D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

APR 14 2011

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 Broad River Road
COLUMBIA SC 29210-4009

Re: Required Revision to Tier I Report
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; Monitoring Well Approval # UMW-24111
Tier I Directive sent February 10, 2011
Tier I Assessment report received April 11, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Tier I Report submitted by Enviro-Test Services on your behalf. The report documents benzene, naphthalene, and MtBE in excess of risk based screening levels for soil and groundwater.

The referenced directed required three groundwater wells to be installed at the referenced facility. The directive required "All shallow wells are to be installed with screen intervals that bracket the water table."
A copy of the directive is enclosed for your reference. The ten-foot screen intervals for monitoring wells do not bracket the water. Please have you site rehabilitation contractor repair or replace the monitoring wells with screens that properly bracket the water table.

A revised report with new Water Well Records (DHEC Form 1903), boring logs, and groundwater analytical data for monitoring wells MW-2, MW-3 and MW-4should **be submitted to the Division on or before May 31, 2011.** Water Well Record (DHEC form 1903, signed by a SC Certified well driller) are required for each new temporary or permanent monitoring well **in accordance with the South Carolina Well Standards, R.61-71.** 1903 forms are required for field screening borings (whether direct push or drilled) where a sample is extracted for analysis.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Tier I Directive
Section F from Tier I Assessment Report

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (with enc.)
Enviro-Test Contractor Certification File
Technical File (with enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

UST DOCKET

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 Broad River Road
COLUMBIA SC 29210-4009

Re: Tier I Assessment Directive
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; Monitoring Well Approval # UMW-24111
Release reported January 4, 2011
Initial Groundwater Assessment received February 4, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report submitted by Enviro-Test Services on your behalf. The report documents benzene, naphthalene, and MtBE in excess of risk based screening levels for soil and groundwater.

In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, assessment activities must be conducted as chemicals of concern are above the risk-based-screening levels in groundwater. Therefore, implementation of the scope of work as outlined in the Tier I Assessment will be necessary to characterize any possible risk to human health or to sensitive environmental receptors. The assessment should be conducted in accordance with the Tier I Assessment guidance document and must be conducted in compliance with all applicable regulations. All shallow wells are to be installed with screen intervals that bracket the water table. The Tier I document may be obtained from our website at http://www.scdhec.gov/ust. **The Tier I report should be submitted to the Division within 60 days of the date of this correspondence.** Water Well Record (DHEC form 1903, signed by a SC Certified well driller) are required for each new temporary or permanent monitoring well **in accordance with the South Carolina Well Standards, R.61-71**. 1903 forms are required for field screening borings (whether direct push or drilled) where a sample is extracted for analysis.

Please be aware that the release cannot be qualified for State Underground Petroleum Environmental Response Bank (SUPERB) and SUPERB funds cannot be expended for site rehabilitation until the UST system is determined to have been in substantial compliance at the time of the release and a completed SUPERB application is on-file with the UST Management Division. Our records indicate that an application has not been received.

Please note that in addition to the sample analyses required in the Tier I Guidance Document, all initial assessment activities are now required to include analyses for EDB (by EPA Method 8011) and lead. Laboratory analyses should be in accordance with *Analytical Methodology for Groundwater and Soil Assessment Guidelines* dated August 24, 2005. A copy of this publication is available on line at http://www.scdhec.gov/environment/lwm/forms/analmet.pdf. Also, if any drinking water wells are located within 500 feet of the UST system, a water sample shall be obtained from the well(s) and analyzed for the appropriate parameters.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Implementation of the Tier I Assessment may proceed immediately upon receipt of this correspondence. Approval to install three permanent monitoring wells is enclosed. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Also note that only EPA Method 8260B will be accepted for analysis of volatile organic hydrocarbons except for EDB because EDB needs to be analyzed under EPA Method 8011 for the lower detection limit. Any site rehabilitation activity associated with the UST release must be performed by a SCDHEC-certified site rehabilitation contractor as required by R.61-98. According to Section IV.C.1 of the SUPERB Site Regulations and Fund Access Regulations, R.61-98, all plans, reports, invoices, and other documents relating to site rehabilitation activities which have been prepared or approved by a certified contractor shall be signed by the certified contractor and bear his certification number

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil or groundwater with concentrations below RBSLs.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Monitoring Well Approval (MWA)

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (with enc.)
Technical File (with enc.)

ENVIRO-TEST SERVICES

UST
APR 11 2011
PROGRAM

TIER I ASSESSMENT

Broad River Amoco (BP)
4335 Broad River Road
Columbia, South Carolina
Richland County

SCDHEC SITE ID # 11946

Tech
UST
DOCKET

Submitted to:

Bureau of Underground Storage Tank Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Prepared By:

ENVIRO-TEST SERVICES INC.
P.O. Box 2237
Irmo, South Carolina 29063
(803) 413-4936

April 8, 2011

SCANNED 4-8-11

F. Chemicals of Concern - Ground Water

MW	INSTALLATION DATE	DEVELOPMENT DATE	SAMPLING DATE
1	1/20/11	1/21/11	3/5/11
2	2/25/11	3/5/11	3/5/11
3	2/25/11	3/5/11	3/5/11
4	2/25/11	3/5/11	3/5/11

SOIL COC (mg/kg)	MW-1 (IGWA)	MW-2 (SB-1)	MW-3 (SB-8)	MW-4 (SB-9)
Depth of sample (ft)	15	10	35	-
Benzene	<0.00802	4.11J	<0.001	-
Toluene	0.834	<0.254	<0.001	-
Ethylbenzene	0.520	22.7	<0.001	-
Xylenes	2.260	5.34J	<0.001	-
Total BTEX	3.614	32.404	-	-
MTBE	0.189J	4.96	0.00434J	-
Naphthalene (8260)	0.635	33.0	<0.001	-
Naphthalene (8270)	0.046J	4.5	<0.0168	-
Benzo(a)anthracene	0.0659J	<0.066	<0.066	-
Benzo(b)fluoranthene	0.083J	<0.066	<0.066	-
Benzo(k)fluoranthene	0.0556J	<0.066	<0.066	-
Chrysene	0.0969J	<0.066	<0.066	-
Dibenzo(a,h)anthracene	<0.0111	<0.066	<0.066	-
Lead	4.77	10.4	5.68	-

MW #	TOC ELEVATION (FT)	SCREENED INTERVAL (BLS)	DEPTH TO WATER (BLS) 4/2/11	WATER TABLE ELEVATION (FT) 4/2/11
1	100.59	20 – 40	14.45	86.14
2	99.94	18 – 28	13.50	86.44
3	99.91	21 – 31	13.72	86.19
4	95.85	15 – 25	9.15	86.70

ENVIRO-TEST SERVICES

February 4, 2011

Mr. Arthur Shrader Hydrogeologist
Assessment Section
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201

UST
FEB 0 4 2011
PROGRAM

RE: IGWA: Initial Groundwater Assessment
Broad River BP (Amoco)
Site # 11946;
Richland County

Dear Mr. Shrader,

Enviro-Test Services Inc. has completed the Initial Groundwater assessment and installed the Monitor Well (MW-1) in the location as directed in your January 12th 2011 directive. The results of the analytical data show there are several COC's (Chemicals of Concern), which are over the RBSL's (Risk Based Screening Levels).

Please apply the amount of $1,300.00 to Mr. Cecchini $25,000.00 deductible a copy of the paid check is included.

Should you have any questions, comments or require any additional information, please call (803)-413-4936 at your convenience.

Very truly yours,

Terry L. Teate

Project Manager

ENVIRO-TEST SERVICES, INC.

Attachments

UST
DOCKET
3 Tech

INITIAL GROUNDWATER ASSESSMENT REPORT

Facility Name Broad River BP

Facility Address 4335 Broad River Rd. Columbia, SC 29210

Facility Telephone Number 803-798-3051

UST Permit Number 11946

UST Owner and Operator's Name Fred Cecchini

Address 4335 Broad River Rd. Columbia, SC 29210

Phone Number 803-238-2143

Property Owner's Name Fred Cecchini

Address 4335 Broad River Rd. Columbia, SC 29210

Phone Number 803-238-2143

Contractor Enviro-Test Services Inc. Cert. # 14

Address P.O. Box 2237 Irmo, SC 29063

Phone Number 803-413-4936

Well Driller Terry TeaTe Cert. # 1242

Address P.O. Box 2237 Irmo, SC 29063

Phone Number 803-413-4936

Receptor and Site Data

Please place a check in the appropriate answer block for each question:

Receptor Survey Questions	No	Yes *
Are any drinking water supply wells (public or private) or surface water supply intakes within 1000 feet of the UST?	✓	
Are irrigation or other non-drinking water wells located within 1000 feet of the UST?	✓	
Are other potential receptors (i.e., utilities, surface waters, wetlands) less than 500 feet from the UST?		✓

* If "yes" provide additional information below:

Water Lines, Gas lines, Phone lines,

Were any water supply wells or surface waters within 250 ft. sampled?

Yes ____ No ✓ (Show on site base map)

Is a public water supply line in the area? Yes ✓ No ____ (Show on site base map)

Is the current use of the facility and surrounding properties commercial, residential, agricultural or industrial?

Site: Residential & Commercial

Adjacent Properties:
North: SLED South Carolina Law Enforcement Division
East: Mechanical Engineering Firm
South: Nail + Beauty Salon
West: Day Care Play Pals

Soil and Boring/Monitoring Well Data

Primary Soil Type: Clay

Well Installation Method and Date: auger 1-20-2011

Development Method and Date: Bailer (Teflon) 1-20-2011

Soil Sample obtained from 15 feet.

SOIL ANALYTICAL DATA

Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Xylenes (µg/kg)	Naphthalene (µg/kg)	MTBE (µg/kg) 189 J
<293	834	520	2760	635	<293

Benzo(a)-anthracene (µg/kg)	Benzo(b)-fluoranthene (µg/kg)	Benzo(k)-fluoranthene (µg/kg)	Chrysene (µg/kg)	Dibenz(a,h) anthracene (µg/kg)	Total PAH (µg/kg)	Lead (µg/kg)
65.9 J	83.0 J	55.6 J	96.9 J	11.1	312.5	4.77

*For waste oil UST releases only:

Chromium* (µg/kg)	Mercury* (µg/kg)	Selenium* (µg/kg)	Silver* (µg/kg)	Arsenic* (µg/kg)	Barium* (µg/kg)	Cadmium* (µg/kg)

Include Laboratory Data and Chain of Custody Form in Appendix B.

Groundwater Data

Depth to Groundwater: 20.92 Depth to FP, if present: None

Free Product Thickness: NA

Well Purging/Sampling Method: Teflon Bailer

Date Sampled: 1-21-2011

Equilibrated values: Temperature: 21.3 °C pH: 8.3

Dissolved Oxygen: 2.73 Specific Conductance: 76

Soil/Water Disposal Method: Crandall Corp.

Include in Appendix D. Costs for work cannot be compensated without manifest.

GROUNDWATER ANALYTICAL DATA

Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Xylenes (µg/l)	MTBE (µg/l)	EDB (µg/l)	Naphthalene (µg/l)
929	10,300	684	2,960	243	<0.010	922

Benzo(a)-anthracene (µg/l)	Benzo(b)-fluoranthene (µg/l)	Benzo(k)-fluoranthene (µg/l)	Chrysene (µg/l)	Dibenz(a,h) anthracene (µg/l)	Total PAH (µg/l)	Lead (µg/l)
<10.1	<10.1	<10.1	<10.1	<10.1	50.5	<15

*For waste oil UST releases only:

Chromium* (µg/l)	Mercury* (µg/l)	Selenium* (µg/l)	Silver* (µg/l)	Arsenic* (µg/l)	Barium* (µg/l)	Cadmium* (µg/l)

Include Laboratory Data and Chain of Custody Form in Appendix B.

Report Completed By (Print Name): Terry TeaTe

Signature : Terry L. Teate

DHEC Contractor Certification # 14 Date: 2-4-2011

Appendices

The appendices required for this report are as follows:

Appendix A. Well Construction Log
Appendix B. Laboratory Data
Appendix C. Maps (Topographic and Site Base)
Appendix D. Disposal Manifest(s). (Must be included for payment from SUPERB)
Appendix E. Additional Data (Property owner name, address, phone number for any water supply wells or surface water bodies sampled.)

APPENDIX A

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: SCDHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: (803) 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River BP DHEC Site # 11946
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29219-4009
Latitude: N 34*03.920' Longitude: W 081*06.995'

3. PUBLIC SYSTEM NAME: MW-1 **PUBLIC SYSTEM NUMBER:** Permit # 11946

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
SEE ATTACHED		
BORING LOG		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-24060

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 40.0 ft. Date Started: 01-20-2011 Date Completed: 01-20-2011

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 20 ft. depth
Height: Above /Below Surface U _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 2 inch
Slot/Gauge: 0.010 Length: _____
Set Between: _____ ft. and 20 ft.
_____ ft. and 40 ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 20.92 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 18 ft. to 40 ft.
Effective size No.2 sand Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 18 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 10 ft. ft. S direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) P.O. Box 2237 Irmo, SC 29063
Level: (A) B C D (circle one)
Telephone No.: 803-413-0930 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate (Well Driller) Date: 02-02-2011

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

SOIL BORING LOG

Project Name: Broad River BP	**Site #: 11946**	**Location: 4335 Broad River Rd. Columbia, SC 29210**	**County:** Richland
Driller: Terry L. Teate	**Logged by: T. Teate**	**Installed: 01/20/11**	**TD: 40 Feet**
Sample Method: Cuttings		**Development Method: Bailing**	

DEPTH (FT)	DESCRIPTION	PPM	ODOR
5	Sandy CLAY – Dark Brown Red, very firm, sandy; dry CXLN	190	Slight
10	Sandy CLAY – Lt Gray, Orange, mod. firm, sandy, silty; Dry MXLN	567	Slight
15	CLAY- Lt Orange, Red , FXLN Dry	1782	Strong
20	CLAY- Tan, Brown, Orange Mott, VFXLN Dry	1760	Strong
25	CLAY- Tan, Brown, Orange, VFXLN Dry	1281	Moderate
30	CLAY – Orange Lt Red Brown, mod. firm, silty; moist, micaceous, FVXLN	1243	Moderate
35	CLAY – Lt Gray. firm, silty; moist, VFXLN	715	Moderate
40	CLAY – Lt Gray, silty; firm, VFXLN Wet	208	Slight

APPENDIX B

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063

ATTENTION
Terry Teate

PROJECT ID
Broad River BP

LABORATORY REPORT NUMBER
211012406

DATE
01/31/2011

Primary Data Review By

Curtis Ekker
Data Validation Manager, GCAL

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 GSRI Avenue, Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

NELAP CERTIFICATE NUMBER 01955
DOD ELAP CERTIFICATE NUMBER ADE - 1482

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.
7979 GSRI Avenue
Baton Rouge, LA 70820

Report Date 01/31/2011

GCAL Report 211012406

Deliver To Enviro-Test Services
P.O. Box 2237
Irmo, SC 29063
803-732-5770

Attn Terry Teate

Project Broad River BP

CASE NARRATIVE

Client: Enviro-Test Services **Report:** 211012406

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the SW-846 8260B analysis, samples 21101240602 (MW-1) and 21101240601 (MW-1-SB) had to be diluted to bracket the concentration of target compounds within the calibration range of the instrument.

SEMI-VOLATILES MASS SPECTROMETRY

In the SW-846 8270D analysis for prep batch 449503, the LCS/LCSD exhibited recoveries above the established control limits for Benzo(g,h andi)perylene and Indeno(1,2,3-cd)pyrene. However, Benzo(g,h ,i)perylene and Indeno(1,2,3-cd)pyrene were not detected in the associated samples, therefore the data is reportable.

MISCELLANEOUS

Sample 21101240601 (MW-1-SB) container ID 21101240601-2 had to be preserved at the laboratory with HNO3. This container was used to analyze SW-846 6010B.

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates an estimated value
U	Indicates the compound was analyzed for but not detected
B	(ORGANICS) Indicates the analyte was detected in the associated Method Blank
B	(INORGANICS) Indicates the result is between the RDL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Robyn Migues
Technical Director
GCAL REPORT 211012406

THIS REPORT CONTAINS 20 PAGES.

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240601	MW-1-SB	Solid	01/20/2011 10:30	01/22/2011 09:00
21101240602	MW-1	Water	01/21/2011 10:45	01/22/2011 09:00

Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240601	MW-1-SB	Solid	01/20/2011 10:30	01/22/2011 09:00

SW-846 6010B

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	4.77	0.74	0.089	mg/kg

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
108-88-3	Toluene	834	293	11.7	ug/Kg
100-41-4	Ethylbenzene	520	293	12.1	ug/Kg
1330-20-7	Xylene (total)	2260	585	40.2	ug/Kg
91-20-3	Naphthalene	635	293	48.3	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	189J	293	9.78	ug/Kg

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
56-55-3	Benzo(a)anthracene	65.9J	403	17.2	ug/Kg
50-32-8	Benzo(a)pyrene	62.7J	403	23.2	ug/Kg
205-99-2	Benzo(b)fluoranthene	83.0J	403	12.6	ug/Kg
191-24-2	Benzo(g,h,i)perylene	57.0J	403	11.1	ug/Kg
207-08-9	Benzo(k)fluoranthene	55.6J	403	18.4	ug/Kg
218-01-9	Chrysene	96.9J	403	13.5	ug/Kg
206-44-0	Fluoranthene	235J	403	8.91	ug/Kg
86-73-7	Fluorene	15.9J	403	12.3	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	41.1J	403	16.1	ug/Kg
91-20-3	Naphthalene	46.0J	403	13.4	ug/Kg
85-01-8	Phenanthrene	191J	403	16.4	ug/Kg
129-00-0	Pyrene	166J	403	56.5	ug/Kg

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240602	MW-1	Water	01/21/2011 10:45	01/22/2011 09:00

SW-846 8270D

CAS#	Parameter	Result	RDL	MDL	Units
91-20-3	Naphthalene	170	10.1	0.135	ug/L
85-01-8	Phenanthrene	0.671J	10.1	0.152	ug/L

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	929	100	5.42	ug/L
100-41-4	Ethylbenzene	684	100	6.27	ug/L
91-20-3	Naphthalene	922	500	8.17	ug/L
108-88-3	Toluene	10300	100	5.90	ug/L
1330-20-7	Xylene (total)	2960	300	5.80	ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240602	MW-1	Water	01/21/2011 10:45	01/22/2011 09:00

SW-846 8260B

CAS#	Parameter	Result	RDL	MDL	Units
1634-04-4	tert-Butyl methyl ether (MTBE)	243	100	5.17	ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101246601	MW-1-SB	Solid	01/20/2011 10:30	01/22/2011 09:05

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			50	01/28/2011 13:09	RJU	449790

CAS#	Parameter	Result	RDL	MDL	Units
71-43-2	Benzene	8.02U	293	8.02	ug/Kg
108-88-3	Toluene	834	293	11.7	ug/Kg
100-41-4	Ethylbenzene	520	293	12.1	ug/Kg
1330-20-7	Xylene (total)	2260	585	40.2	ug/Kg
91-20-3	Naphthalene	635	293	48.3	ug/Kg
1634-04-4	tert-Butyl methyl ether (MTBE)	189J	293	9.78	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	2360	2160	ug/Kg	92	62 - 127
1868-53-7	Dibromofluoromethane	2360	2470	ug/Kg	105	65 - 130
2037-26-5	Toluene d8	2360	2310	ug/Kg	98	71 - 132
17060-07-0	1,2-Dichloroethane-d4	2360	2620	ug/Kg	111	62 - 125

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/26/2011 10:15	449579	3550B	1	01/27/2011 16:01	KCB	449756

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	22.8U	403	22.8	ug/Kg
208-96-8	Acenaphthylene	13.5U	403	13.5	ug/Kg
120-12-7	Anthracene	14.2U	403	14.2	ug/Kg
56-55-3	Benzo(a)anthracene	65.9J	403	17.2	ug/Kg
50-32-8	Benzo(a)pyrene	62.7J	403	23.2	ug/Kg
205-99-2	Benzo(b)fluoranthene	83.0J	403	12.6	ug/Kg
191-24-2	Benzo(g,h,i)perylene	57.0J	403	11.1	ug/Kg
207-08-9	Benzo(k)fluoranthene	55.6J	403	18.4	ug/Kg
218-01-9	Chrysene	96.9J	403	13.5	ug/Kg
53-70-3	Dibenz(a,h)anthracene	11.1U	403	11.1	ug/Kg
206-44-0	Fluoranthene	235J	403	8.91	ug/Kg
86-73-7	Fluorene	15.9J	403	12.3	ug/Kg
193-39-5	Indeno(1,2,3-cd)pyrene	41.1J	403	16.1	ug/Kg
91-20-3	Naphthalene	46.0J	403	13.4	ug/Kg
85-01-8	Phenanthrene	191J	403	16.4	ug/Kg
129-00-0	Pyrene	166J	403	56.5	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	1640	1230	ug/Kg	75	46 - 123
321-60-8	2-Fluorobiphenyl	1640	1210	ug/Kg	74	47 - 127
1718-51-0	Terphenyl-d14	1640	1200	ug/Kg	73	38 - 167

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240601	MW-1-SB	Solid	01/20/2011 10:30	01/22/2011 09:00

SW-846 6010B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/24/2011 12:00	449472	SW-846 3050B	1	01/25/2011 20:58	BNB	449617

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	4.77	0.74	0.089	mg/kg

RESULTS REPORTED ON A DRY WEIGHT BASIS

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240602	MW-1	Water	01/21/2011 10:45	01/22/2011 09:00

SW-846 8260B

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
			100	01/26/2011 20:25	CLH	449688

CAS#	Parameter	Result	RDL	MDL	Units
107-06-2	1,2-Dichloroethane	8.60U	100	8.60	ug/L
71-43-2	Benzene	929	100	5.42	ug/L
100-41-4	Ethylbenzene	684	100	6.27	ug/L
91-20-3	Naphthalene	922	500	8.17	ug/L
108-88-3	Toluene	10300	100	5.90	ug/L
1330-20-7	Xylene (total)	2960	300	5.80	ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	243	100	5.17	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
460-00-4	4-Bromofluorobenzene	5000	5870	ug/L	117	78 - 130
1868-53-7	Dibromofluoromethane	5000	5190	ug/L	104	77 - 127
2037-26-5	Toluene d8	5000	5560	ug/L	111	76 - 134
17060-07-0	1,2-Dichloroethane-d4	5000	4710	ug/L	94	71 - 127

SW-846 8270D

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/25/2011 07:17	449503	3510C	1	01/25/2011 19:45	KCB	449613

CAS#	Parameter	Result	RDL	MDL	Units
83-32-9	Acenaphthene	0.204U	10.1	0.204	ug/L
208-96-8	Acenaphthylene	0.119U	10.1	0.119	ug/L
120-12-7	Anthracene	0.159U	10.1	0.159	ug/L
56-55-3	Benzo(a)anthracene	0.159U	10.1	0.159	ug/L
50-32-8	Benzo(a)pyrene	0.123U	10.1	0.123	ug/L
205-99-2	Benzo(b)fluoranthene	0.242U	10.1	0.242	ug/L
191-24-2	Benzo(g,h,i)perylene	0.162U	10.1	0.162	ug/L
207-08-9	Benzo(k)fluoranthene	0.239U	10.1	0.239	ug/L
218-01-9	Chrysene	0.267U	10.1	0.267	ug/L
53-70-3	Dibenz(a,h)anthracene	0.263U	10.1	0.263	ug/L
206-44-0	Fluoranthene	0.175U	10.1	0.175	ug/L
86-73-7	Fluorene	0.135U	10.1	0.135	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	0.270U	10.1	0.270	ug/L
91-20-3	Naphthalene	170	10.1	0.135	ug/L
85-01-8	Phenanthrene	0.671J	10.1	0.152	ug/L
129-00-0	Pyrene	0.203U	10.1	0.203	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	50.5	42.4	ug/L	84	52 - 120
321-60-8	2-Fluorobiphenyl	50.5	44.1	ug/L	87	16 - 128
1718-51-0	Terphenyl-d14	50.5	39	ug/L	77	43 - 138
4165-62-2	Phenol-d5	101	37.8	ug/L	37	10 - 120
367-12-4	2-Fluorophenol	101	34.5	ug/L	34	10 - 120
118-79-6	2,4,6-Tribromophenol	101	76.6	ug/L	76	52 - 121

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21101240802	MW-1	Water	01/21/2011 10:45	01/22/2011 08:30

SW-846 8011

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/25/2011 16:15	449506	SW-846 8011	1	01/28/2011 18:01	DLB	449866

CAS#	Parameter	Result	RDL	MDL	Units
106-93-4	1,2-Dibromoethane	0.00380U	0.010	0.00380	ug/L

SW-846 6010B Dissolved

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
01/25/2011 09:35	449486	SW-846 3005 Dissolved	1	01/26/2011 23:19	BNB	449658

CAS#	Parameter	Result	RDL	MDL	Units
7439-92-1	Lead	0.0014U	0.015	0.0014	mg/L

GC/MS Volatiles Quality Control Summary

Analytical Batch 449688	Client ID	MB449688	LCS449688	LCSD449688
Prep Batch N/A	GCAL ID	916356	916357	916358
	Sample Type	Method Blank	LCS	LCSD
	Analytical Date	01/26/2011 19:19	01/26/2011 17:52	01/26/2011 18:35
	Matrix	Water	Water	Water

SW-846 8260B		Units	ug/L	Spike			Control				
		Result	RDL	Added	Result	% R	Limits % R	Result	% R	RPD	RPD Limit
107-06-2	1,2-Dichloroethane	0.086U	0.086	50.0	58.2	116	71 - 129	55.1	110	5	30
100-41-4	Ethylbenzene	0.063U	0.063	50.0	56.8	114	74 - 126	52.5	105	8	30
1634-04-4	tert-Butyl methyl ether (MTBE)	0.052U	0.052	50.0	55.9	112	71 - 125	55.1	110	1	30
1330-20-7	Xylene (total)	0.058U	0.058	150	168	112	74 - 127	157	105	7	30
91-20-3	Naphthalene	0.082U	0.082	50.0	44.9	90	57 - 138	48.6	97	8	35
71-43-2	Benzene	0.054U	0.054	50.0	58.6	117	70 - 129	53.6	107	9	20
108-88-3	Toluene	0.059U	0.059	50.0	58.2	116	72 - 120	54.3	109	7	20
Surrogate											
460-00-4	4-Bromofluorobenzene	51.1	102	50	49.4	99	78 - 130	48.8	98		
1868-53-7	Dibromofluoromethane	53.1	106	50	47.6	95	77 - 127	46.7	93		
2037-26-5	Toluene d8	55.6	111	50	46.8	94	76 - 134	47.8	96		
17060-07-0	1,2-Dichloroethane-d4	48.1	96	50	49.5	99	71 - 127	48.1	96		

Analytical Batch 449790	Client ID	MB449790	LCS449790	LCSD449790
Prep Batch N/A	GCAL ID	916916	916917	916929
	Sample Type	Method Blank	LCS	LCSD
	Analytical Date	01/28/2011 10:09	01/28/2011 07:49	01/28/2011 10:52
	Matrix	Solid	Solid	Solid

SW-846 8260B		Units	ug/Kg	Spike			Control				
		Result	RDL	Added	Result	% R	Limits % R	Result	% R	RPD	RPD Limit
100-41-4	Ethylbenzene	10.3U	10.3	2500	2440	98	74 - 130	2320	93	5	30
1634-04-4	tert-Butyl methyl ether (MTBE)	8.35U	8.35	2500	2630	105	69 - 126	2510	100	5	30
1330-20-7	Xylene (total)	34.3U	34.3	7500	6870	92	71 - 129	6640	89	3	30
91-20-3	Naphthalene	41.3U	41.3	2500	2390	96	54 - 132	2220	89	7	30
71-43-2	Benzene	6.85U	6.85	2500	2660	106	73 - 128	2470	99	7	30
108-88-3	Toluene	10.0U	10.0	2500	2290	92	74 - 121	2290	92	0	30
Surrogate											
460-00-4	4-Bromofluorobenzene	2310	92	2500	2350	94	62 - 127	2460	98		
1868-53-7	Dibromofluoromethane	2500	100	2500	2640	106	65 - 130	2570	103		
2037-26-5	Toluene d8	2430	97	2500	2300	92	71 - 132	2380	95		
17060-07-0	1,2-Dichloroethane-d4	2750	110	2500	2700	108	62 - 125	2700	108		

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch 449613	**Client ID**	MB449503			LCS449503			LCSD449503			
Prep Batch 449503	**GCAL ID**	915446			915447			915448			
Prep Method 3510C	**Sample Type**	Method Blank			LCS			LCSD			
	Prep Date	01/25/2011 07:17			01/25/2011 07:17			01/25/2011 07:17			
	Analytical Date	01/25/2011 18:37			01/25/2011 18:54			01/25/2011 19:10			
	Matrix	Water			Water			Water			
SW-846 8270D		**Units**	ug/L								
		Result	**RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
208-96-8	Acenaphthylene	0.118U	0.118	100	94.7	95	55 - 120	102	102	7	50
120-12-7	Anthracene	0.157U	0.157	100	94.7	95	58 - 120	102	102	7	50
56-55-3	Benzo(a)anthracene	0.157U	0.157	100	89.3	89	56 - 120	98.6	99	10	50
205-99-2	Benzo(b)fluoranthene	0.240U	0.240	100	86.1	86	55 - 120	94.9	95	10	50
207-08-9	Benzo(k)fluoranthene	0.237U	0.237	100	82.7	83	49 - 121	89.3	89	8	50
191-24-2	Benzo(g,h,i)perylene	0.160U	0.160	100	128	128	44 - 132	155	**155***	19	50
50-32-8	Benzo(a)pyrene	0.122U	0.122	100	92.3	92	56 - 120	102	102	10	50
218-01-9	Chrysene	0.264U	0.264	100	96.6	97	58 - 120	103	103	6	50
53-70-3	Dibenz(a,h)anthracene	0.260U	0.260	100	120	120	50 - 138	137	137	13	50
206-44-0	Fluoranthene	0.173U	0.173	100	98.0	98	55 - 120	89.5	90	9	50
86-73-7	Fluorene	0.134U	0.134	100	92.6	93	54 - 120	95.7	96	3	50
193-39-5	Indeno(1,2,3-cd)pyrene	0.267U	0.267	100	121	121	43 - 133	142	**142***	16	50
91-20-3	Naphthalene	0.134U	0.134	100	92.2	92	44 - 120	98.5	99	7	50
85-01-8	Phenanthrene	0.150U	0.150	100	92.7	93	58 - 120	102	102	10	50
83-32-9	Acenaphthene	0.202U	0.202	100	94.3	94	52 - 120	100	100	6	32
129-00-0	Pyrene	0.201U	0.201	100	84.8	85	54 - 120	99.7	100	16	30
Surrogate											
4165-60-0	Nitrobenzene-d5	42.8	86	50	42.8	86	52 - 120	44.7	89		
321-60-8	2-Fluorobiphenyl	43.7	87	50	44.4	89	16 - 128	47.1	94		
1718-51-0	Terphenyl-d14	42.2	84	50	39.4	79	43 - 138	44.3	89		
4165-62-2	Phenol-d5	39.5	40	100	39.9	40	10 - 120	44.7	45		
367-12-4	2-Fluorophenol	58.1	58	100	59.3	59	10 - 120	64.7	65		
118-79-6	2,4,6-Tribromophenol	71	71	100	80.9	81	52 - 121	82.8	83		

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch 449756	**Client ID**	MB449579	LCS449579	LCSD449579	
Prep Batch 449579	**GCAL ID**	915804	915805	915806	
Prep Method 3550B	**Sample Type**	Method Blank	LCS	LCSD	
	Prep Date	01/26/2011 10:15	01/26/2011 10:15	01/26/2011 10:15	
	Analytical Date	01/27/2011 13:14	01/27/2011 13:31	01/27/2011 13:48	
	Matrix	Solid	Solid	Solid	

SW-846 8270D		**Units** Result	ug/Kg RDL	**Spike Added**	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
208-96-8	Acenaphthylene	11.1U	11.1	3330	3040	91	53 - 120	3270	98	7	40
120-12-7	Anthracene	11.6U	11.6	3330	3090	93	52 - 120	3250	98	5	40
56-55-3	Benzo(a)anthracene	14.1U	14.1	3330	2890	87	48 - 120	3150	95	9	40
205-99-2	Benzo(b)fluoranthene	10.3U	10.3	3330	3090	93	31 - 130	3260	98	5	40
207-08-9	Benzo(k)fluoranthene	15.0U	15.0	3330	3250	98	36 - 122	3370	101	4	40
191-24-2	Benzo(g,h,i)perylene	9.09U	9.09	3330	3170	95	29 - 134	3410	102	7	40
50-32-8	Benzo(a)pyrene	18.9U	18.9	3330	3210	96	44 - 120	3320	100	3	40
218-01-9	Chrysene	11.1U	11.1	3330	3190	96	51 - 120	3450	104	8	40
53-70-3	Dibenz(a,h)anthracene	9.03U	9.03	3330	3150	95	27 - 129	3390	102	7	40
206-44-0	Fluoranthene	7.28U	7.28	3330	3260	98	39 - 120	3330	100	2	40
86-73-7	Fluorene	10.1U	10.1	3330	3030	91	48 - 120	3230	97	6	40
193-39-5	Indeno(1,2,3-cd)pyrene	13.2U	13.2	3330	3180	95	43 - 132	3370	101	6	40
91-57-6	2-Methylnaphthalene	17.6U	17.6	3330	2760	83	43 - 120	2960	89	7	40
91-20-3	Naphthalene	11.0U	11.0	3330	2920	88	48 - 120	3140	94	7	40
85-01-8	Phenanthrene	13.4U	13.4	3330	3080	92	53 - 120	3270	98	6	40
83-32-9	Acenaphthene	18.6U	18.6	3330	3050	92	50 - 120	3160	95	4	40
129-00-0	Pyrene	46.1U	46.1	3330	2850	86	38 - 136	3180	95	11	40
Surrogate											
4165-60-0	Nitrobenzene-d5	1340	81	1670	1440	86	46 - 123	1420	85		
321-60-8	2-Fluorobiphenyl	1340	81	1670	1500	90	47 - 127	1470	88		
1718-51-0	Terphenyl-d14	1370	82	1670	1400	84	38 - 167	1480	89		

Analytical Batch 449756	**Client ID**	SB0078	SB0078 MS	SB0078 MSD	
Prep Batch 449579	**GCAL ID**	21101202413	21101202414	21101202415	
Prep Method 3550B	**Sample Type**	SAMPLE	MS	MSD	
	Prep Date	01/26/2011 10:15	01/26/2011 10:15	01/26/2011 10:15	
	Analytical Date	01/27/2011 17:08	01/27/2011 17:24	01/27/2011 17:41	
	Matrix	Solid	Solid	Solid	

SW-846 8270D		**Units** Result	ug/Kg RDL	**Spike Added**	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
208-96-8	Acenaphthylene	0.00	10.9	3280	3080	94	53 - 120	2990	90	3	40

GC/MS Semi-Volatiles Quality Control Summary

Analytical Batch	449756	**Client ID**	SB0078			SB0078 MS				SB0078 MSD		
Prep Batch	449579	**GCAL ID**	21101202413			21101202414				21101202415		
Prep Method	3550B	**Sample Type**	SAMPLE			MS				MSD		
		Prep Date	01/26/2011 10:15			01/26/2011 10:15				01/26/2011 10:15		
		Analytical Date	01/27/2011 17:08			01/27/2011 17:24				01/27/2011 17:41		
		Matrix	Solid			Solid				Solid		
SW-846 8270D		**Units**	ug/Kg	**Spike**			**Control**					
		Result	**RDL**	**Added**	**Result**	**% R**	**Limits % R**		**Result**	**% R**	**RPD**	**RPD Limit**
120-12-7	Anthracene	0.00	11.4	3280	3030	92	52 - 120		3040	91	0.3	40
56-55-3	Benzo(a)anthracene	0.00	13.9	3280	3040	93	48 - 120		3100	93	2	40
205-99-2	Benzo(b)fluoranthene	0.00	10.1	3280	2880	88	31 - 130		2700	81	6	40
207-08-9	Benzo(k)fluoranthene	0.00	14.9	3280	2780	85	36 - 122		2820	85	1	40
191-24-2	Benzo(g,h,i)perylene	0.00	8.97	3280	3800	116	29 - 134		3720	112	2	40
50-32-8	Benzo(a)pyrene	0.00	18.7	3280	3040	93	44 - 120		2910	87	4	40
218-01-9	Chrysene	0.00	10.9	3280	3140	96	51 - 120		2870	86	9	40
53-70-3	Dibenz(a,h)anthracene	0.00	8.91	3280	3870	118	27 - 129		3680	110	5	40
206-44-0	Fluoranthene	0.00	7.18	3280	3070	94	39 - 120		3180	95	4	40
86-73-7	Fluorene	0.00	9.93	3280	2960	90	48 - 120		2930	88	1	40
193-39-5	Indeno(1,2,3-cd)pyrene	0.00	13.0	3280	3710	113	43 - 132		3560	107	4	40
91-57-6	2-Methylnaphthalene	0.00	17.4	3280	2650	81	43 - 120		2650	80	0	40
91-20-3	Naphthalene	0.00	10.8	3280	2900	88	48 - 120		2860	86	1	40
85-01-8	Phenanthrene	0.00	13.2	3280	3040	93	53 - 120		3050	92	0.3	40
83-32-9	Acenaphthene	0.00	18.4	3280	3000	92	50 - 120		2920	88	3	40
129-00-0	Pyrene	0.00	45.5	3280	2780	85	38 - 136		2800	84	0.7	40
Surrogate												
4165-60-0	Nitrobenzene-d5			1640	1300	79	46 - 123		1310	79		
321-60-8	2-Fluorobiphenyl			1640	1360	83	47 - 127		1300	78		
1718-51-0	Terphenyl-d14			1640	1200	73	38 - 167		1200	72		

General Chromatography Quality Control Summary

Analytical Batch 449866	**Client ID**	MB449506	LCS449506	LCSD449506	
Prep Batch 449506	**GCAL ID**	915456	915457	915759	
Prep Method SW-846 8011	**Sample Type**	Method Blank	LCS	LCSD	
	Prep Date	01/25/2011 16:15	01/25/2011 16:15	01/25/2011 16:15	
	Analytical Date	01/28/2011 15:32	01/28/2011 15:54	01/28/2011 16:16	
	Matrix	Water	Water	Water	

SW-846 8011		**Units**	ug/L							
		Result	**RDL**	**Spike Added**	**Result**	**% R**	**Control Limits % R**	**Result**	**% R**	**RPD**	**RPD Limit**
96-12-8	1,2-Dibromo-3-chloropropane	0.00650U	0.00650	1.15	1.17	102	45 - 150	1.07	98	9	40
106-93-4	1,2-Dibromoethane	0.00380U	0.00380	1.15	1.43	124	55 - 141	1.33	122	7	40

Inorganics Quality Control Summary

Analytical Batch	449617	**Client ID**	MB449472			LCS449472		
Prep Batch	449472	**GCAL ID**	915323			915324		
Prep Method	SW-846 3050B	**Sample Type**	Method Blank			LCS		
		Prep Date	01/24/2011 12:00			01/24/2011 12:00		
		Analytical Date	01/25/2011 20:44			01/25/2011 20:51		
		Matrix	Solid			Solid		
SW-846 6010B		**Units**	mg/kg	**Spike**		**Result**		**Control**
		Result	**RDL**	**Added**			**% R**	**Limits % R**
7439-92-1	Lead	0.072U	0.072	20.0		19.8	99	80 - 120

Analytical Batch	449617	**Client ID**	MW-1-SB			915386MS		
Prep Batch	449472	**GCAL ID**	21101240601			915389		
Prep Method	SW-846 3050B	**Sample Type**	SAMPLE			MS		
		Prep Date	01/24/2011 12:00			01/24/2011 12:00		
		Analytical Date	01/25/2011 20:58			01/25/2011 21:11		
		Matrix	Solid			Solid		
SW-846 6010B		**Units**	mg/kg	**Spike**		**Result**		**Control**
		Result	**RDL**	**Added**			**% R**	**Limits % R**
7439-92-1	Lead	3.85	0.072	20.0		22.9	96	75 - 125

Analytical Batch	449617	**Client ID**	MW-1-SB			915386DUP		
Prep Batch	449472	**GCAL ID**	21101240601			915388		
Prep Method	SW-846 3050B	**Sample Type**	SAMPLE			DUP		
		Prep Date	01/24/2011 12:00			01/24/2011 12:00		
		Analytical Date	01/25/2011 20:58			01/25/2011 21:05		
		Matrix	Solid			Solid		
SW-846 6010B		**Units**	mg/kg		**Result**		**RPD**	
		Result	**RDL**			**RPD**	**Limit**	
7439-92-1	Lead	3.85	0.072		3.53	9	20	

Inorganics Quality Control Summary

Analytical Batch	449658	Client ID	MB449486			LCS449486		
Prep Batch	449486	GCAL ID	915392			915393		
Prep Method	SW-846 3005 Dissolved	Sample Type	Method Blank			LCS		
		Prep Date	01/25/2011 09:35			01/25/2011 09:35		
		Analytical Date	01/26/2011 23:05			01/26/2011 23:12		
		Matrix	Water			Water		
SW-846 6010B Dissolved		Units	Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R
7439-92-1	Lead		0.0014U	0.0014	0.50	0.52	103	80 - 120

Analytical Batch	449658	Client ID	MW-1			915387MS		
Prep Batch	449486	GCAL ID	21101240602			915395		
Prep Method	SW-846 3005 Dissolved	Sample Type	SAMPLE			MS		
		Prep Date	01/25/2011 09:35			01/25/2011 09:35		
		Analytical Date	01/26/2011 23:19			01/26/2011 23:33		
		Matrix	Water			Water		
SW-846 6010B Dissolved		Units	Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R
7439-92-1	Lead		0.0	0.0014	0.50	0.52	104	75 - 125

Analytical Batch	449658	Client ID	MW-1		915387DUP		
Prep Batch	449486	GCAL ID	21101240602		915394		
Prep Method	SW-846 3005 Dissolved	Sample Type	SAMPLE		DUP		
		Prep Date	01/25/2011 09:35		01/25/2011 09:35		
		Analytical Date	01/26/2011 23:19		01/26/2011 23:26		
		Matrix	Water		Water		
SW-846 6010B Dissolved		Units	Result	mg/L RDL	Result	RPD	RPD Limit
7439-92-1	Lead		0.0	0.0014	0.0	0	20

Access Analytical - Chain of Custody Record

LAB USE ONLY

Sales Order # _____ PO # _____ Access Quote # _____

Project Work Order # _____

Laboratory ID: _____

Company Name: Enviro-Test Services

Report To: Terry TeaTe

Address: P.O. Box 2237

City: Irmo State: SC Zip: 29063

Phone: 413-4936 Fax:

Email:

Project ID: Broad River BP

Sampled By: Terry TeaTe

Sample ID/Description	Date Collected	Time Collected	Type (grab or composite)	Matrix (see codes)	Program Area (see codes)	TOTAL # of containers	Preservative (*see codes)	Container Type (*see codes)	REQUESTED LAB ANALYSIS: BTEX, Naph, MTBE	1,2-DCA	EDB - 8011	PAH's	Total Lead	Filtered Lead	NOTES / COMMENTS (if sample is a composite please use space below to note start/finish times & dates)
MW-1-SB	1-20-11	1030	G	S	SHW	5			X			X	X		Taken @ 15 FT.
MW-1	1-21-11	1045	G	W	SHW	6			X	X	X	X		X	

Turnaround Time:

✓ Standard

___ RUSH*

*Date Required: _____

(For rush work, results emailed/faxed by end of business day on date required)

Project Location:

✓ SC

___ NC

___ Other

(specify) _____

Relinquished By:	Received By:	Date (mm-dd-yy)	Time (24HR)	Sample Temp. Upon Receipt (°C)	
Terry L Teate	M. Rebuton	1/21/11	1125	5.9 (°C)	___ (N/A)
M. Rebuton	FedEx	1/21/11	1700	___ (°C)	✓ (N/A)
FedEx	Dan	1/22/11	0900	4.6 (°C)	___ (N/A)
				___ (°C)	___ (N/A)

ACCESS ANALYTICAL, INC.

7478 Carlisle Street
Irmo, SC 29063

Phone: (803) 781-4243
Fax: 781-4303

www.axs-inc.com

*Preservative Codes (place corresponding # in block above analysis field): 0 = None; 1 = HCl; 2 = HNO3; 3 = H2SO4; 4 = NaOH; 5 = Na2SO3; 6 = Method 5035 kit w/ NaHSO4 & CH3OH; 7 = NaOH/ZnOAc; 8 = H3PO4

*Matrix Codes (place corresponding code in matrix column): GW = ground water; WW = waste water; DW = drinking water; S = soil; SL = sludge; A = air; IW = industrial waste; WO = waste oil; OT = other (specify in comments section)

*Program Area Codes: CWA = Clean Water Act (for wastewaters); SDWA = Safe Drinking Water Act (for drinking waters); SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

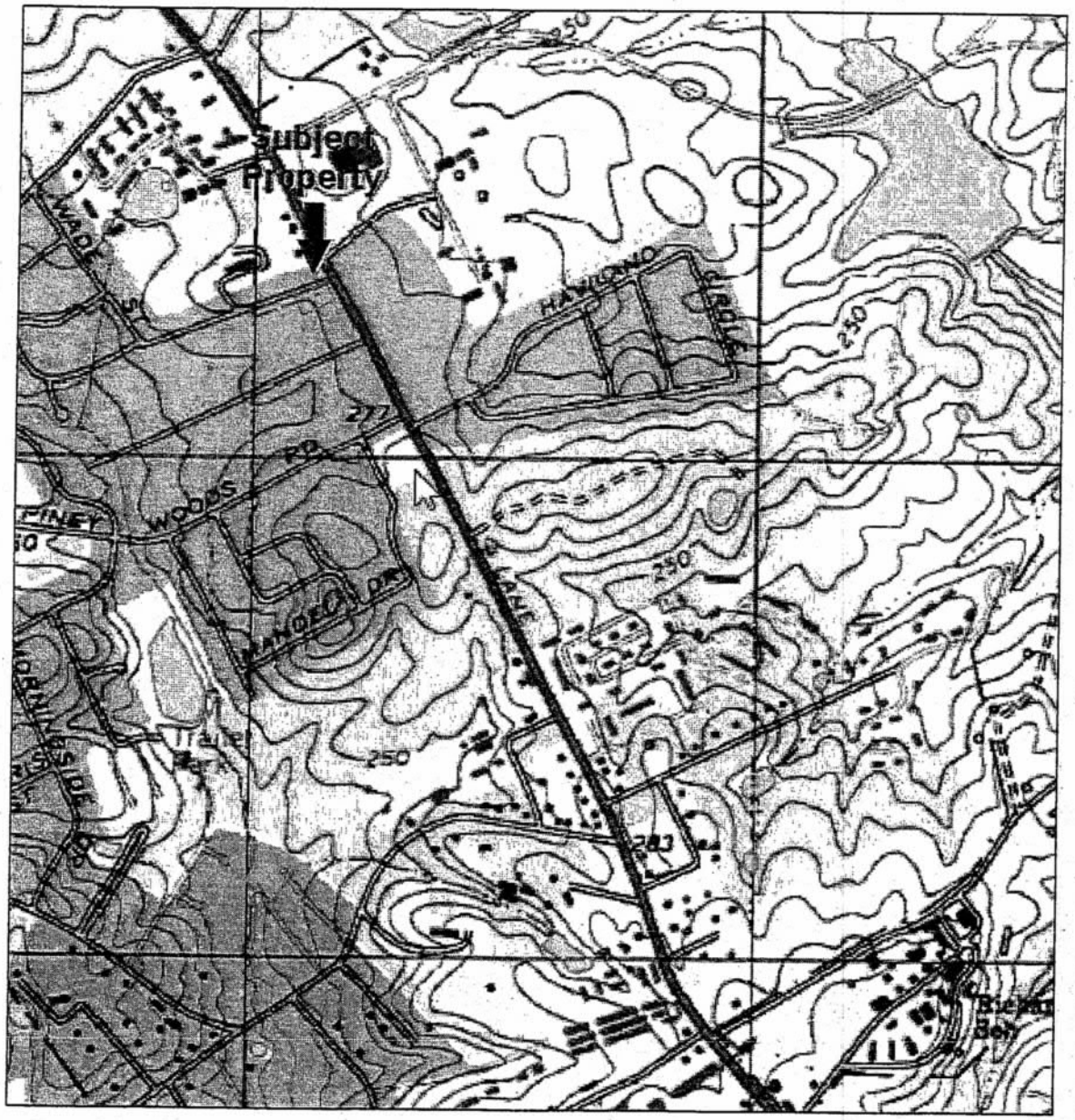
*Container Type: G = Glass; P = Plastic

See Reverse for Terms and Conditions

Original Copy - Returned w/Report
Yellow Copy - Access File Copy
Pink Copy - Client Copy

Pg ____ of ____

APPENDIX C

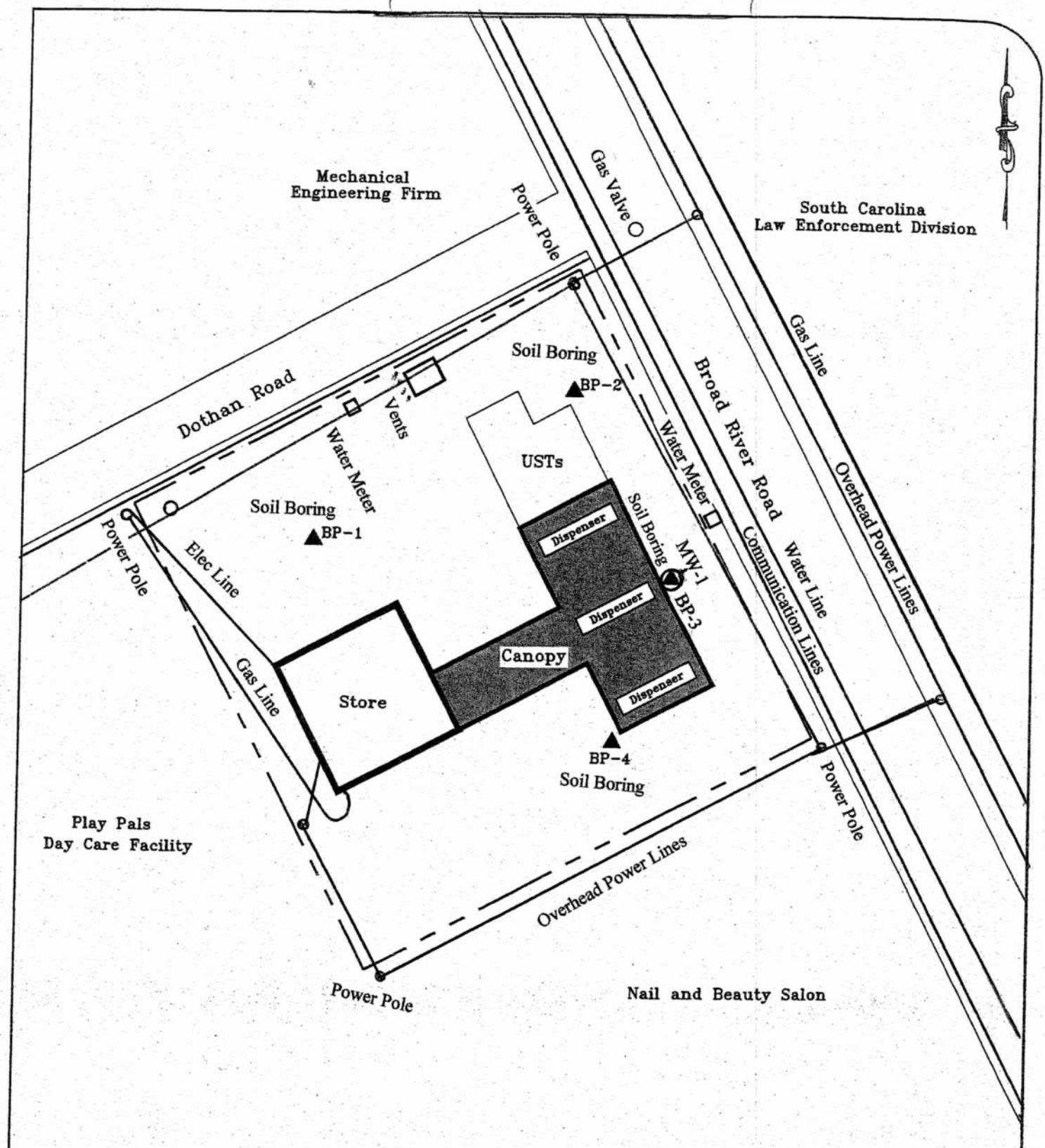


NOT TO SCALE

SITE VICINITY MAP

BP
4335 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA 29210
PROJECT NO:. 10-72634.2

FIGURE 1



LEGEND

▲ Soil Boring Location

USTs Underground Storage Tanks

NOT TO SCALE

Monitor Well Location for IGWA

BP
4335 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA 29210

DHEC Site # 11946

Date: February 2, 2011

APPENDIX D

C 161297

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. .
Manifest Document No. 64826
2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Enviro-Test Services
7505 Irmo Dr
Columbia, SC 29212
4. Generator's Phone (803) 732-5770

5. Transporter 1 Company Name
Crandall Corporation
6. US EPA ID Number
SCD981864499
A. Transporter's Phone
(803) 791-4800

7. Transporter 2 Company Name
8. US EPA ID Number
B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072
10. US EPA ID Number
SCD981864499
C. Facility's Phone
(803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non - Hazardous Waste, Petroleum Contaminated Soil	001	DM	0500	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River BP IGWA
Columbia, SC
Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0164226
ID. Profile: ENV004-001-C

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Terry Teate
Signature: Terry Teate
Month: 01 Day: 31 Year: 11

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Terry Teate
Signature: Terry Teate
Month: 01 Day: 31 Year: 11

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month: . Day: . Year: .

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Bob Grooms
Signature
Month: 02 Day: 01 Year: 11

GENERATOR COPY

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

UST DOCKET

JAN 12 2011

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 Broad River Road
COLUMBIA SC 29210-4009

Re: Initial Groundwater Assessment Directive
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; Monitoring Well Approval # UMW-24060
Release reported January 4, 2011
Phase II Limited Subsurface Assessment received January 4, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced report submitted by Partner Engineering and Science for Community South Bank. The report documents benzene in excess of risk based screening levels from soil at BP-3. An Initial Groundwater Assessment (IGWA) monitoring well should be installed on the front of the facility in the vicinity of the dispensers and in the vicinity of BP-3. The text and figures from the referenced report is attached for your reference.

In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, assessment activities must be conducted as chemicals of concern are above the risk-based-screening levels in soil and groundwater. Therefore, implementation of the scope of work as outlined in the IGWA will be necessary to characterize any possible risk to human health or to sensitive environmental receptors. The assessment should be conducted in accordance with the IGWA guidance document and must be conducted in compliance with all applicable regulations. All shallow wells are to be installed with a 10-foot screen that brackets the water table. The IGWA document may be obtained from our website at http://www.scdhec.gov/ust. **The IGWA report should be submitted to the Division within 60 days of the date of this correspondence.**

Please be aware that the release cannot be qualified for State Underground Petroleum Environmental Response Bank (SUPERB) and SUPERB funds cannot be expended for site rehabilitation until the UST system is determined to have been in substantial compliance at the time of the release and a completed SUPERB application is on-file with the UST Management Division. **Our records indicate that a site rehabilitation contactor has not been selected for this release. The enclosed form should be completed and returned to my attention within 15 day of the date of this letter.** A list of certified contractors is enclosed for your information.

Please note that, in addition to the sample analyses required in the IGWA Guidance Document, all initial assessment activities are now required to include analyses for EDB (by EPA Method 8011) and lead. Laboratory analyses should be in accordance with *Analytical Methodology for Groundwater and Soil Assessment Guidelines* dated August 24, 2005. A copy of this publication is available on line at http://www.scdhec.gov/environment/lwm/forms/analmet.pdf. Also, if any drinking water wells are located within 250 feet of the UST system, a water sample shall be obtained from the well(s) and analyzed for the appropriate parameters.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Implementation of the IGWA may proceed immediately upon receipt of this correspondence. Approval to install one permanent monitoring well is enclosed. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Also note that only EPA Method 8260B will be accepted for analysis of volatile organic hydrocarbons except for EDB because EDB needs to be analyzed under EPA Method 8011 for the lower detection limit. **Any site rehabilitation activity associated with the UST release must be performed by a SCDHEC-certified site rehabilitation contractor as required by R.61-98.** According to Section IV.C.1 of the SUPERB Site Regulations and Fund Access Regulations, R.61-98, all plans, reports, invoices, and other documents relating to site rehabilitation activities which have been prepared or approved by a certified contractor shall be signed by the certified contractor and bear his certification number.

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil or groundwater with concentrations below RBSLs.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Text and Figures from Phase II Subsurface Investigation by Partner Engineering and Science
Monitoring Well Approval (MWA)
UST Owner/Operator Selection Form
List of Certified Contractors

cc: Ms. Bullington, Community South Bank, 625 South Gay Street, Ste 450, Knoxville, TN 37902 (without enc.)
Technical File (with enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

Monitoring Well Installation Approval Form

Is hereby granted to: Mr. Fredrick Cecchini, Broad River Amoco
Facility: Broad River Amoco 4355 Broad River Road, Columbia, SC
UST Permit Number: 11946
County: Richland

This approval is for the installation of one shallow monitoring well. The monitoring well is to be installed in the approved location. The monitoring well is to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Arthur Shrader (tel: (803) 896-6669 or e-mail: shradeaa@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **January 11, 2011** **Approval #:** **UMW-24060**

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Please Return to: **Arthur Shrader**
Assessment Section, UST Division
2600 Bull Street
Columbia, SC 29201

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET

1. CONTRACTOR OF CHOICE

As the UST Owner/Operator of the UST Permit #11946, I would like to use the contractor or person(s)* listed below and request that they represent me for:

☐ IGWA
☐ All future assessment scopes.**

Name of Contractor/Person(s) _____

Address _____

_____

_____

Telephone Number _____ Certification # _____

Note: After September 20, 1997, rehabilitation activities must be performed by a SC Certified Site Rehabilitation Contractor.

*indicate if the person listed is your own employee

** if you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above? _____ Yes _____ No (please initial)

Financial Relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT

The first $25,000.00 in eligible site rehabilitation costs will be applied against the applicable SUPERB deductible, upon submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment.

For eligible costs exceeding the $25,000.00 deductible, you can pay the contractor and, upon the submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (check one)

_____ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

_____ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor. (Note: all costs must receive prior financial approval from the Department regardless of payment option.)

Underground Storage Tank Owner/Operator Signature _____

Date Signed _____

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

UST DOCKET 10 tech

MAY 17 2011

MR JAMES D COTTI PG
ENVIRO-TEST SERVICES INC
PO BOX 2237
IRMO SC 29063-2237

Re: Additional Monitoring Well Directive
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; CA # 41556; MWA # UMW-24111
Release reported January 4, 2011
Tier I Report received April 11, 2011
Directive to Repair or Replace MW-2, MW-3, and MW-4 dated April 15, 2011
Conversation and E-mail to James Cotti from Don Siron on April 21, 2011
Richland County

Dear Mr. Cotti:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has revised the directive dated April15, 2011. In order to verify the actual depth to groundwater at this site it has been agreed to install another shallow monitoring well in the vicinity of monitoring well MW-2 at the edge of the UST basin.

Enviro-Test Services will install a new well with a 10-foot screen in the vicinity of MW-2. The groundwater level in existing monitoring well MW-2 will be checked prior to the installation of the new well. The new well will be constructed such that the screen brackets the elevation of the groundwater level measured in MW-2. For example, if the water table elevation in MW-2 is 20 feet, then the screen in the new well will be set to bracket between 15 and 25 feet level below the land surface and the total depth of the boring will not be greater than 26 feet below the land surface. The new well may prove useful to determine if product is present in the vicinity of the worst-case wells (MW-1 and MW-2). The monitoring well approval for the initial Tier I directive has been amended to include this fourth monitoring well. A copy of the monitoring well approval is enclosed. Please provide a minimum of 48 hours notice to the tank owner and Art Shrader before the new well is installed. Art Shrader will be present during the boring of the new well and will check the depth to groundwater (and product if present) in the new well approximately two weeks after the well is installed.

If the new well has water, Enviro-Test Services will adjust the well screens in existing monitoring wells MW-3 and MW-4 appropriately. The existing monitoring well MW-2 will not be altered. If the new well is dry, Enviro-Test Services will not be required to do any additional work to existing monitoring wells MW-2, MW-3, or MW-4 and the Tier I invoice with be processed with no additional sampling required. The new well will not be abandoned whether ground water is present or absent in the new monitoring well.

Cost agreement number 41556 has been established to install a new monitoring well with a 10 foot screen that brackets the water table, collect a groundwater sample from the new well, laboratory analyses of the groundwater sample for BTEX, naphthalene, and MtBE, plus preparation of a report of findings similar to an Initial Ground Water Assessment. **The report is due on or before 45 days from the date of this letter.** Laboratory analyses should be in accordance with *Analytical Methodology for Groundwater and Soil Assessment Guidelines* dated August 24, 2005. A copy of this publication is available on line at http://www.scdhec.gov/environment/lwm/forms/analmet.pdf.

Enviro-Test Services, Incorporated may be reimbursed for preapproved costs from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. An interim well drilling invoice may be submitted. Invoices and/or criteria included therein must comply with current SUPERB criteria per Section 44-2-20(2) of the SUPERB Act. The SCDHEC UST Division reserves the authority to pay only for work performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Division reserves the right to question and/or reject costs if deemed unreasonable, and the right to audit project records at any time during the project or after completion of the work. The UST Division, because of unnecessary dilution, cannot make decisions if the reporting limit of individual petroleum CoC exceeds Risk-Based Screening Levels (RBSLs). Note that the Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. **Any site rehabilitation activity associated with the UST release must be performed by a SCDHEC-certified site rehabilitation contractor as required by R.61-98.** According to Section IV.C.1 of the SUPERB Site Regulations and Fund Access Regulations, R.61-98, all plans, reports, invoices, and other documents relating to site rehabilitation activities which have been prepared or approved by a certified contractor shall be signed by the certified contractor and bear his certification number.

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations, based on laboratory analysis, are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement (ACA)
Monitoring Well Approval (MWA)

cc: Mr. Cecchini, Broad River Amoco, 4335 Broad River Road, Columbia, SC 29210 (with enc.)
Technical File (with enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment

Monitoring Well Installation Approval Form

Is hereby granted to:	Enviro-Test Services, Incorporated
(on behalf of):	Mr. Fredrick Cecchini, Broad River Amoco
Facility:	Broad River Amoco 4335 Broad River Road, Columbia, SC
UST Permit Number:	11946
County:	Richland

This approval is for the installation of four shallow monitoring well. The monitoring well is to be installed in the approved location. The monitoring well is to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Arthur Shrader (tel: (803) 896-6669 or e-mail: shradeaa@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **April 25, 2011** **Approval #:** **UMW-24111**

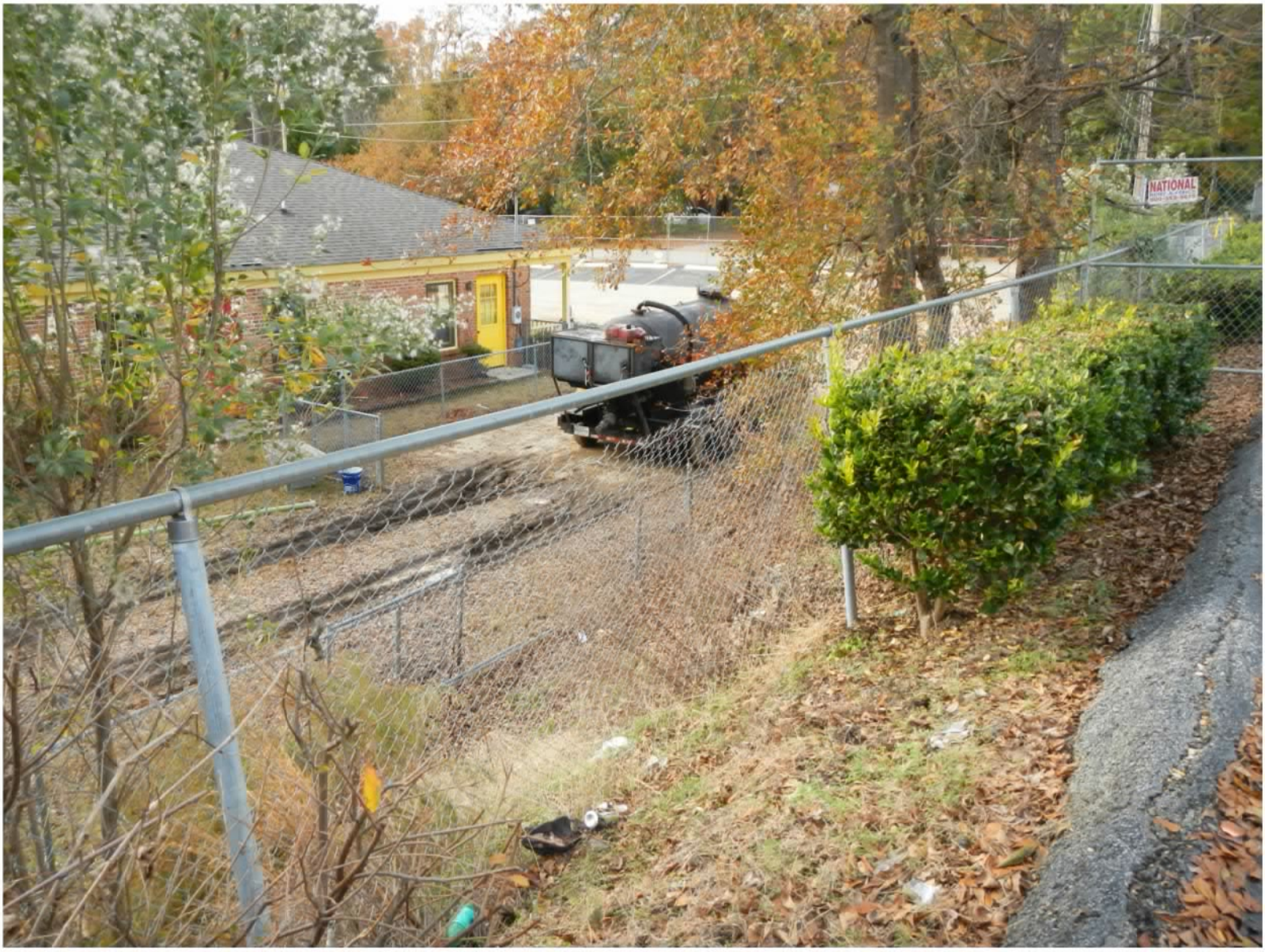
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Approved Cost Agreement 41556

Facility: 11946 BROAD RIVER AMOCO
SHRADEAA
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	1.0000	575.00	575.00
		B	PERSONNEL	2.0000	290.00	580.00
09 WELL INSTALLATION						
		B	WATER TABLE (DRILLED)	24.0000	38.00	912.00
10 SAMPLE COLLECTION						
		A	GROUND WATER	1.0000	55.00	55.00
11 ANALYSES	GW GROUNDWATER	A	BTEX+NAPTH+MTBE	1.0000	100.00	100.00
16 SUBSEQUENT SURVEY						
			SUBSEQUENT SURVEY	1.0000	260.00	260.00
17 DISPOSAL						
		A1	WASTEWATER - PURGING/SAMPLING	1.0000	90.00	90.00
		C	SOIL (TREATMENT/DISPOSAL)	1.0000	50.00	50.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	2,622.00	393.30
				Total Amount		3,015.30

CAUTION DO NOT ENTER


NATIONAL

PLAY
PALS

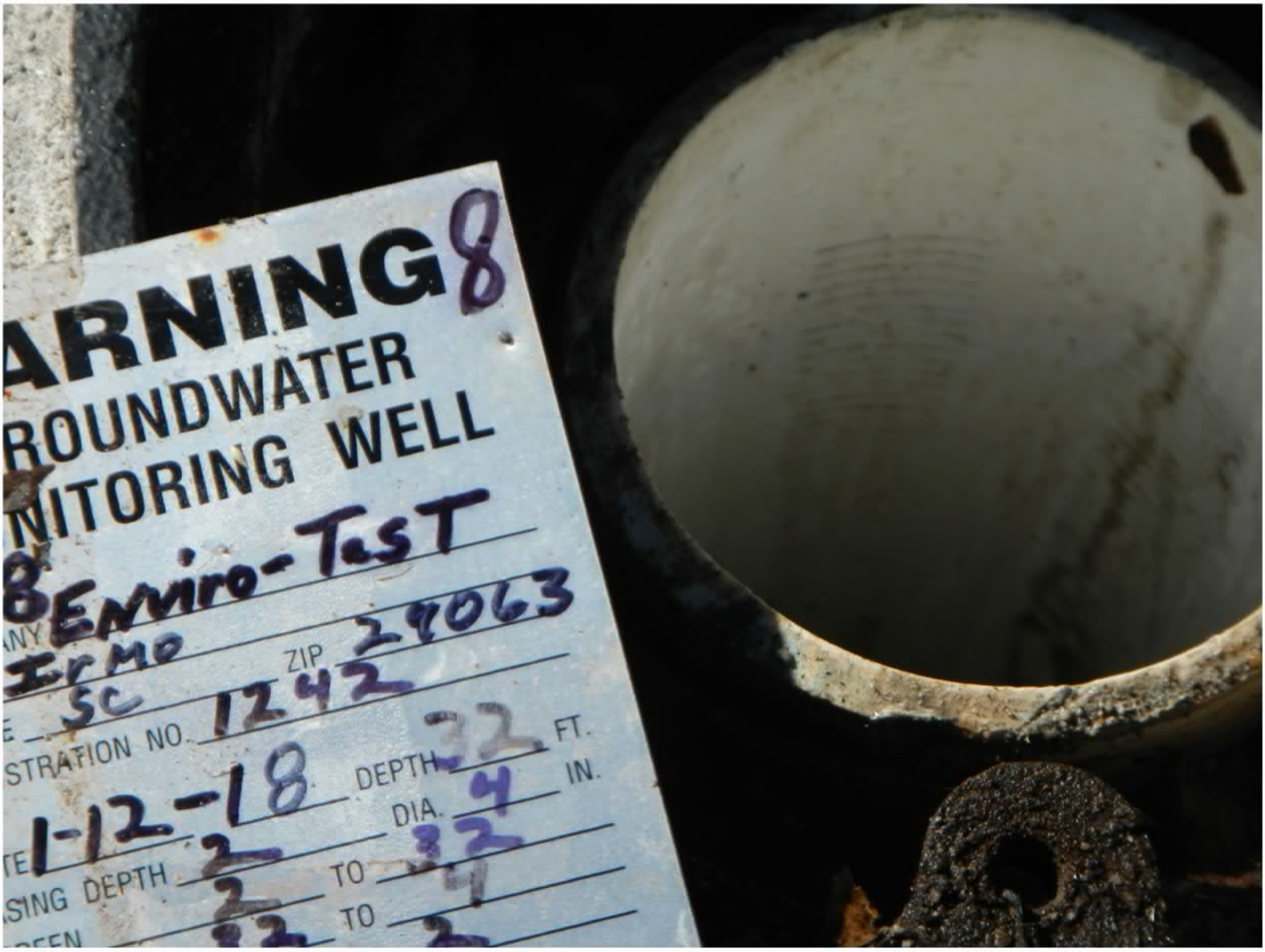
JOBOX
PLAY

A CHILD'S HOME AWAY FROM HOME
PLAY PALS
DAY CARE

1A2/Y1.2/100
USA/8109/1/18RL
FLAMMABLE LIQUID

1A2/Y1.2/100
USA/R1091/16RL
FLAMMABLE LIQUID

WARNING 8
GROUNDWATER
MONITORING WELL
RW-8
COMPANY Enviro-Test
CITY Irmo
STATE SC ZIP 29063
REGISTRATION NO. 1242
DATE 1-12-18 DEPTH 32 FT.
CASING DEPTH 2 DIA. 4 IN.
SCREEN 2 TO 32
SAND 32 TO 4
BENTONITE 4 TO 2
GROUT 2 TO 0
STATIC LEVEL 11.20
YIELD GPM STATIC
CAUTION
NOT POTABLE WATER


ARNING 8
ROUNDWATER
NITORING WELL
Enviro-Test
SC
ZIP 29063
STRATION NO. 1242
1-12-18
DEPTH 32 FT.
DIA. 4 IN.
SING DEPTH 2 TO 32
2 TO 4
32 TO 2

UST 106 tech DOCKETING

#11946 12/21/18

Arrive @ 1400 Paul leaving for India monday

-Wendy on-site
- pump H_2O out of tanks
- remove remaining product
- deciding on abandonment method
  - foam
  - ☺ concrete (Paul/Wendy decided)
- start working on Diesel tanks week after christmas to repair drop tube.
  - once complete, 200 galls. test lines

-Terry onsite
- set up vacuum pipes to avoid moving hoses
- removing H_2O, taking for disposal tomorrow
- continue to vacuum water/product from ditches
- set up pipes to allow for an AFVR/AFVR-style set up.
- running GC analysis on water coming from hillside and in sump.

left @ 1445

12/22/18
Arrived @ 10:35

- Billy from ARM pumping product/H_2O from cube containers into vac truck for disposal
- Daycare owners on site, walking around w/ Terry.

- RW-B
  @ 1012 TP: 6.62 DTW: 9.16
  @ 1024 pump initiated
  @ 1053 turned of: 6 gallons

- Plan to back fill some of the trenches not sure which or when ARM)
- Sump appears to fill often. possible channel?

- @ 1102 TP: 8.90 DTW: 9.25
- started pump again

- ~~150~~ 105 dw gallons product, ~2100 H_2O (Terry)

- Turned off @ 1115 drawing H_2O.
  ~1.25 gallons
  @ 1118 TP: 9.31 DTW: 9.34

Time		DTW	DTP	screen depth	Install date
1129	RW-12:	10.19	—	9-~~14~~39	(2-19-18)
1133	RW-11:	10.79	10.78	10-40	" "
1138	KGWA:	10.75	—		
1147	MW-6B:	10.80	—		
1151	MW-6A:	10.70	—		
1155	MW-3:	10.15	10.15		sheen, odor
1200	RW-9:	10.48	—		
1214	RW-A:	6.21	6.20		
1219	RW-3:	9.61	—		
1229	RW-1:	9.80	—		
1233	RW-2:	10.04	—		
1240	DMW-1:	10.53	—		
1243	MW-5:	9.16	9.07		
1249	RW-4:	9.50	—		
1253	RW-6:	10.27	—		
1257	MW-4:	8.97	—		
1303	RW-7:	8.40	—		
1307	RW-8:	8.60	—		
1311	MW-2:	9.88	—		
1320	RW-10:	9.46	9.91		
1317	RW-5:	9.91	—		

- RW-8 appears to be screened higher than 2'
- ARM/Terry collected ~3900 gallons H_2O/product
- Plan, Pump RW-10 and the RW-B after ~~the~~ lunch.

Leave @ 13:30

D H E C
PROMOTE PROTECT PROSPER

Underground Storage Tank Management Division
Field Data Information Sheet – Notes

Site Information		
Date: 1/2/2019	Site ID #: 11946	Site Name: Broad River Amoco
County: Richland	Project Manager: E. Mendenhall C Moore	Field Personnel: C White

Notes:

Free product in SB 27

RW-12 tag in sharpie
RW-11 tag in sharpie
RW-10 tag in sharpie (0.18' product)
RW-5 etched

@ 1118 Roll off arrived

RW-3 etched (top of casing cracked)
RW-1 etched (0.01" product)
RW-2 etched
RW-9 sharpie (screen @ top of casing)
RW-8 tag in sharpie
RW-7 tag in sharpie
RW-6 half sharpie/half etched

Signature: Cwhite Date: 1/2/2019

-UST Field Data Information Sheet – Notes

-Purpose of the form is to record information gathered during a field activity

-DHEC UST Project Managers and Field Staff

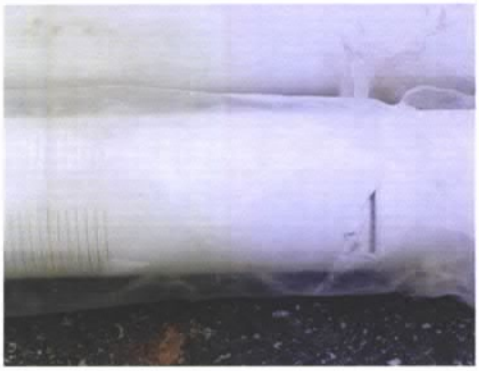
-Item-by-item instructions for completing the form:
- Fill in all Site Information boxes
- Record any applicable notes
- Sign and date the form

-Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304

UST #11946 Site Visit 1/2/2019

JOBOX

Invigorate



RW-11

WARNING
CAUTION

WELL

D H E C
PROMOTE PROTECT PROSPER

Underground Storage Tank Management Division
Field Data Information Sheet – Notes

Site Information		
Date: 1/3/2019	Site ID #: 11946	Site Name: Broad Rvr. Amoco
County: Richland	Project Manager: E. Mendenhall C. Moores	Field Personnel: C. White

Notes: Arrival: 857

- gas station manhole → 108' deformation repaired Nov '16
- gas station to manhole → 90' lens covered.
- try to clear it out w/ jetty

UST 108 see DOCKETING

- MW-RZ-2

left: 1255

ture: _____ Date: 1/3/2019

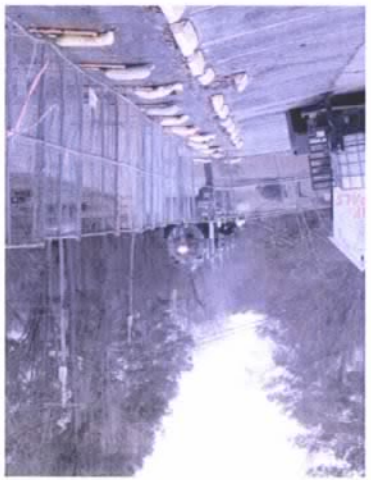
-UST Field Data Information Sheet – Notes

-Purpose of the form is to record information gathered during a field activity

-DHEC UST Project Managers and Field Staff

-Item-by-item instructions for completing the form:
- Fill in all Site Information boxes
- Record any applicable notes
- Sign and date the form

-Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304



UST #11946 Site Visit 1/3/2019

D H E C
PROMOTE PROTECT PROSPER

Drilling/Soil Boring Audit Form
Underground Storage Tank Management Division

RESULTS:
☑ Satisfactory
☐ Issues

Date: 1/2/2019 Project Manager: E. Mendenhall DHEC Field Staff: C. White

Contractor: CTSI Contractor Field Staff. Bill Wood

Drilling Company: Elite Techniques Driller's Name: Broadus Eddings

Driller's Certification Number: 2214 Same information as ACQAP/SSWP? yes. None submitted

Site Number: 10416 Site Name: Pee Dee River AMOCO

Time Arrived at Site: 1045 Time Leaving Site: 1700 Weather Conditions: Cloudy

Which SB/MW location? MW-R2-1 Monitoring Well Approval Form on Site? ☑YES ○NO

Type of Rig: Geoprobe 7822DT Bit Size: 9" Auger Size: 4 1/4

Method: ☑Hollow-stem ☐Solid-stem ☐Mud-rotary ☐Air-rotary ☐Other:

Drilling fluids? ○YES ☑NO Type of Sampler: ☐Hammer-weight ☐Fall ☑Other: N/A

Depth to Groundwater: N/A Total Depth of Borehole: 15' (17.4')

Screened Interval: 5-15' Gravel Pack Size: GP # 2 Gravel Pack Interval: 15-4'

Bentonite Type: 3/8" Hole plug Bentonite Interval: 4-4'

Bentonite Hydrated: ☑YES ○NO Length of Time: 24 hrs.

Geologist's and/or driller's log completed correctly? ○YES ☑NO N/A

IDW contained properly? ☑YES ○NO Labeled properly? ○YES ☑NO N/A

Equipment decontamination observed? ☑YES ○NO

Equipment appeared to be decontaminated? ☑YES ○NO

Materials stored and handled properly? ☑YES ○NO

PPE handled, stored, and worn properly? ☑YES ○NO

Soil samples collected and stored properly? ○YES ☑NO N/A

Type of soil sample collected. ☐Lithology ☐Screening ☐Grain Size ☐Lab Analysis ☑Other: N/A

Signature: [signature] Date: 1/2/19

UST DOCKETING 10/9 tech

Notes: no samples collected. data gathered from soil borings (SB1) (10 ft. screen)
MW CVA readings every 5 ft
↳ taken on flight

Notes (continued): _____

UST DRILLING AND SOIL BORING AUDIT FORM

- Purpose of the form is to record information gathered during an audit of drilling and soil boring activities.
- DHEC UST Project Managers and Field Staff
- Item-by-item instructions for completing the form.
  - Fill in all Site Information boxes
  - Answer all the questions and record any applicable information in the blanks.
  - Sign and date the form.
  - Record any applicable notes.
- Form is scanned and saved electronically – Record Group Number 169, Retention Schedule 13300

UST # 11946
Drilling Audit
01/02/2019

White, Corie L.

From: William Wood <wwood@ctsiengineering.com>
Sent: Tuesday, January 8, 2019 10:43 AM
To: White, Corie L.
Cc: Mendenhall, Jeffery E.; Cody Alexander
Subject: Re: 11946 Audit

*** Caution This is an EXTERNAL email DO NOT open attachments or click links from unknown senders or unexpected email. ***

Thank you, Corie. We will use the OVA data from the soil boring in closest proximity as well as the borings detailed soil descriptions. Due to the accelerated time to get mobilized to the site, the scope of work was agreed upon during a meeting with Tom Knight and no SSWP was prepared. Our drillers and lab are those listed in our ACQAP.

Sincerely,

Bill Wood

William D. Wood, P. G.
Carolina Technical Services, Inc.
Irmo, SC - Florence, SC
843-610-1953

From: "White, Corie L." <whitecl@dhec.sc.gov>
To: "wwood@ctsiengineering.com" <wwood@ctsiengineering.com>
Cc: "Mendenhall, Jeffery E." <MENDENJE@dhec.sc.gov>
Sent: Tuesday, January 8, 2019 9:16 AM
Subject: 11946 Audit

Bill,

Attached are the audit form and pictures I took during the drilling of MWR2-1 on January 2, 2019. The only deviation from the QAPP I observed was that soil samples were not collected. However, talking to Ed before the start of the event, he approved the change. For the OVA readings, I would ask that you use the reading from the nearby soil borings instead of the values obtained from the soil cuttings for the final completed log. An SSWP not submitted, so I was not able to verify some of that information. If you do have one, please submit it to Ed as soon as possible.

Thanks!

Corie White, GIT, Hydrologist II
Corrective Action & Field Support Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management
S.C. Dept. of Health & Environmental Control
Office: (803)-898-0502

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

UST DOCKET

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 Broad River Road
COLUMBIA SC 29210-4009

Re: Tier II Plan Directive
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; CA # 41556; Monitoring Well Approval # UMW-24111
Release Reported January 4, 2011
Tier I Assessment report received April 11, 2011
Additional Monitoring Well Directive dated May 17, 2011
Site Visit on May 26, 2011 and June 9, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Tier I Report submitted by EnviroTest Services on your behalf. Additionally, staff checked the newly installed monitoring well on May 26 and June 9, 2011. On May 26, 2011, the new monitoring well was installed with a screened interval from 10 to 20 feet below the land surface. On June 9, 2011, the new monitoring well contained groundwater at approximately 14 feet plus approximately 0.2 feet of free phase product floating on top of the groundwater.

Please have EnviroTest Services, Incorporated (EnviroTest) submit a report and invoice documenting the construction details and current groundwater measurements in this new monitoring well. Direct payment will be made from the State Underground Petroleum Environmental Response Bank (SUPERB) Account to EnviroTest once a report of findings and invoice are received. No adjustments are required to the four existing monitoring wells as these will be used to document levels of petroleum Chemicals of Concern (CoC) in the intermediate zone. Please include a copy of this letter with the signed invoice form.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of the scope of work as outlined in the Tier II Assessment Guidance Document is necessary. The assessment should be conducted in accordance with the Tier II Assessment guidance document and must be conducted in compliance with all applicable regulations. All shallow wells are to be installed with screen intervals that bracket the water table. The Tier II assessment document and appendices may be obtained from our website at http://www.scdhec.gov/environment/lwm/html/ust_guidance_docs.htm Forms may be obtained from the UST website at http://www.scdhec.gov/eqc/lwm/ forms/assess%7E1.pdf.

Please have your contractor complete and submit the Assessment Component Cost Agreement and Assessment Plan Forms within thirty days of the date of this letter. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from the Department must be issued before the work begins**.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063
Technical File

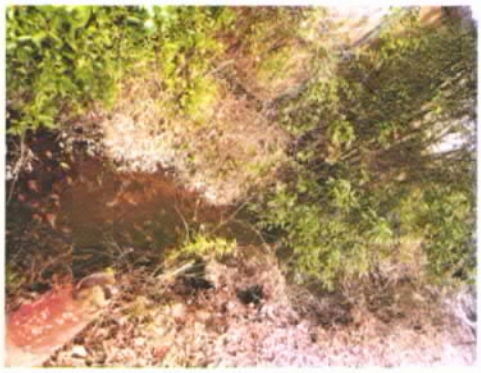
UST # 11946 Site Visit 01/02/2019

WARNING
CAUTION

WARNING
CAUTION

WARNING
CAUTION

JBBBX

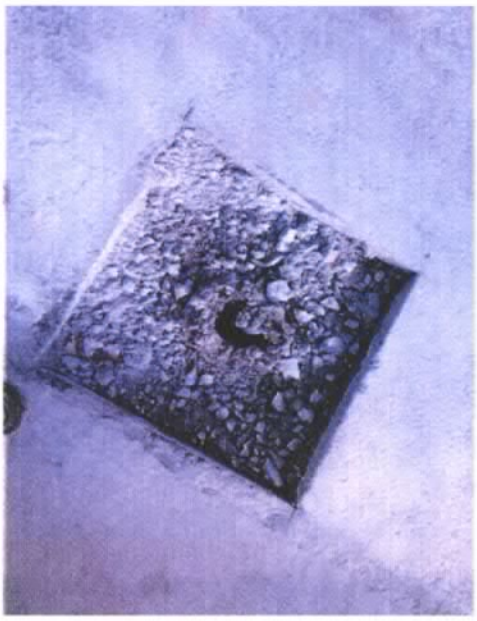


UST
DOCKETING

UST # 11946 Site Visit 01/03/2019

UST # 09347 Site Visit 01/04/2019

UST # 11946 site visit 01/07/19



UST # 11946 Site visit 1/7/19

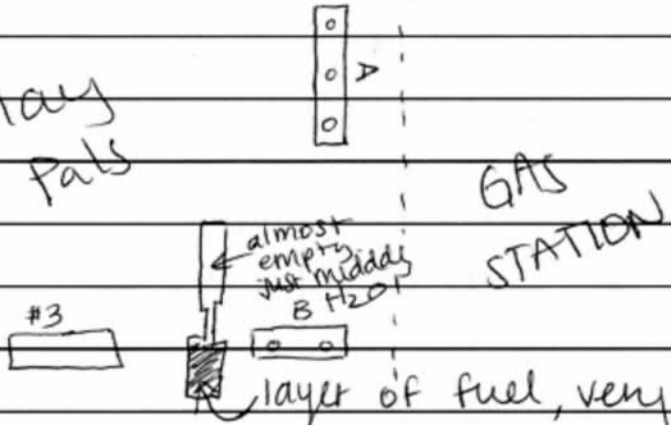
D H E C
PROMOTE PROTECT PROSPER

Underground Storage Tank Management Division
Field Data Information Sheet – Notes

Site Information		
Date: 1/11/19	Site ID #: 11946	Site Name: Broad River
County: Richland	Project Manager: C. Moores E. Merdinnall	Field Personnel: C. White

Notes: Arrived @ 1131

- new lines marked (Shied Power)
- caps added to TWs, ~~p~~ sealed
- MW 6+7 no pad
-



- camera dead = no pictures
- booms and ditch clean

Leave @ 1148

UST 115 Tech DOCKETING

Signature: _____ Date: 1/11/19

-UST Field Data Information Sheet – Notes

-Purpose of the form is to record information gathered during a field activity

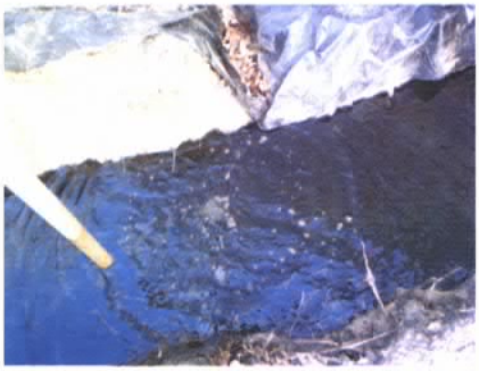
-DHEC UST Project Managers and Field Staff

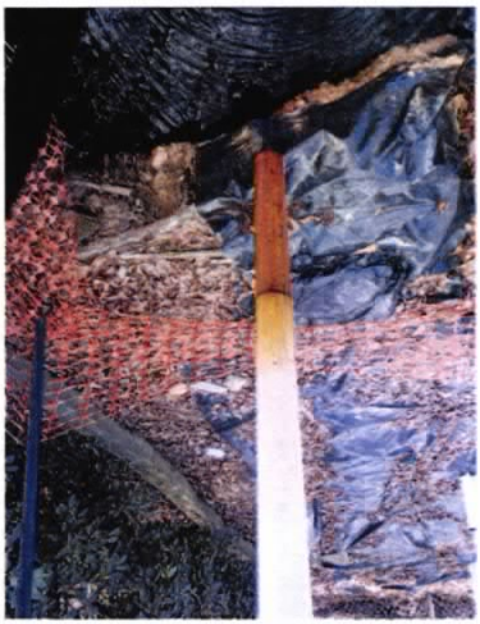
-Item-by-item instructions for completing the form:
- Fill in all Site Information boxes
- Record any applicable notes
- Sign and date the form

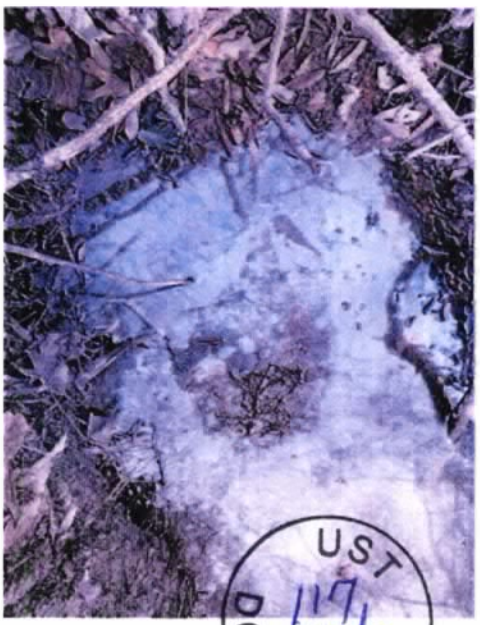
-Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304

UST #11946 Site Visit 1/14/19

UST DOCKETING







UST #11946 Site Visit 1/17/19

UST 117 Tech DOCKETING

D H E C
PROMOTE PROTECT PROSPER

Underground Storage Tank Management Division
Field Data Information Sheet – Notes

UST 118 Clerk DOCKETING

Site Information

Date: 1/22/19	Site ID #: 11946	Site Name: Broad River
County: Richland	Project Manager:	Field Personnel: C. White

Notes: Arrived: 10:17

Recovery well @ utility junction. Not until next week due to rig concerns. Use possibly Geoprobe next week. Truck mounted rig.

3 others: corner (near RW-9), back of store, and near SB 12. dug this Friday due to needing rig operator.

RW-C completed — hit rock @ 13 ft
MW-RZ-8 compled — hit rock @ 12.5 ft
MW-RZ-9 completed — Monday 1/21/19
18 ft. (~10 Ft H_2O level in SB)

MW-RZ 1-5 already developed
b-9: develop

Next gauge on Friday

SB-17 gauged (Wed. last week), only sheen came back so far.

Pads today
Product coming out of hill again near Trench B — Trench C is connected

Signature: [signature] Date: 1/22/19

-UST Field Data Information Sheet – Notes

-Purpose of the form is to record information gathered during a field activity

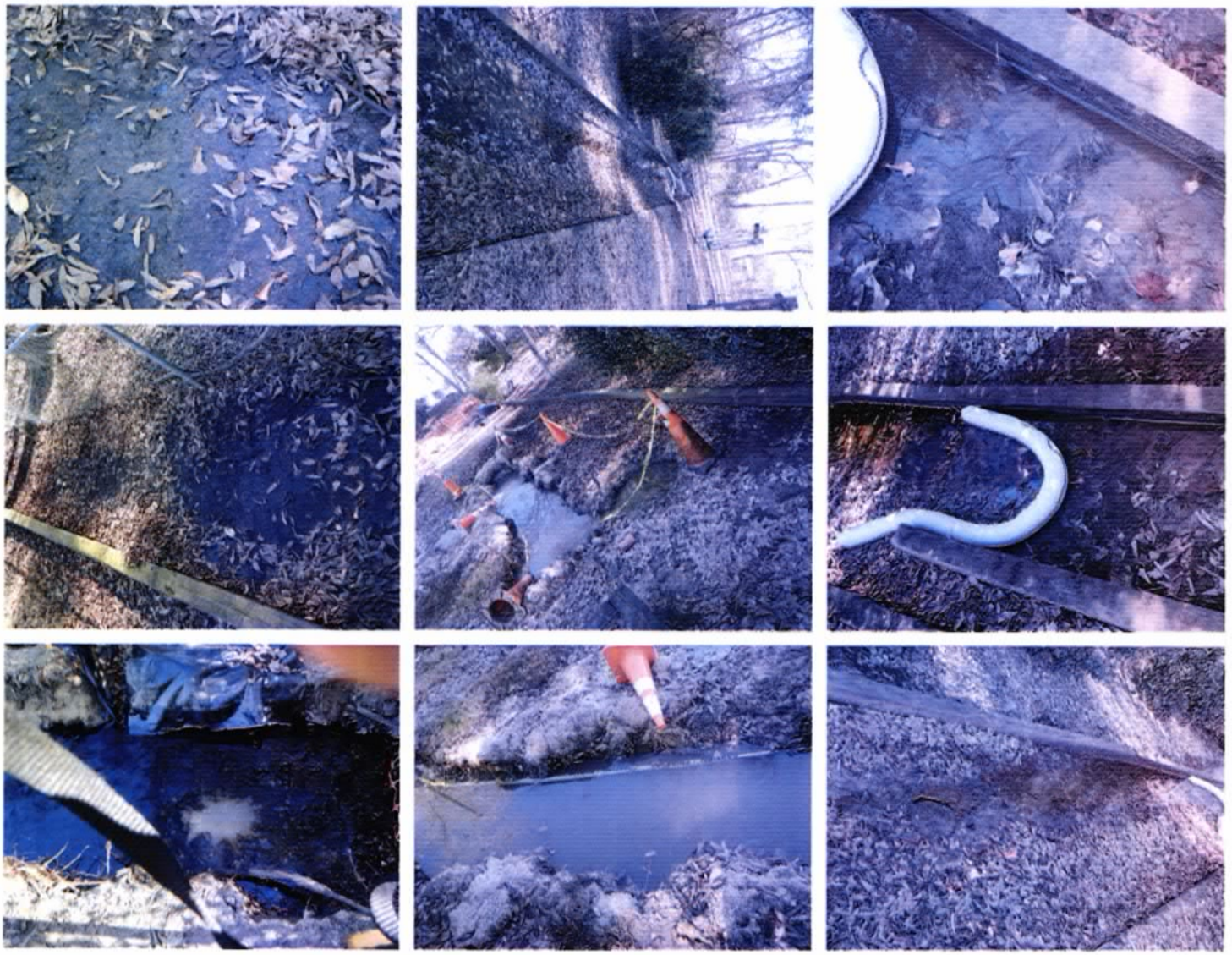
-DHEC UST Project Managers and Field Staff

-Item-by-item instructions for completing the form:

Fill in all Site Information boxes
Record any applicable notes
Sign and date the form

-Form is scanned and saved electronically; Record Group Number 169, Retention Schedule 10304

UST #11946 site visit : 1/22/19



dhec
Healthy People. Healthy Communities.

JAN 18 2019

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

UST 119 Tech DOCKETING

Re: **SSWP Directive for MW installation**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Monitoring Report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. The report documents petroleum chemicals in the soil and groundwater above Risk-Based Screening Levels (RBSLs). The next appropriate scope of work at the site is to replace a pair of monitoring wells, specifically MW-16 A & B.

To determine what risk the referenced release may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of monitoring well installation is necessary. The assessment must be conducted in accordance with the most recent revision of the UST Quality Assurance Program Plan (QAPP) and in compliance with all applicable regulations. A copy of the UST QAPP is available at https://scdhec.gov/environment/land-waste/underground-storage-tanks/release-assessment-clean/quality-assurance.

Your contractor must complete the Site-Specific Work Plan (SSWP) if your contractor has an approved Annual Contractor Quality Assurance Plan (ACQAP). The SSWP and Cost Proposal must be submitted within 30 days from the date of this letter. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from DHEC must be issued before work begins.**

On all correspondence regarding this site, please reference UST Permit #11946. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 898-2622, fax me at (803) 898-0673, or e-mail me at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

ENVIRO-TEST SERVICES

June 20, 2011

UST
JUN 2 1 2011
PROGRAM

Mr. Arthur Shrader Hydrogeologist
Assessment Section
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201

12tch
UST
DOCKET

RE: Additional Monitor Well Directive
Broad River BP (Amoco)
Site # 11946; CA # 41556
Richland County

Dear Mr. Shrader,

Enviro-Test Services Inc. has completed the additional Monitor Well (MW-5) as directed in your May 17th 2011 directive. On May 27, 2011 Enviro-Test Services SC certified Well Driller Terry Teate # 1242 installed monitor well (MW-5) to a total depth of 20 ft with the well screen set between 10 ft. and 20 ft. See Site Map Figure 1. and Well completion form 1903 Attachment A. Soil samples were taken at 5 ft. intervals and screened with an OVA. Results were high. See Attachment B: Soil Boring Log. After the well was installed Mr. Shrader and Terry Teate checked the Ground Water Level and No Groundwater was present. Seven Days later on June 3, 2011 Mr. Teate checked the GWL and the water had risen to 13.80 and Free Product at 13.68 (0.12 tenths). On June 20, 2011 the well was measured again the GWL was 14.05 and the FPL was 13.75 (0.3 tenths). See Groundwater History Attachment C: The Soil Disposal Manafest is Attachment D:

No Groundwater samples were taken due to the presence of Free Product in the well.

This should close out Cost Agreement # 41556.

Should you have any questions, comments or require any additional information, please call (803)-413-4936 at your convenience.

Very truly yours,

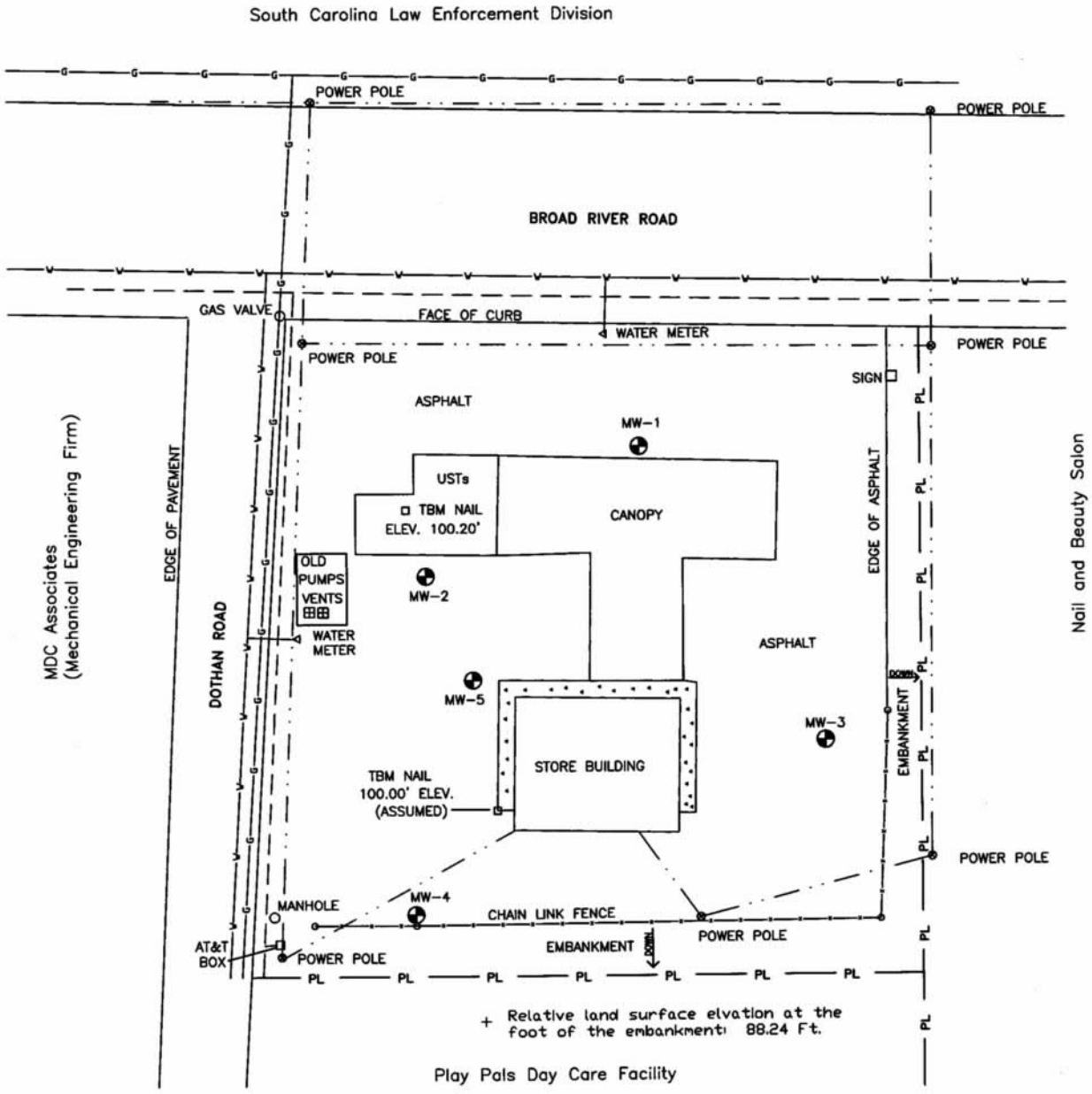
Terry L. Teate

Terry L. Teate

Project Manager

ENVIRO-TEST SERVICES, INC.

FIGURE 1



TOC = TOP OF CASING
TBM = TEMPORARY BENCH MARK
UST = UNDERGROUND STORAGE TANK

	TOC ELEVATION
MW-1	100.59
MW-2	99.94
MW-3	99.91
MW-4	95.85
MW-5	100.16

Monitoring Well
Water Line
Gas Line
Overhead Power Line
Communication Line
Property Line (Approximate)

0 50 100
1 INCH = 50 FEET

FIGURE 3B: Site Base Map

Enviro-Test Services, Inc.	Broad River Amoco (BP)
DWG BY: JDK	4335 Broad River Road
DWG DATE: 6/20/11	Columbia, SC, Richland County
	SCDHEC ID #11946

ATTACHMENT A

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: SCDHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: 898-3234 Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Broad River Amoco (BP) Permit # 11946
Street Address: 4335 Broad River Road
City: Columbia Zip: 29201-0000
Latitude: N 34*03.927' Longitude: W 081*07.011'

3. PUBLIC SYSTEM NAME: Monitor Well **PUBLIC SYSTEM NUMBER:** MW-5

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Sandy Clay-Dk Br Red Dry CXLN	5 ft.	5 ft.
Sandy CLAY-Lt Brn Firm MXLN	5 ft.	10 ft.
CLAY- Orng, Red, FXLN, Dry	5 ft.	15 ft.
CLAY- Lt Orange, VFXLN, Dry	5 ft.	20 ft.
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
OVA Reading Very High at 15 ft. 5646 PPM. See Boring Log

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-24111 UST permit # 11946

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft. Date Started: 05/27/2011 Date Completed: 05/27/2011

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 10 ft. depth
Height: Above /Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 inch
Slot/Gauge: 0.010 Length: 10 ft.
Set Between: 10 ft. and 20 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 13.75 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 20 ft. to 9 ft.
Effective size No. 2 sand Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 9 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 40 ft. N direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) P.O. Box 2237 Irmo, SC 29063
Level: (A) B C D (circle one)
Telephone No.: 803-413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate Well Driller Date: 06/20/2011

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

ATTACHMENT B

SOIL BORING LOG

Project Name: Broad River BP	**Site #: 11946**	**Location: 4335 Broad River Rd. Columbia, SC 29210**	**County:** Richland
Driller: Terry L. Teate	**Logged by: T. Teate**	**Installed: 06/03/11**	**TD: 20 Feet**
Sample Method: Cuttings		**Development Method: Bailing**	

DEPTH (FT)	DESCRIPTION	PPM	ODOR
5	Sandy CLAY – Dark Brown Red, very firm, sandy; dry CXLN	470	Slight/Gas
10	Sandy CLAY – Lt Brown, mod. firm, sandy, silty; Dry MXLN	599	Gas
15	CLAY- Orange, Red , FXLN Dry	5645	VeryStrong
20	CLAY- Lt, Orange , VFXLN Dry	3300	VeryStrong

ATTACHMENT C

Broad River Amoco (BP)
Columbia, SC
SCDHEC ID #11946

Well	ELEV	5-Mar-11 FPL	GWL	ELEV
1	100.59		16.44	84.15
2	99.94		14.50	85.44
3	99.91		15.32	84.59
4	95.85		9.84	86.01

Well	ELEV	2-Apr-11 FPL	GWL	ELEV
1	100.59		14.45	86.14
2	99.94		13.50	86.44
3	99.91		13.72	86.19
4	95.85		9.15	86.70
		20-Jun-11 FPL	GWL	
5	100.16	14.05	13.75	86.41

ATTACHMENT D

C 163336

Crandall

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . | Manifest Document No. 69474 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: Enviro-Test Services
7505 Irmo Dr
Columbia, SC 29212
4. Generator's Phone ((803) 732-5770

5. Transporter 1 Company Name: Enviro-Test Services | 6. US EPA ID Number . . . . . | A. Transporter's Phone (803) 732-5770

7. Transporter 2 Company Name | 8. US EPA ID Number . . . . . | B. Transporter's Phone

9. Designated Facility Name and Site Address
Crandall Corporation
100 Rich Lex Dr
Lexington, SC 29072
10. US EPA ID Number SCD981864499 | C. Facility's Phone (803) 791-4800

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non - Hazardous Waste, Petroleum Contaminated Soil	001	BM	0300.	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Broad River BP Soil Cullings
Richland County, SC.
Infotrac 800-535-5053 Registrant Crandall Corp
Srv Call ID: GLB0169474
11a. Profile: ENV004-001-C

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Terry Teate | Signature: Terry L. Teate | Month 06 Day 15 Year 11

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Terry Teate | Signature: Terry L. Teate | Month 06 Day 15 Year 11

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month . Day . Year .

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Janie Berkley | Signature: Janie Berkley | Month 06 Day 15 Year 11

GENERATOR COPY

dhec
Healthy People. Healthy Communities.

UST 120 week DOCKETING

CERTIFIED MAIL
9214 8969 0099 9790 1413 8770 02

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

JAN 25 2019

Re: **Request for Cost Proposal for ongoing FP containment measures**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). To address the current site conditions that began in November of 2018, and the containment of migrating free product, DHEC requests a cost proposal for removing and disposing of the accumulating free product on the adjacent Play Pals property downgradient from the site.

The cost proposal should include costs for removing the free product from the trenches and areas where it collects prior to forecast rain events as well as removing free product and storm water from trenches after rain events. Additionally, the cost proposal should include expenses relating to the prevention of plume migration such as boom replacement, as needed, in areas that are at risk of contributing to surface water contamination (such as the storm drain and in the adjacent creek as a secondary containment measure) and to prevent migration.

Please have your contractor complete and submit the cost proposal, within fifteen (15) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

dhec
Healthy People. Healthy Communities.

JAN 2 5 2019

UST DOCKETING

CERTIFIED MAIL
9214 8969 0099 9790 1413 8770 95

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Request for November 2018 Incident Report, including December 2018 Activities**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the incident that was reported on November 16, 2018. This report should include all the known details of the incident, including timelines and locations of free product appearance and the subsequent emergency responses to contain, abate, and quantify the product and the effects on the adjacent properties and neighborhoods. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the November 2018 incident and subsequent emergency and abatement response, including December activities, within thirty (30) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

UST
DOCKETING

UST # 11946 Site Visit 1/25/19

UST
JAN 3 0 2019
PROGRAM

Pace Analytical®
Energy Services™

UST

Broad River Amoco 58456

Report Prepared for:

UST
123
DOCKETING

Pace Analytical Charlotte
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078

Report Prepared By:

Alan Jeffrey, PhD

Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238

26 January 2019

TABLE OF CONTENTS

INTRODUCTION	**3**
METHODOLOGY	**4**
PETROLEUM PRODUCT CHARACTERIZATION	**5**
CONCLUSIONS	**5**

Introduction

Four product samples, labeled Sewer, Ditch 1, Ditch 2, and MWS, were received on November 28, 2018 for characterization of petroleum products in the sample. The following analyses were performed:

1. C_3-C_{36} whole oil analysis by GC/FID (ASTM D3328)
2. Oxygenated blending agents by EPA Method 1624 Modified
3. Simulated Distillation by ASTM D2887

The complete laboratory data report is presented as an appendix to this report.

Methodology

C_3-C_{36} whole oil analysis of product samples by GC/FID (ASTM D3328)

Identifies up to 149 compounds in the range between gasoline and residual oil. Includes gasoline-range PIANO analysis. Assists in the identification of types of petroleum products or crude oils present.

Product samples are directly injected into a GC equipped with a 100 meter Petrolcol column to separate the hydrocarbon, which are detected with a flame ionization detector (FID) interfaced to the GC. Hydrocarbons in the range of C_3 to C_{36} are identified and the peak areas measured. The relative area percent of hydrocarbons in the range of C_3 to C_{10} are calculated and presented as a PIANO distribution (normalized amounts of paraffins, isoparaffins, aromatics, naphthenes, olefins).

Fuel oxygenates in product samples by EPA Method 1624 Modified

Product samples are frozen in a vial in liquid nitrogen. Distilled water is added to the vial, and the product allowed to warm to partition the fuel oxygenates into the water. Recovery is monitored by isotopic dilution of deuterated fuel oxygenates. Six fuel oxygenates (MTBE, ETBE, DIPE, TAME, TBA, and ethanol) are identified and quantified in the water by injection into a gas chromatograph (GC) equipped with a 30 meter narrow bore ZB Wax capillary column interfaced to a mass spectrometer (MS) in Selected Ion Monitoring (SIM) mode.

Simulated Distillation of product samples by ASTM Method D2887

Product samples are directly injected into a GC equipped with a 10 meter SPB-1 column that separates hydrocarbons by increasing boiling point. The hydrocarbons are detected with a flame ionization detector (FID) interfaced to the GC. The method software measures the area under the chromatographic peaks and converts the retention time axis of the GC chromatogram to boiling point by comparison with a calibration standard. Hydrocarbons boiling in the range of 156°F to 1013°F, corresponding to C_6 to C_{44}, are measured. The final display is a graph of boiling point versus the percent of product recovered, and is analogous to a conventional distillation analysis.

Petroleum Product Characterization

The C_3-C_{36} whole oil gas chromatograms of the product samples, shown on the following pages, provide distributions or fingerprints of the major hydrocarbons in the samples. Peak areas correspond approximately to the abundance of the particular hydrocarbon that a peak represents. The retention time of a peak is controlled primarily by the boiling point of the hydrocarbon it represents. Both the boiling point and the number of carbon atoms in a hydrocarbon increase along the retention time axis. Complete peak identifications are given in the appendix.

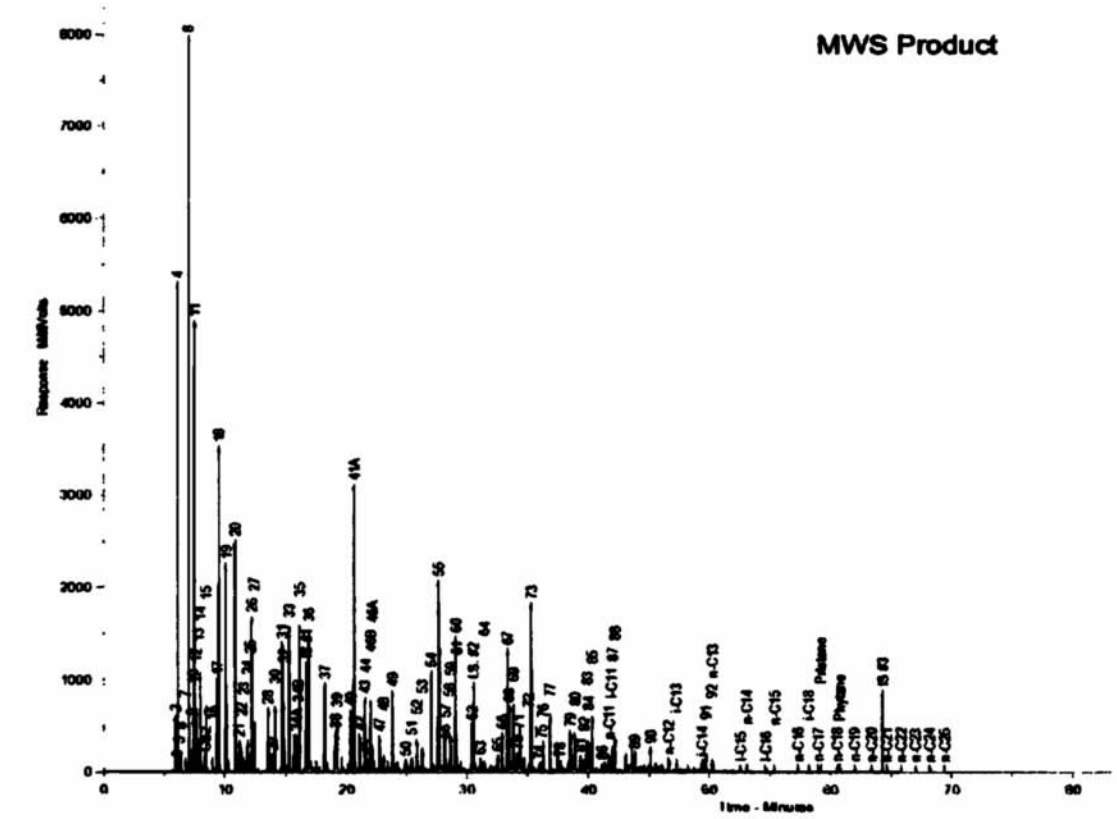
The chromatograms show peaks in the retention time range 6 min to 50 min, corresponding to the carbon range C4-C12, which is indicative of a volatile product. There is no evidence of any heavier products, such as diesel, in the samples. The volatile product contains BTEX compounds and abundant trimethylpentanes, which are alkylate hydrocarbons that are blended into most gasolines to increase octane levels. The chromatograms of Ditch 1, Ditch 2, and MWS show very similar hydrocarbon distributions. The only significant difference is the relative amounts of light C4 and C5 hydrocarbons. The ratio of 2,2,4-trimethylpentane/methylcyclohexane is controlled by the formulation of a gasoline, with different ratios indicating different gasolines. However, the ratios in Ditch 1, Ditch 2, and MWS fall within a relatively narrow range (1.9-2.1), confirming that these samples most likely contain the same gasoline. The gasoline in MWS shows little, if any, weathering, as shown by comparison with a fresh gasoline on p.6. Ditch 1 and Ditch 2 on p.7 show progressively more weathering by evaporation of the light C4 and C5 hydrocarbons, but are still only mildly weathered.

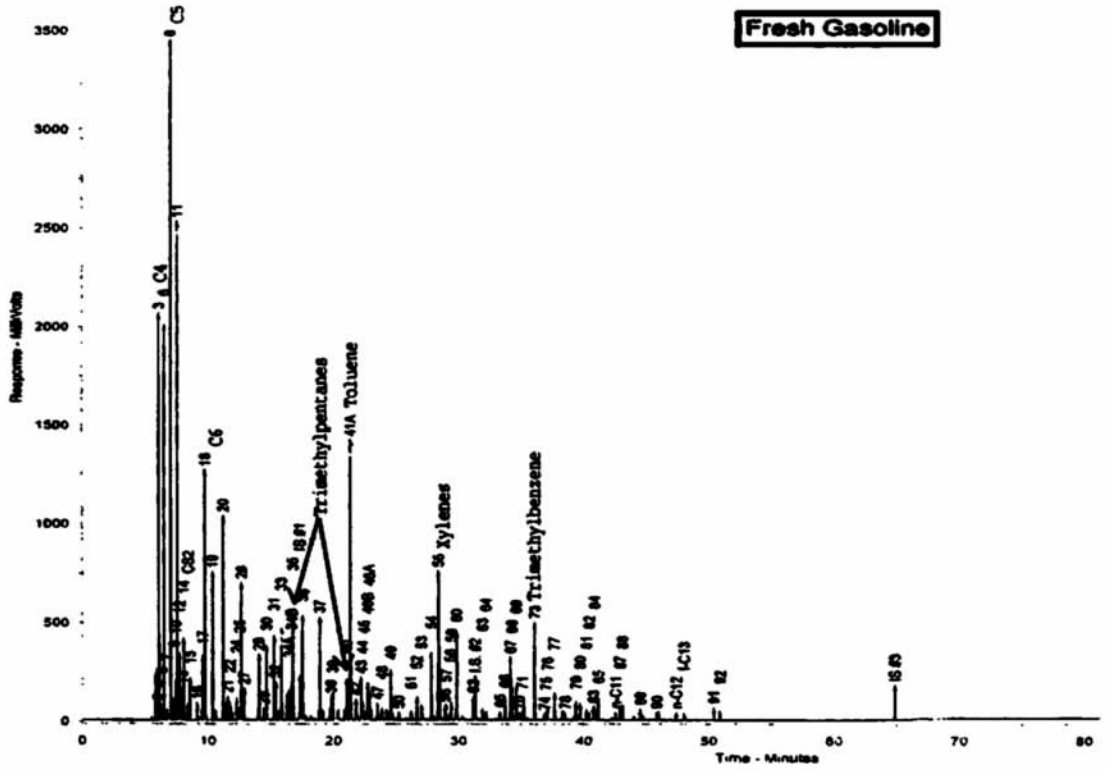
The Sewer sample, shown on p.8, contained only a small amount of gasoline, as indicate by the low hydrocarbon response compared to the internal standards. The gasoline is severely weathered, as indicated by the dominance of the more resistant xylenes and trimethylbenzenes. The 2,2,4-trimethylpentane/methylcyclohexane ratio is 1.4, somewhat lower than the other three samples, although the differences in this ratio and in other features of the hydrocarbon composition could have been caused by the severe weathering of the gasoline in this sample.

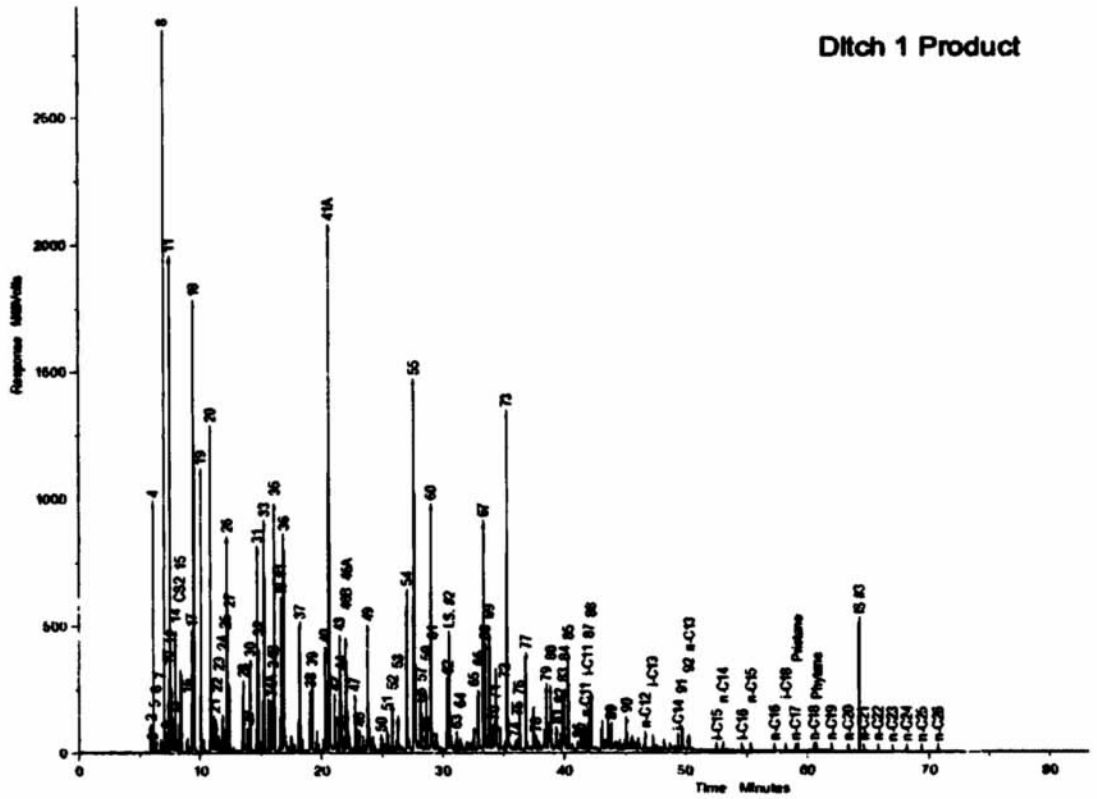
Gasoline additives were used during certain known time periods, and have been used to date gasoline releases. However, fuel oxygenates, which were and still are added to many unleaded gasolines, were not detected in any of the four samples. The weathering of gasoline is typically not a reliable indicator of the time of release because it can be influenced by many factors other than the length of time since the release. However, the absence in MWS of any significant evaporation - the most rapid form of weathering - suggests that the release of the gasoline was recent.

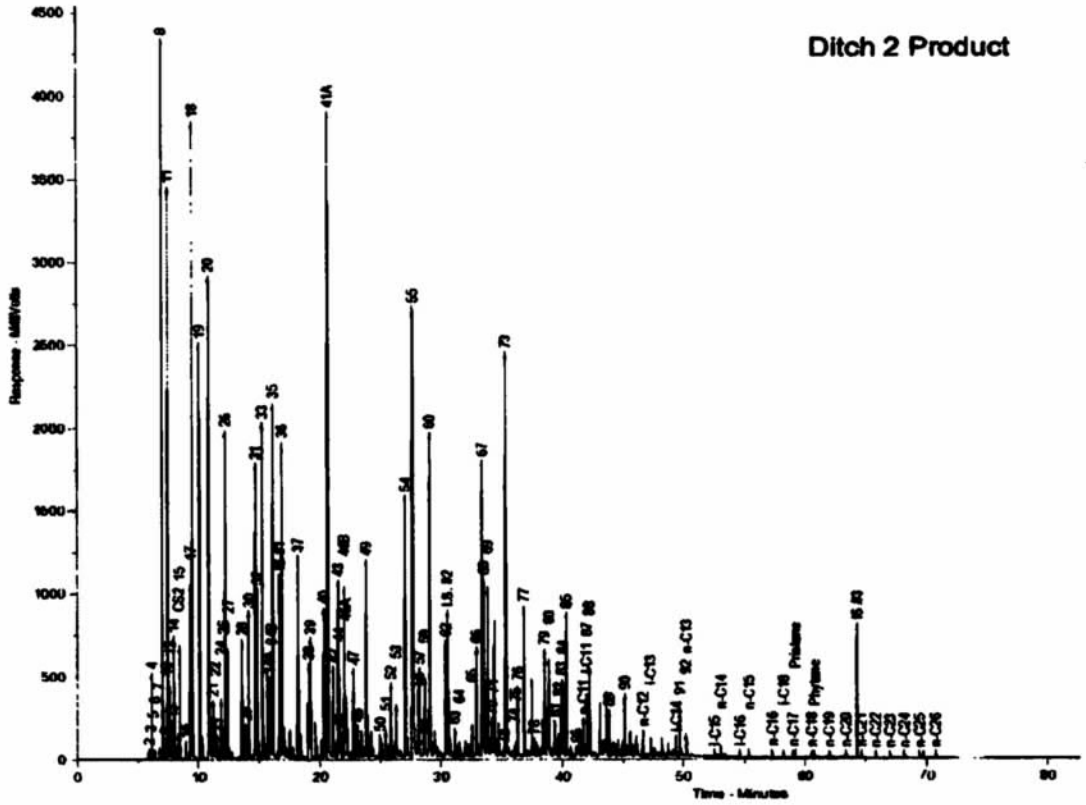
Conclusions

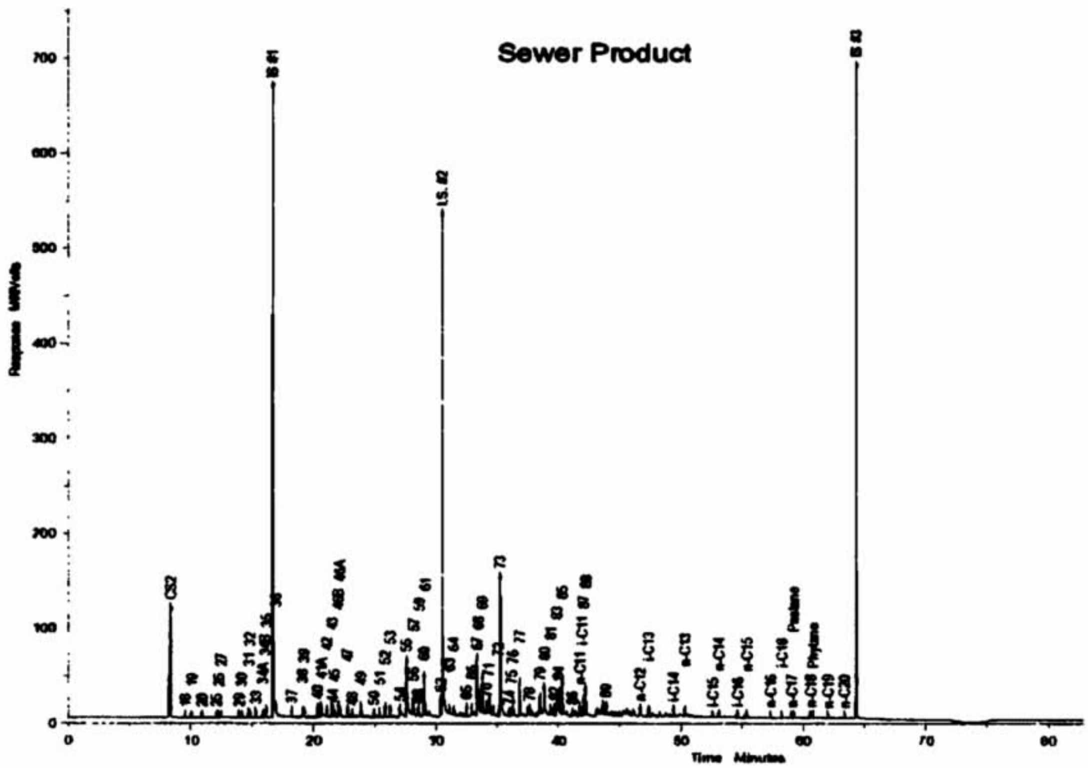
Product samples Ditch 1, Ditch 2, and MWS contain the same relatively unweathered gasoline that was probably a recent release. The Sewer sample contained only a small amount of gasoline that may be the same gasoline as the others, but severely weathered.


MWS Product
Response - MilliVolts
Time - Minutes


Fresh Gasoline
Response - MilliVolts
C5
C4
C6
Trimethylpentanes
41A Toluene
56 Xylenes
73 Trimethylbenzene
Time - Minutes


Ditch 1 Product
Response - MilliVolts
Time - Minutes


Ditch 2 Product
Response - MilliVolts
Time - Minutes


Sewer Product
Response MilliVolts
Time Minutes

December 19, 2018

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave
Suite 100
Huntersville, NC 28078

RE: Broad River Amoco 58456
Project Number: 92408471

Pace Analytical received four samples on November 28, 2018 for analysis labeled Sewer, Ditch1, Ditch2, and MWS. Per client request, the following analysis was performed:

1. **(C3-C36) Whole-Oil Molecular Characterization Gas Chromatography "Fingerprint" by GC/FID**
2. **Oxygenated Gasoline Blending Agents by GC/MS - SIM mode**
3. **Simulated Distillation**

The sample analysis was performed in house under laboratory number **28837**.

Please call the lab at 412-826-5245, or you may email any questions or concerns to Ruth Welsh@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Ruth Welsh

Ruth Welsh
Customer Service

Pace Analytical®
Energy Services™

(C3-C36) Whole-Oil Molecular Characterization
Gas Chromatography "Fingerprint"
by GC/FID

Includes Semi-quantitative screening of over 90
gasoline range PIANO compounds

12/3/2018

Pace ID	28837-1
Sample ID	SEWER
Evaporation	
n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.01
Waterwashing	
Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	2.34
Aromatics / Total Paraffins (n+iso+cyc)	3 75
Aromatics / Naphthenes	33.74
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	1092.08
3-Methylhexane / n-Heptane	0.10
Methylcyclohexane / n-Heptane	0.14
Isoparaffins + Naphthenes / Paraffins	1.98
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	1.38
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	7.00
% Isoparaffinic	11.52
% Aromatic	78.16
% Naphthenic	2.32
% Olefinic	1.01

12/3/2018

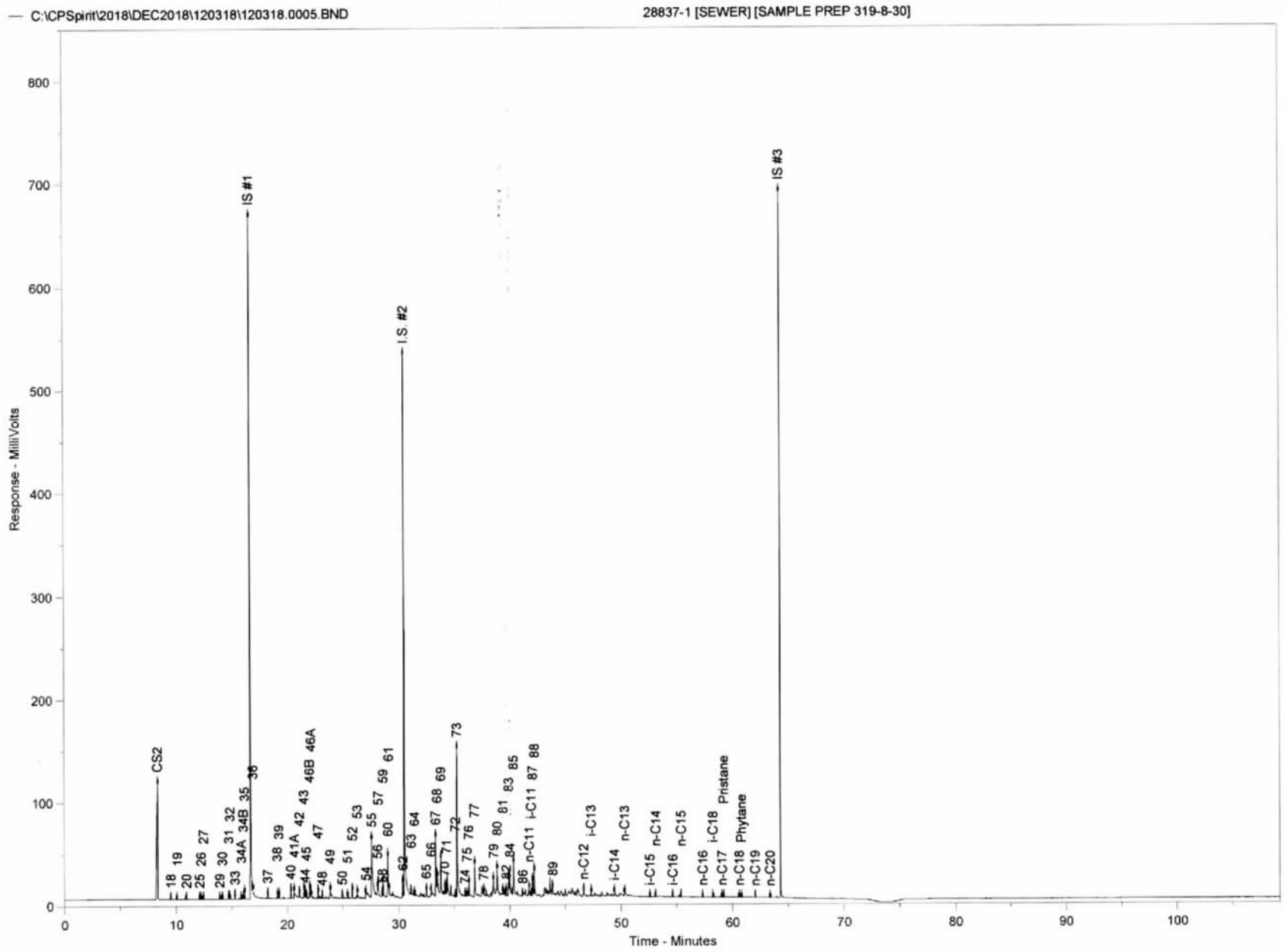
Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0 00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0 00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.01
19	3-Methylpentane	0.01
20	Hexane	0.01
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.02
27	2,4-Dimethylpentane	0.02
28	Benzene	0.00
29	5-Methyl-1-hexene	0 01
30	Cyclohexane	0.03
31	2-Methylhexane/TAME	0.17
32	2,3-Dimethylpentane	0 11
33	3-Methylhexane	0.27
34A	1-trans-3-Dimethylcyclopentane	0.04
34B	1-cis-3-Dimethylcyclopentane	0.05
35	2,2,4-Trimethylpentane	0.55
I.S. #1	α,α,α-Trifluorotoluene	0.00

12/3/2018

Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
36	n-Heptane	2.74
37	Methylcyclohexane	0.39
38	2,5-Dimethylhexane	0.28
39	2,4-Dimethylhexane	0.35
40	2,3,4-Trimethylpentane	0.76
41	Toluene/2,3,3-Trimethylpentane	0.92
42	2,3-Dimethylhexane	0.54
43	2-Methylheptane	0.88
44	4-Methylheptane	0.41
45	3,4-Dimethylhexane	0.19
46A	3-Ethyl-3-methylpentane	0.36
46B	1,4-Dimethylcyclohexane	0 89
47	3-Methylheptane	0 56
48	2,2,5-Trimethylhexane	0 13
49	n-Octane	1.04
50	2,2-Dimethylheptane	0.16
51	2,4-Dimethylheptane	0.23
52	Ethylcyclohexane	0.90
53	2,6-Dimethylheptane	0.44
54	Ethylbenzene	0 76
55	m+p Xylenes	10.14
56	4-Methyloctane	0.78
57	2-Methyloctane	1.08
58	3-Ethylheptane	0.19
59	3-Methyloctane	1.37
60	o-Xylene	4 44
61	1-Nonene	0.87
62	n-Nonane	1.71
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.28
64	3,3,5-Trimethylheptane	0.15
65	2,4,5-Trimethylheptane	0.53
66	n-Propylbenzene	0.64
67	1-Methyl-3-ethylbenzene	6 83
68	1-Methyl-4-ethylbenzene	4.33
69	1,3,5-Trimethylbenzene	5 40
70	3,3,4-Trimethylheptane	0 92

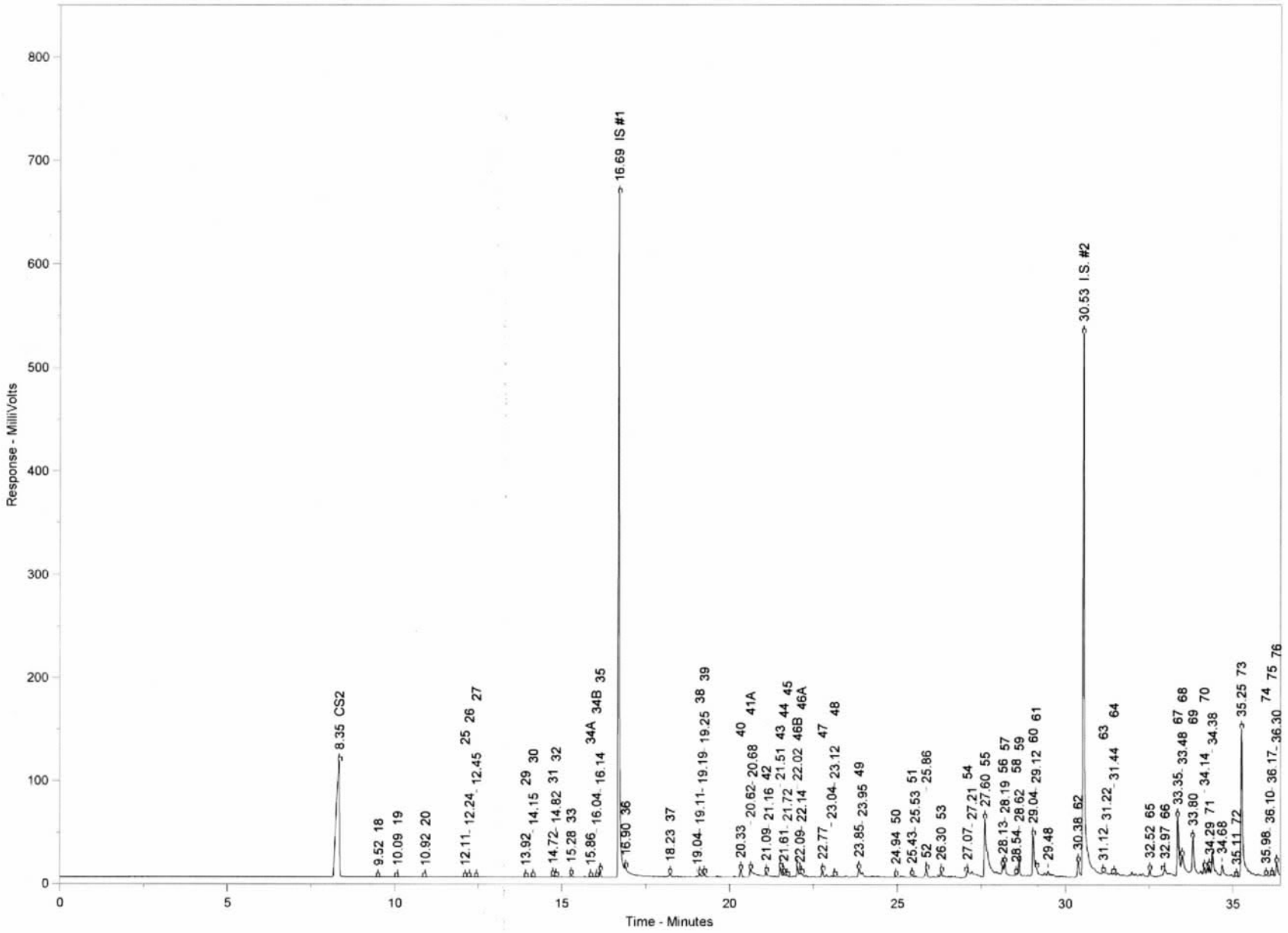
12/3/2018

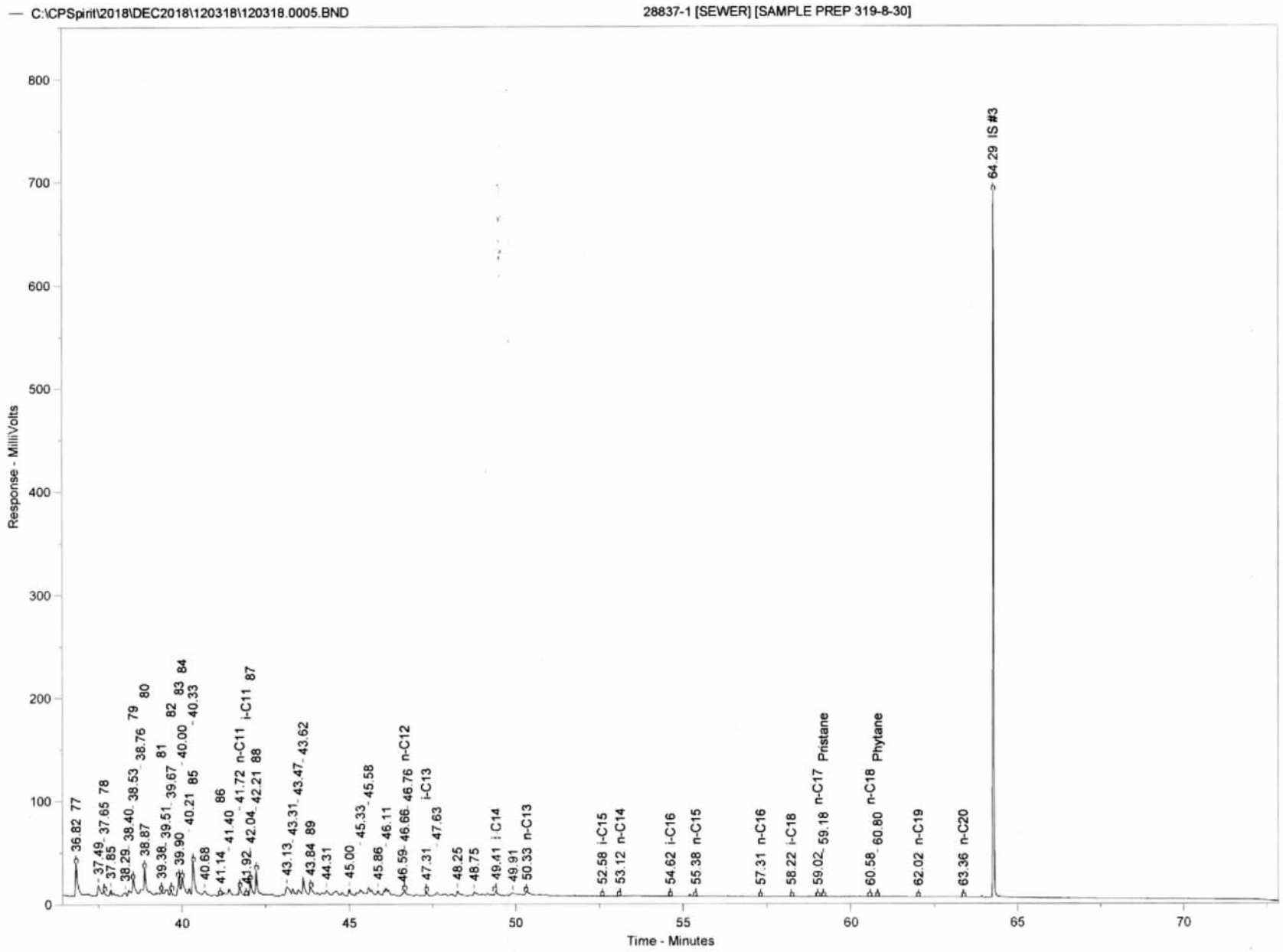
Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.92
72	3-Methylnonane	0.11
73	1,2,4-Trimethylbenzene	15.38
74	Isobutylbenzene	0.13
75	sec-Butylbenzene	0.19
76	n-Decane	1.51
77	1,2,3-Trimethylbenzene	4.22
78	Indan	0.53
79	1,3-Diethylbenzene	2.54
80	1,4-Diethylbenzene	2.66
81	n-Butylbenzene	0.50
82	1,3-Dimethyl-5-ethylbenzene	0.53
83	1,4-Dimethyl-2-ethylbenzene	2.40
84	1,3-Dimethyl-4-ethylbenzene	3.16
85	1,2-Dimethyl-4-ethylbenzene	5.25
86	Undecene	0.12
87	1,2,4,5-Tetramethylbenzene	1.92
88	1,2,3,5-Tetramethylbenzene	2.99
89	1,2,3,4-Tetramethylbenzene	1.12
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00
I.S.#3	5α-Androstane	0.00


C:\CPSprint\2018\DEC2018\120318\120318.0005.BND
28837-1 [SEWER] [SAMPLE PREP 319-8-30]
Response - MilliVolts
Time - Minutes
IS #1
I.S. #2
IS #3
CS2
Pristane
Phytane
i-C13
n-C13
i-C14
n-C14
i-C15
n-C15
i-C16
n-C16
i-C18
n-C17
n-C18
n-C19
n-C20
n-C11
i-C11
n-C12

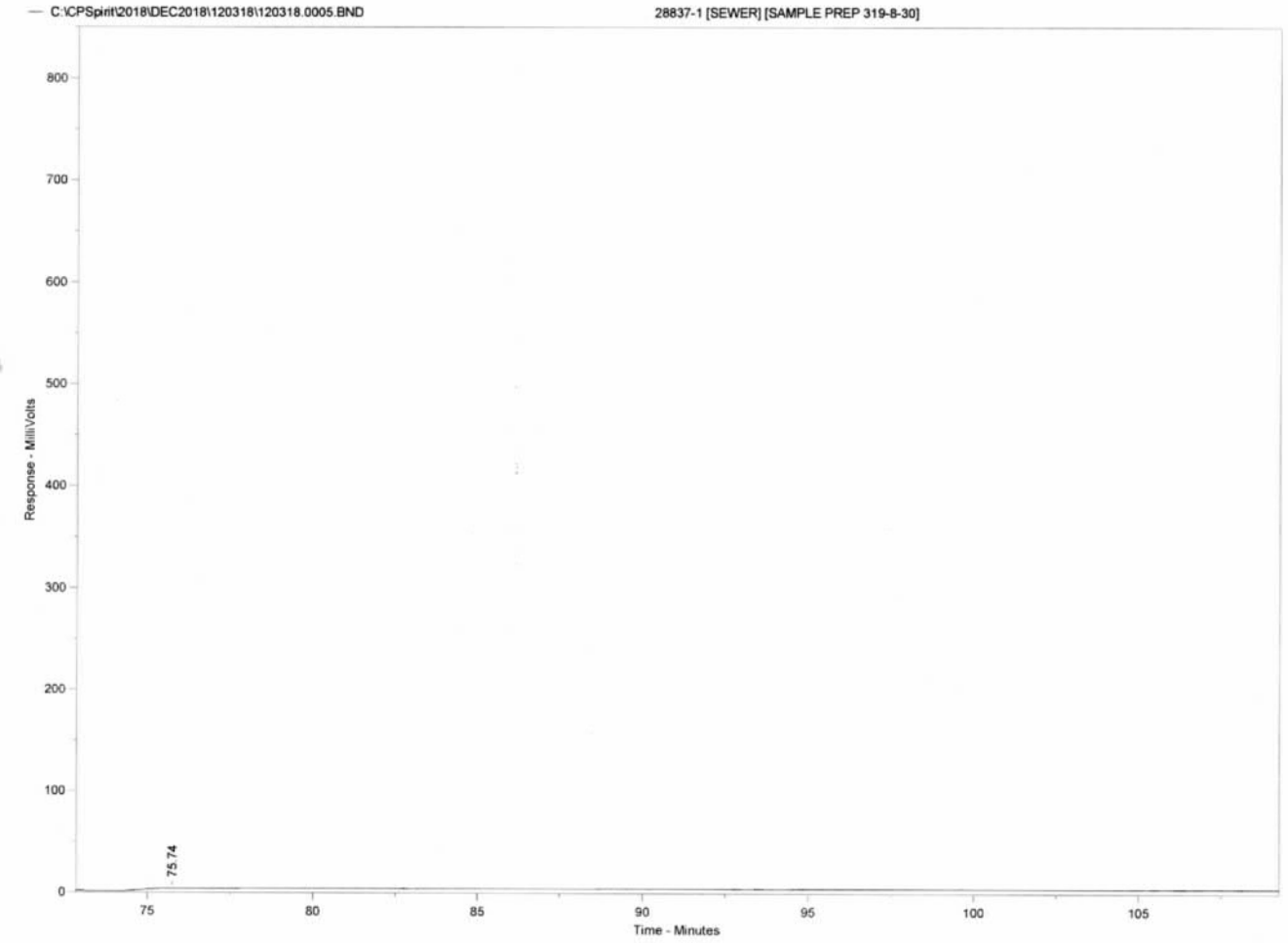
C:\CPSpirit\2018\DEC2018\120318\120318.0005.BND

28837-1 [SEWER] [SAMPLE PREP 319-8-30]




C:\CPSpirit\2018\DEC2018\120318\120318.0005.BND
28837-1 [SEWER] [SAMPLE PREP 319-8-30]
Response - MilliVolts
Time - Minutes
0
100
200
300
400
500
600
700
800
40
45
50
55
60
65
70
36.82 77
37.49
37.65 78
37.85
38.29
38.40
38.53
38.76 79
38.87
80
39.38
39.51
39.67
81
39.90
40.00 82
40.21 83
40.33 84
40.68 85
41.14
41.40 86
41.72 n-C11
41.92
42.04 i-C11 87
42.21 88
43.13
43.31
43.47
43.62
43.84 89
44.31
45.00
45.33
45.58
45.86
46.11
46.59
46.66
46.76 n-C12
i-C13
47.31
47.63
48.25
48.75
49.41 i-C14
49.91
50.33 n-C13
52.58 i-C15
53.12 n-C14
54.62 i-C16
55.38 n-C15
57.31 n-C16
58.22 i-C18
59.02
59.18 n-C17 Pristane
60.58
60.80 n-C18 Phytane
62.02 n-C19
63.36 n-C20
64.29 IS #3

Chrom Perfect Chromatogram Report



Sample Name = **28837-1 [SEWER] [SAMPLE PREP 319-8-30]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2018\DEC2018\120318\120318.0005.RAW**
Method File Name = C \CPSpirit\C344.met
Calibration File Name = C.\CPSpirit\2018\DEC2018\120318\120318 0005 BND

Date Taken (end) = 12/4/2018 1.54 50 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
CS2	8 35	7 4488	763682 40
18	9 52	0 0017	177 75
19	10.09	0 0020	208 35
20	10 92	0 0026	268 37
25	12 11	0 0014	139.32
26	12 24	0.0068	699.31
27	12.45	0.0057	589.09
29	13.92	0 0031	316.30
30	14 15	0 0092	946 88
31	14.72	0.0548	5621 02
32	14 82	0 0341	3498 74
33	15 28	0 0852	8736 24
34A	15 86	0 0132	1352 27
34B	16.04	0 0145	1481.84
35	16 14	0 1726	17698.50
IS #1	16 69	18 0985	1855530 00
36	16 90	0.8672	88905.10
37	18.23	0.1247	12780.26
	19.04	0 0284	2912.86
38	19 11	0 0899	9220 52
	19 19	0.0182	1863 95
39	19 25	0 1116	11439 02
40	20 33	0 2392	24525 71
41A	20.62	0 2913	29870 33
	20.68	0.3947	40469 67
42	21.09	0 1698	17411.63
	21.16	0 0433	4442.38
43	21 51	0 2788	28583 18
44	21 61	0 1286	13181 04
45	21 72	0 0596	6107 95
46B	22 02	0 2814	28845 99
	22 09	0 0784	8034 40
46A	22.14	0 1133	11613 83
47	22.77	0.1784	18286 51
	23.04	0.0457	4680 65
48	23.12	0 0415	4255.21
49	23 85	0 3280	33631 71
	23 95	0 1581	16207 61
50	24 94	0 0504	5164 73
51	25.43	0 0732	7508 23
	25.53	0 0506	5190 87
52	25.86	0 2838	29092 03
53	26 30	0.1403	14385 19
54	27 07	0.2406	24666 08
	27 21	0.5844	59916.31
55	27 60	3 2096	329061.60
56	28 13	0 2464	25261.60
57	28 19	0 3406	34916.99
58	28.54	0 0595	6103.62
59	28.62	0 4344	44539 49
60	29 04	1 4063	144180 50
61	29 12	0 2750	28198 03
	29.48	0.1003	10282 59
62	30 38	0.5403	55390 56
I S #2	30 53	17 0677	1749856 00
63	31 12	0 0879	9008.47
	31.22	0 0551	5647.15
64	31.44	0 0462	4736 05

Peak Name	Ret Time	Area %	Area
65	32 52	0 1666	17076 99
66	32 97	0 2037	20879 37
67	33 35	2 1615	221608 60
68	33 48	1 3725	140713 30
69	33 80	1 7089	175202 40
70	34 14	0 2899	29722.58
71	34 29	0.2902	29750 98
	34 38	1 0933	112088.60
	34 68	0 4012	41133 15
72	35 11	0 0343	3519 17
73	35 25	4 8711	499407 30
74	35 98	0.0412	4223 84
	36 10	0.0205	2097 65
75	36 17	0.0615	6302 23
76	36 30	0.4778	48981 07
77	36 82	1.3348	136845.50
	37 49	0.4993	51190 63
78	37 65	0 1672	17139 78
	37 85	0.1214	12442 20
	38.29	0.1654	16955 43
	38.40	0.2145	21994 46
79	38 53	0 8050	82530 37
	38 76	0 2192	22476 23
80	38 87	0 8408	86201 41
81	39 38	0 1568	16076 24
	39.51	0 2950	30243 20
82	39.67	0 1666	17083 81
83	39.90	0 7589	77805 90
84	40.00	1 0018	102704 60
	40.21	0 2547	26108 38
85	40 33	1 6617	170363 80
	40 68	0 3038	31147 05
86	41 14	0 0394	4039 52
	41.40	0 4991	51167 30
n-C11	41 72	0 3267	33493 39
i-C11	41 92	0 0178	1820 63
87	42 04	0 6087	62404.43
88	42 21	0 9464	97027.64
	43 13	0 5965	61154.64
	43 31	0 2652	27192.70
	43 47	0.2532	25962.14
	43 62	0 6779	69502.20
89	43 84	0.3550	36396.87
	44 31	0.1982	20318.13
	45 00	0.2751	28207.60
	45 33	0 3591	36816.57
	45.58	0 1375	14100 88
	45.86	0.1384	14186 23
	46.11	0.1873	19207 30
	46.59	0 0803	8227 64
n-C12	46.66	0 2327	23857 91
	46 76	0 0757	7758 97
i-C13	47 31	0 1658	16995 17
	47 63	0 1522	15604 84
	48 25	0 2893	29660.80
	48 75	0 1515	15528 86
i-C14	49 41	0 1593	16336 09
	49 91	0 2954	30285 31
n-C13	50 33	0 3187	32674 13
i-C15	52 58	0 0161	1651 07
n-C14	53 12	0 0323	3311 86
i-C16	54 62	0 0122	1255 68
n-C15	55 38	0 0157	1611 12
n-C16	57.31	0 0096	983.93
i-C18	58.22	0 0068	693.80
n-C17	59.02	0 0087	887.89
Pristane	59 18	0.0075	767.50
n-C18	60.58	0.0073	744 19
Phytane	60.80	0.0066	672 02
n-C19	62.02	0.0068	697 53

Peak Name	Ret Time	Area %	Area
n-C20	63 36	0 0036	371 38
IS #3	64.29	13.2864	1362179.00
	75 74	1 3005	133331 00

Total Area = 1 025242E+07 Total Height = 3018795 Total Amount = 0 7545941

12/3/2018

Pace ID	28837-2
Sample ID	DITCH 1
Evaporation	
n-Pentane / n-Heptane	1.43
2-Methylpentane / 2-Methylheptane	3.04
Waterwashing	
Benzene / Cyclohexane	0.99
Toluene / Methylcyclohexane	6.01
Aromatics / Total Paraffins (n+iso+cyc)	0.82
Aromatics / Naphthenes	5.85
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	11.48
3-Methylhexane / n-Heptane	1.03
Methylcyclohexane / n-Heptane	0.58
Isoparaffins + Naphthenes / Paraffins	3.02
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	2.01
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	13.12
% Isoparaffinic	32.23
% Aromatic	43.20
% Naphthenic	7.39
% Olefinic	4.07

12/3/2018

Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
1	Propane	0.00
2	Isobutane	0.11
3	Isobutene	0.01
4	Butane/Methanol	1.36
5	trans-2-Butene	0.02
6	cis-2-Butene	0.03
7	3-Methyl-1-butene	0.04
8	Isopentane	4.58
9	1-Pentene	0.12
10	2-Methyl-1-butene	0.33
11	Pentane	3.47
12	trans-2-Pentene	0.52
13	cis-2-Pentene/t-Butanol	0.27
14	2-Methyl-2-butene	0 96
15	2,2-Dimethylbutane	0 52
16	Cyclopentane	0.08
17	2.3-Dimethylbutane/MTBE	1 07
18	2-Methylpentane	3.94
19	3-Methylpentane	2.50
20	Hexane	3.04
21	trans-2-Hexene	0.33
22	3-Methylcyclopentene	0.32
23	3-Methyl-2-pentene	0.16
24	cis-2-Hexene	0.37
25	3-Methyl-trans-2-pentene	0.16
26	Methylcyclopentane	2.11
27	2,4-Dimethylpentane	0.72
28	Benzene	0.91
29	5-Methyl-1-hexene	0.21
30	Cyclohexane	0.92
31	2-Methylhexane/TAME	2.24
32	2,3-Dimethylpentane	1.04
33	3-Methylhexane	2.51
34A	1-trans-3-Dimethylcyclopentane	0.50
34B	1-cis-3-Dimethylcyclopentane	0.49
35	2,2,4-Trimethylpentane	2.86
I.S. #1	α,α,α-Trifluorotoluene	0.00

12/3/2018

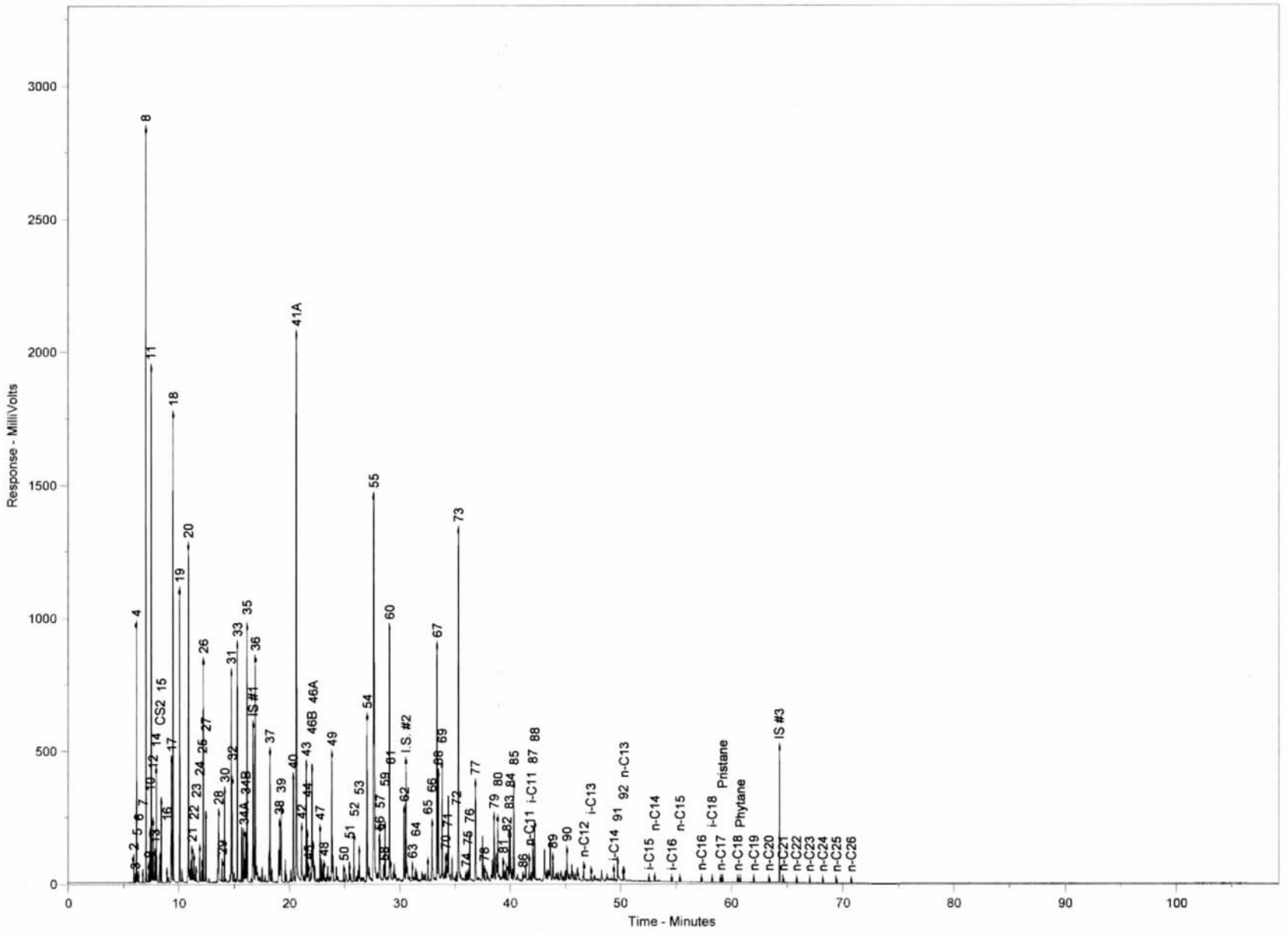
Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
36	n-Heptane	2.43
37	Methylcyclohexane	1.42
38	2,5-Dimethylhexane	0.62
39	2,4-Dimethylhexane	0.92
40	2,3,4-Trimethylpentane	1.49
41	Toluene/2,3,3-Trimethylpentane	8.55
42	2,3-Dimethylhexane	0.68
43	2-Methylheptane	1.30
44	4-Methylheptane	0.51
45	3,4-Dimethylhexane	0.24
46A	3-Ethyl-3-methylpentane	0.79
46B	1,4-Dimethylcyclohexane	1.24
47	3-Methylheptane	0.58
48	2,2,5-Trimethylhexane	0 18
49	n-Octane	1 45
50	2,2-Dimethylheptane	0.11
51	2,4-Dimethylheptane	0.16
52	Ethylcyclohexane	0.62
53	2,6-Dimethylheptane	0.33
54	Ethylbenzene	2.08
55	m+p Xylenes	8.12
56	4-Methyloctane	0.43
57	2-Methyloctane	0.52
58	3-Ethylheptane	0 10
59	3-Methyloctane	0 66
60	o-Xylene	3.13
61	1-Nonene	0.20
62	n-Nonane	0.87
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.18
64	3,3,5-Trimethylheptane	0.09
65	2,4,5-Trimethylheptane	0.17
66	n-Propylbenzene	0 83
67	1-Methyl-3-ethylbenzene	2 87
68	1-Methyl-4-ethylbenzene	1 31
69	1,3,5-Trimethylbenzene	1.54
70	3,3,4-Trimethylheptane	0.25

12/3/2018

Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.26
72	3-Methylnonane	0.03
73	1,2,4-Trimethylbenzene	4.93
74	Isobutylbenzene	0.04
75	sec-Butylbenzene	0.09
76	n-Decane	0.49
77	1,2,3-Trimethylbenzene	1.29
78	Indan	0.11
79	1,3-Diethylbenzene	0.88
80	1,4-Diethylbenzene	0.78
81	n-Butylbenzene	0.24
82	1,3-Dimethyl-5-ethylbenzene	0.15
83	1,4-Dimethyl-2-ethylbenzene	0.66
84	1,3-Dimethyl-4-ethylbenzene	0.75
85	1,2-Dimethyl-4-ethylbenzene	1.23
86	Undecene	0.04
87	1,2,4,5-Tetramethylbenzene	0.46
88	1,2,3,5-Tetramethylbenzene	0.61
89	1,2,3,4-Tetramethylbenzene	0.41
90	Naphthalene	0.45
91	2-Methyl-naphthalene	0.26
92	1-Methyl-naphthalene	0.08
I.S.#3	5α-Androstane	0.00

C:\CPSpirit\2018\DEC2018\120318\120318.0006.BND

28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]



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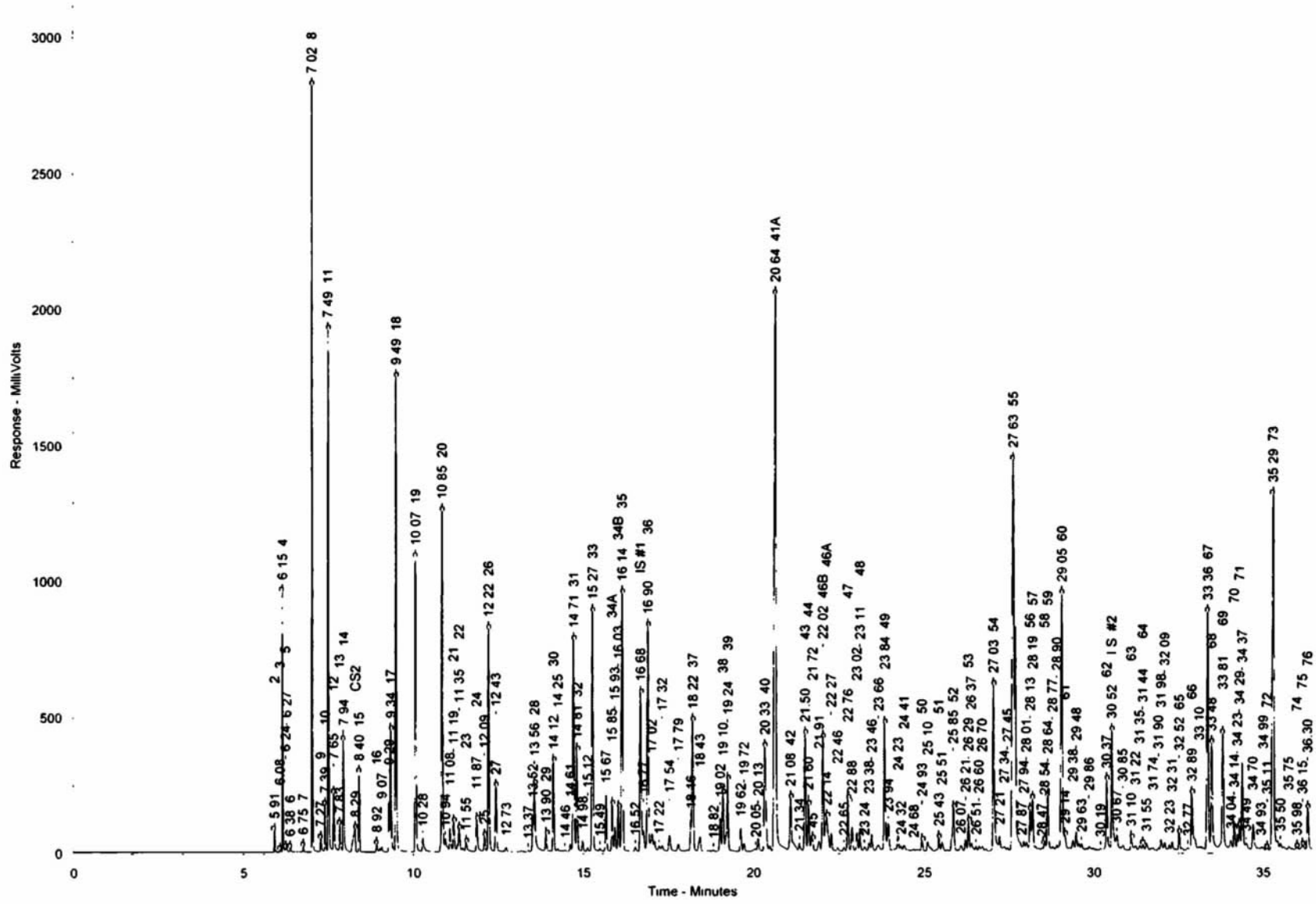
28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]



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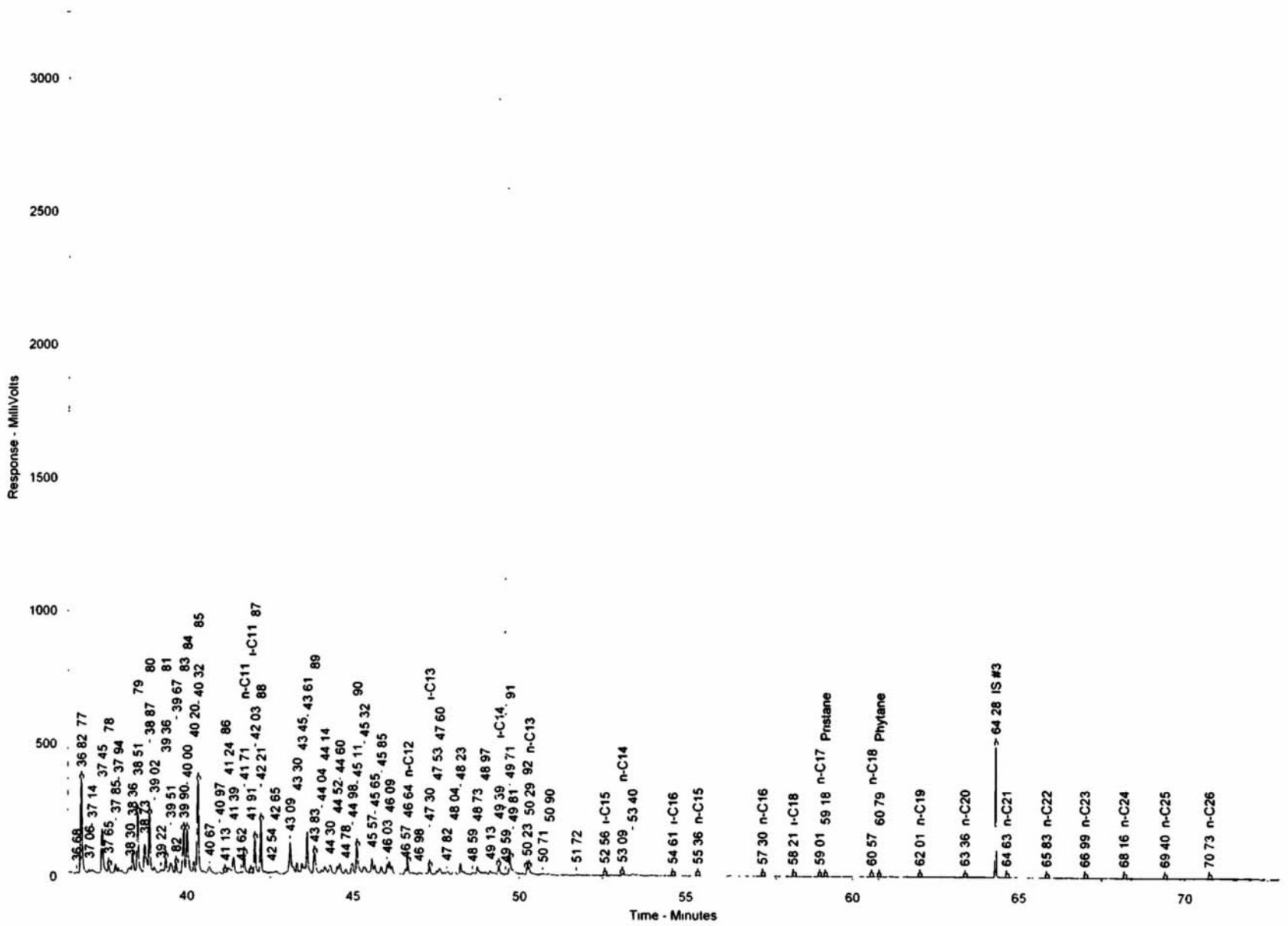
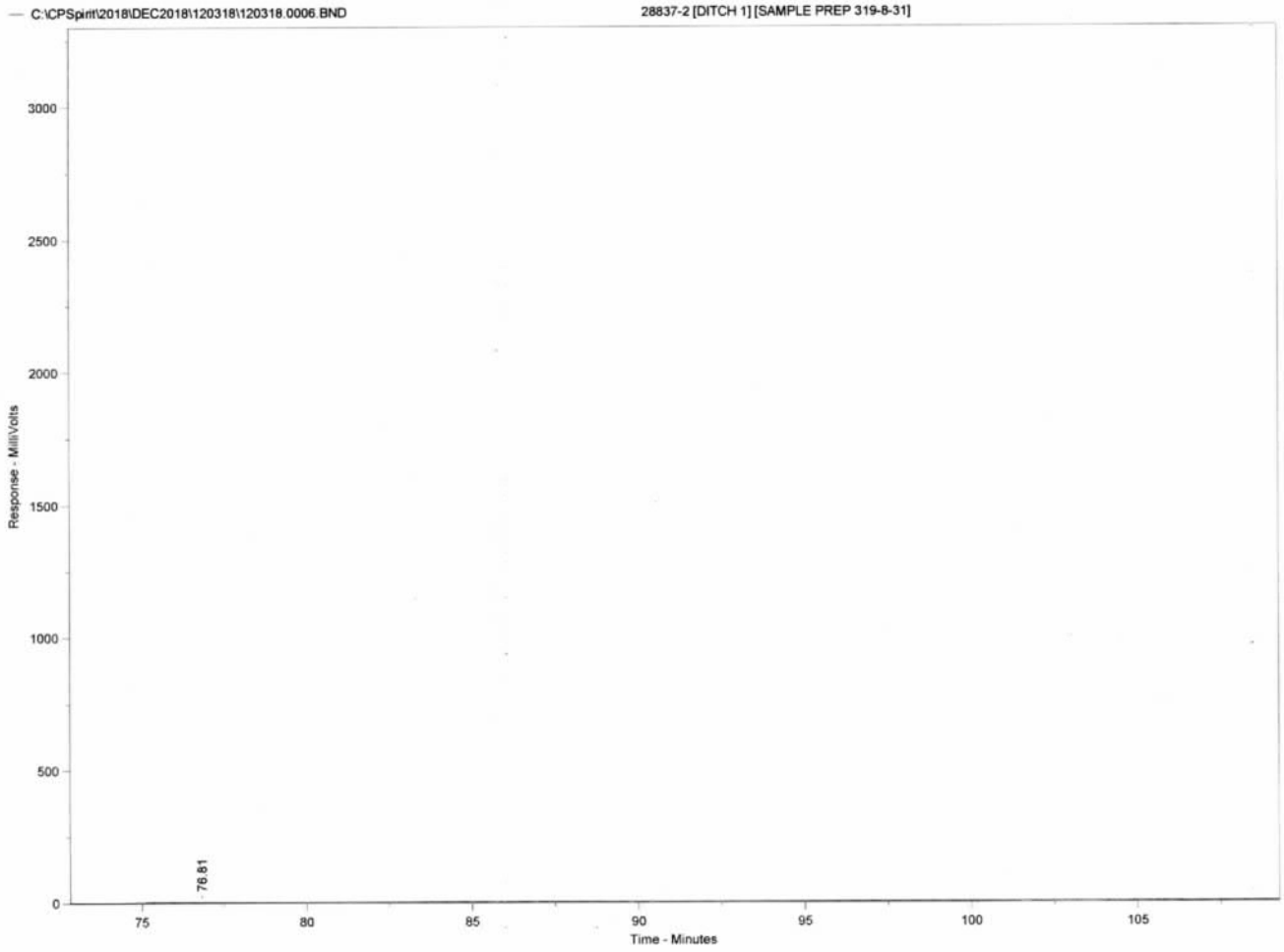
28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]

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28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]
Response - MilliVolts
3000
2500
2000
1500
1000
500
0
76.81
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2018\DEC2018\120318\120318.0006.RAW**
Method File Name = C:\CPSpirit\C344 met
Calibration File Name = C:\CPSpirit\CALIBRATIONS\2018\120418 cal

Date Taken (end) = 12/4/2018 3 57 40 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5 91	0 0870	101269 90
3	6 08	0 0112	12994 74
4	6.15	1.0793	1255807.00
5	6.24	0.0120	13942.76
	6 27	0.0108	12543.92
6	6.38	0 0224	26079.95
7	6.75	0 0281	32695.55
8	7 02	3.6307	4224589 00
9	7.27	0 0917	106667.40
10	7 39	0 2625	305382 90
11	7 49	2 7549	3205442 00
12	7 65	0 4153	483254 40
13	7 83	0 2126	247377 20
14	7 94	0 7590	883119 60
CS2	8 29	0.3644	423980 50
15	8 40	0.4135	481174 70
16	8 92	0.0634	73752.78
	9.07	0.0422	49060.48
	9.29	0 3035	353100.90
17	9 34	0 8513	990587.30
18	9.49	3 1257	3636951.00
19	10 07	1 9801	2303985 00
	10 28	0 1690	196679 50
20	10 85	2 4102	2804380.00
	10 94	0 1680	195462 00
	11 08	0 2078	241766 60
21	11.19	0 2620	304910 20
22	11.35	0.2528	294116.50
23	11.55	0 1230	143171.30
24	11.87	0.2922	339994.10
25	12 09	0 1270	147821 00
26	12 22	1 6714	1944803 00
27	12 43	0 5682	661162 50
	12 73	0 0484	56355 88
	13 37	0 0114	13270 03
	13 52	0 2431	282890 70
28	13 56	0 7254	844049 10
29	13 90	0 1651	192090 50
30	14 12	0 7314	851084 60
	14 25	0.0341	39672.07
	14 46	0.0193	22443.60
	14.61	0.0630	73282.25
31	14.71	1.7757	2066113 00
32	14.81	0 8207	954942 70
	14 98	0 0960	111746 20
	15 12	0 0390	45365 73
33	15 27	1 9926	2318477.00
	15 49	0 0389	45278.42
	15 67	0 4703	547183 40
34A	15 85	0.3925	456714.30
	15 93	0.2011	234049.40
34B	16.03	0.3908	454739 80
35	16 14	2 2681	2639024 00
	16.52	0 0455	52895 19
IS #1	16.68	1 3252	1541896.00
	16.77	0 2195	255360 40
36	16.90	1 9291	2244626.00
	17 02	0 3421	398070 50

Peak Name	Ret Time	Area %	Area
	17 22	0 0640	74413.43
	17.32	0 0814	94693 85
	17.54	0 2023	235383 80
	17.79	0.0982	114276 50
	18.16	0.2486	289285 30
37	18 22	1 1271	1311488.00
	18 43	0 1825	212347 00
	18.82	0 0132	15315.31
	19.02	0 2792	324856.50
38	19 10	0 4946	575453 40
39	19 24	0.7256	844303 10
	19 62	0.1975	229757 30
	19 72	0 0711	82762 77
	20 05	0 0414	48136 18
	20.13	0 1296	150839 50
40	20 33	1 1794	1372308 00
41A	20 64	6 7777	7886288 00
42	21 08	0 5397	627938.00
	21 34	0.0910	105937.00
43	21 50	1.0288	1197118 00
44	21 60	0.4049	471139.20
45	21 72	0.1864	216853 50
	21 91	0 1339	155774 00
46B	22.02	0 9857	1146921.00
46A	22.14	0 6266	729128 60
	22 27	0 1624	188994 40
	22 46	0.0368	42798 15
	22 65	0.0350	40707 35
47	22 76	0 4600	535250.90
	22 88	0 2198	255760.50
	23.02	0 1577	183537.00
48	23.11	0 1397	162590 60
	23.24	0 0516	60066 68
	23 38	0 0737	85807 40
	23 46	0 1604	186678 20
	23 66	0 1117	129933 70
49	23.84	1.1464	1333889.00
	23 94	0.2878	334823.00
	24.23	0 1401	162962.90
	24.32	0 0496	57713.77
	24 41	0 0791	92021 75
	24 68	0 0131	15238 96
50	24 93	0 0853	99199 84
	25 10	0 1401	163006.20
51	25 43	0 1289	149946 90
	25.51	0.0978	113785 20
52	25.85	0.4943	575170.60
	26 07	0 0669	77831.19
	26 21	0 0961	111784.30
53	26 29	0 2655	308924.80
	26 37	0.0901	104849 60
	26 51	0 0366	42530 66
	26 60	0.0483	56162 37
	26 70	0.0393	45737 46
54	27.03	1.6494	1919122.00
	27 21	0 1775	206536 20
	27 34	0 0660	76782 57
	27 45	0 0247	28737.75
55	27.63	6 4405	7493930.00
	27.87	0 0044	5064.76
	27 94	0.0673	78315.09
	28.01	0.0646	75130 21
56	28.13	0.3419	397829.70
57	28.19	0.4106	477794 40
	28.47	0 0130	15130 39
58	28 54	0 0807	93913 63
59	28 64	0 5201	605159 90
	28 77	0 0439	51050 46
	28 90	0 0382	44468.40
60	29 05	2 4827	2888818 00

Peak Name	Ret. Time	Area %	Area
61	29 14	0.1567	182295 30
	29 38	0.1036	120541 40
	29 48	0 1733	201649.40
	29 63	0.0653	75985.88
	29 86	0.0314	36514.72
	30 19	0.0183	21253.30
62	30 37	0.6895	802292.00
I S #2	30 52	1.1814	1374594 00
	30 67	0.1839	214002 00
	30 85	0.0653	75943 66
63	31 10	0.1444	168029.20
	31 22	0.0610	70982 24
	31 35	0 0598	69583 33
64	31 44	0 0688	80099 43
	31 55	0 0830	96571 77
	31 74	0 0444	51614 93
	31 90	0 0208	24216 21
	31 98	0 1156	134486 50
	32 09	0 0701	81620 84
	32 23	0.0428	49844 89
	32 31	0 0684	79530 55
65	32 52	0 1334	155223 40
	32 77	0 0166	19340 81
66	32 89	0 6555	762690 60
	33 10	0 0128	14835 98
67	33 36	2 2789	2651652.00
68	33.48	1 0384	1208274.00
69	33 81	1 2214	1421126.00
	34.04	0 1247	145080 60
70	34 14	0 2004	233222 90
	34 23	0 1354	157566 00
71	34 29	0 2078	241779 20
	34 37	0.8271	962437 90
	34 49	0 0991	115360 80
	34 70	0 2977	346450 00
	34 93	0.0287	33393 58
	34 99	0 0260	30305 80
72	35 11	0 0215	24991 06
73	35.29	3 9080	4547212.00
	35.50	0 0435	50579 54
	35.75	0 0210	24385 43
74	35.98	0 0292	33966 93
75	36.15	0 0691	80386 63
76	36 30	0 3895	453183.30
	36.68	0 0115	13387 94
77	36.82	1 0228	1190046 00
	37 06	0 0423	49241 29
	37 14	0 0737	85713 46
	37 45	0 5245	610307 80
78	37.65	0 0857	99755 52
	37 85	0.0708	82432 80
	37.94	0.0398	46355.93
	38 30	0.1061	123485 20
	38 36	0.2405	279837 50
79	38 51	0.6940	807553.00
	38 73	0.4420	514240 60
80	38 87	0.6222	724012.40
	39 02	0.1008	117288.20
	39 22	0.0519	60372.07
81	39 36	0.1940	225725.50
	39 51	0.1989	231443.60
82	39 67	0.1201	139784.40
83	39.90	0.5197	604683.40
84	40 00	0.5925	689406.60
	40 20	0.1295	150627.00
85	40 32	0.9720	1131029 00
	40 67	0 1461	170048.90
	40 97	0 0286	33228 87
86	41 13	0 0299	34832.82
	41 24	0 1184	137799.50

Peak Name	Ret Time	Area %	Area
	41 39	0 2047	238210 50
	41 62	0.0309	35932 18
n-C11	41 71	0 2288	266248 50
i-C11	41.91	0.0128	14896 38
87	42 03	0.3647	424312.70
88	42 21	0 4831	562077 60
	42.54	0 0078	9018 65
	42 65	0 0081	9388 85
	43.09	0 5149	599117 00
	43.30	0 1141	132813 40
	43.45	0 1264	147088 40
	43.61	0 4745	552067 40
89	43 83	0 3213	373862.50
	44 04	0 0466	54208 21
	44.14	0 1324	154006.50
	44 30	0 1560	181572.50
	44 52	0 0733	85335 72
	44 60	0 1363	158574.60
	44 78	0 0506	58844.71
	44 98	0 1489	173213.90
90	45 11	0 3578	416330.10
	45 32	0 1449	168648.90
	45 57	0 1901	221150.90
	45 65	0 1009	117390.90
	45 85	0.0975	113448.20
	46 03	0 0688	80031.07
	46 09	0.0771	89715.38
	46 57	0.0466	54179.45
n-C12	46.64	0.1151	133962.10
	46 98	0.0368	42825.32
i-C13	47.30	0 0939	109276.50
	47.53	0.0411	47768 15
	47.60	0 0921	107148 50
	47.82	0 0554	64468.53
	48.04	0.0572	66556 55
	48.23	0.0859	99965.87
	48.59	0.0321	37389.91
	48.73	0.1135	132119.90
	48.97	0 0287	33435.29
	49.13	0.0385	44784.11
i-C14	49 39	0 0975	113429.90
	49.59	0 0120	13909.91
91	49 71	0 2048	238282.90
	49 81	0 0760	88377.35
92	50 23	0 0656	76286.83
n-C13	50 29	0 1036	120535 70
	50 71	0.0300	34945.43
	50 90	0 0169	19687.99
	51 72	0 0075	8687 61
i-C15	52 56	0 0064	7399.80
n-C14	53 09	0 0325	37814.59
	53 40	0 0157	18219.38
i-C16	54 61	0 0054	6250.93
n-C15	55 36	0 0073	8505.14
n-C16	57 30	0 0045	5229.84
i-C18	58 21	0 0029	3352.14
n-C17	59 01	0 0039	4529.72
Pristane	59 18	0 0037	4355.40
n-C18	60.57	0 0024	2837.76
Phytane	60 79	0 0019	2258.53
n-C19	62 01	0 0022	2606.63
n-C20	63.36	0 0018	2125 96
IS #3	64 28	0 8267	961887.70
n-C21	64.63	0 0010	1160.93
n-C22	65 83	0 0008	965 74
n-C23	66.99	0 0005	622.36
n-C24	68.16	0 0005	563.57
n-C25	69 40	0 0002	260.99
n-C26	70.73	0 0001	132.70
	76.81	0 1324	154011.30

Total Area = 1 163562E+08 Total Height = 4 089352E+07 Total Amount = 0

12/3/2018

Pace ID	28837-3
Sample ID	DITCH 2
Evaporation	
n-Pentane / n-Heptane	0.97
2-Methylpentane / 2-Methylheptane	2.63
Waterwashing	
Benzene / Cyclohexane	0.92
Toluene / Methylcyclohexane	6.21
Aromatics / Total Paraffins (n+iso+cyc)	0.91
Aromatics / Naphthenes	6.00
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	13.37
3-Methylhexane / n-Heptane	1.01
Methylcyclohexane / n-Heptane	0.56
Isoparaffins + Naphthenes / Paraffins	3.36
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	2.05
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	11.64
% Isoparaffinic	31 37
% Aromatic	46.14
% Naphthenic	7.69
% Olefinic	3 15

12/3/2018

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
1	Propane	0 00
2	Isobutane	0.01
3	Isobutene	0.00
4	Butane/Methanol	0.29
5	trans-2-Butene	0.01
6	cis-2-Butene	0.01
7	3-Methyl-1-butene	0.02
8	Isopentane	2.90
9	1-Pentene	0.08
10	2-Methyl-1-butene	0.22
11	Pentane	2.58
12	trans-2-Pentene	0.38
13	cis-2-Pentene/t-Butanol	0.20
14	2-Methyl-2-butene	0.72
15	2,2-Dimethylbutane	0.46
16	Cyclopentane	0.07
17	2,3-Dimethylbutane/MTBE	0.99
18	2-Methylpentane	3 73
19	3-Methylpentane	2.39
20	Hexane	3 08
21	trans-2-Hexene	0.34
22	3-Methylcyclopentene	0.23
23	3-Methyl-2-pentene	0.15
24	cis-2-Hexene	0.37
25	3-Methyl-trans-2-pentene	0.16
26	Methylcyclopentane	2.10
27	2,4-Dimethylpentane	0.72
28	Benzene	0.88
29	5-Methyl-1-hexene	0.21
30	Cyclohexane	0.95
31	2-Methylhexane/TAME	2.41
32	2,3-Dimethylpentane	1.07
33	3-Methylhexane	2.69
34A	1-trans-3-Dimethylcyclopentane	0 52
34B	1-cis-3-Dimethylcyclopentane	0.52
35	2,2,4-Trimethylpentane	3 05
I.S. #1	α,α,α-Trifluorotoluene	0 00

12/3/2018

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
36	n-Heptane	2.66
37	Methylcyclohexane	1.49
38	2,5-Dimethylhexane	0.67
39	2,4-Dimethylhexane	0.98
40	2,3,4-Trimethylpentane	1.62
41	Toluene/2,3,3-Trimethylpentane	9.26
42	2,3-Dimethylhexane	0.72
43	2-Methylheptane	1.42
44	4-Methylheptane	0.55
45	3,4-Dimethylhexane	0.24
46A	3-Ethyl-3-methylpentane	0.83
46B	1,4-Dimethylcyclohexane	1.37
47	3-Methylheptane	0 64
48	2,2,5-Trimethylhexane	0.19
49	n-Octane	1.61
50	2,2-Dimethylheptane	0.13
51	2,4-Dimethylheptane	0.16
52	Ethylcyclohexane	0 69
53	2,6-Dimethylheptane	0.37
54	Ethylbenzene	2.34
55	m+p Xylenes	8.85
56	4-Methyloctane	0.49
57	2-Methyloctane	0.58
58	3-Ethylheptane	0 11
59	3-Methyloctane	0.70
60	o-Xylene	3.52
61	1-Nonene	0.00
62	n-Nonane	0.92
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.20
64	3,3,5-Trimethylheptane	0.08
65	2,4,5-Trimethylheptane	0.17
66	n-Propylbenzene	1.00
67	1-Methyl-3-ethylbenzene	3.04
68	1-Methyl-4-ethylbenzene	1.37
69	1,3,5-Trimethylbenzene	1.59
70	3,3,4-Trimethylheptane	0.26

12/3/2018

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.27
72	3-Methylnonane	0.02
73	1,2,4-Trimethylbenzene	5.16
74	Isobutylbenzene	0.04
75	sec-Butylbenzene	0.10
76	n-Decane	0.51
77	1,2,3-Trimethylbenzene	1.32
78	Indan	0.11
79	1,3-Diethylbenzene	0.88
80	1,4-Diethylbenzene	0.75
81	n-Butylbenzene	0.26
82	1,3-Dimethyl-5-ethylbenzene	0.13
83	1,4-Dimethyl-2-ethylbenzene	0.66
84	1,3-Dimethyl-4-ethylbenzene	0.72
85	1,2-Dimethyl-4-ethylbenzene	1.21
86	Undecene	0.04
87	1,2,4,5-Tetramethylbenzene	0.47
88	1,2,3,5-Tetramethylbenzene	0.63
89	1,2,3,4-Tetramethylbenzene	0.41
90	Naphthalene	0.50
91	2-Methyl-naphthalene	0.38
92	1-Methyl-naphthalene	0.11
I.S.#3	5α-Androstane	0 00

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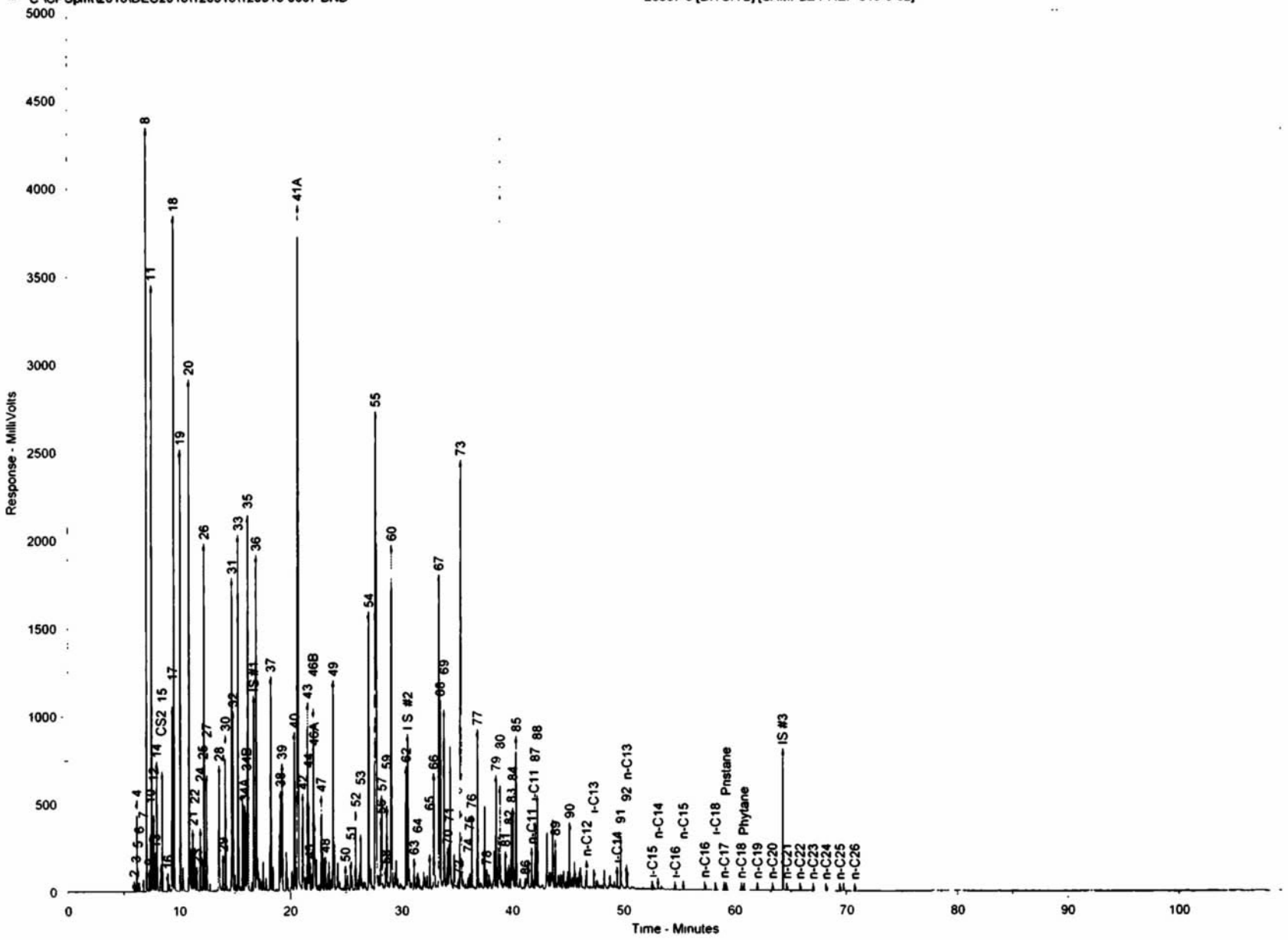
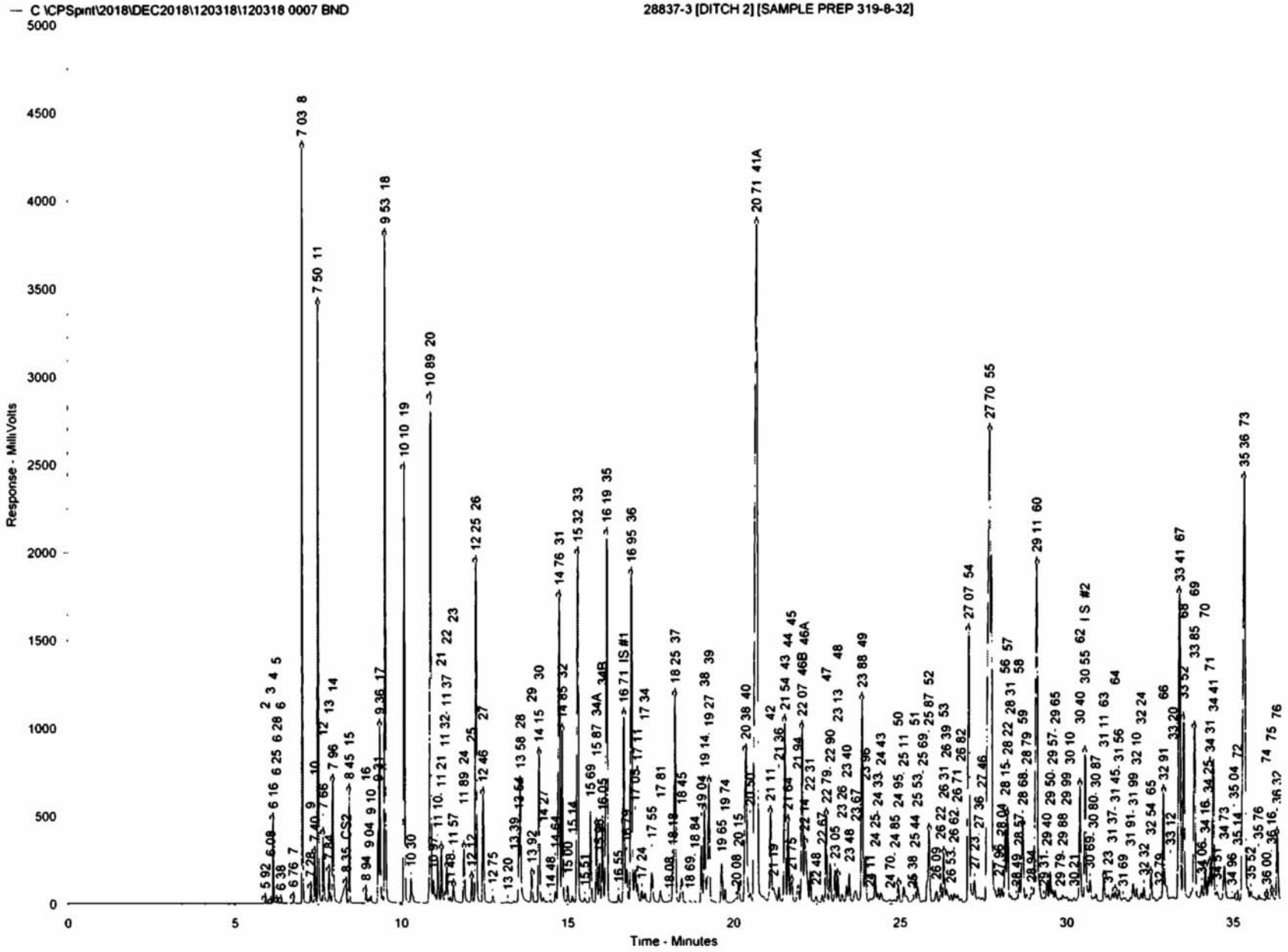
28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]

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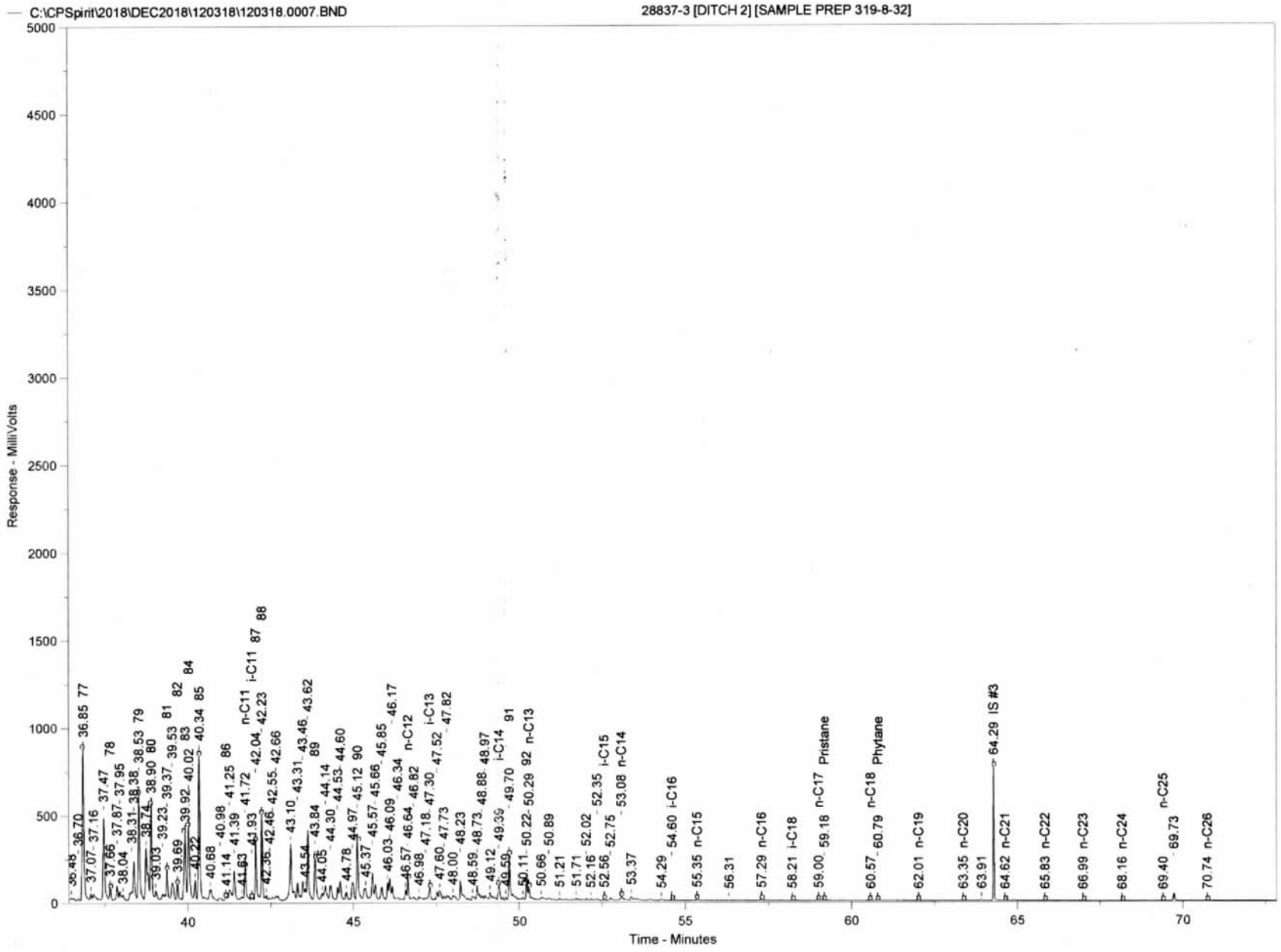
28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]
Response - MilliVolts
Time - Minutes
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
5
10
15
20
25
30
35
CS2
IS #1
IS #2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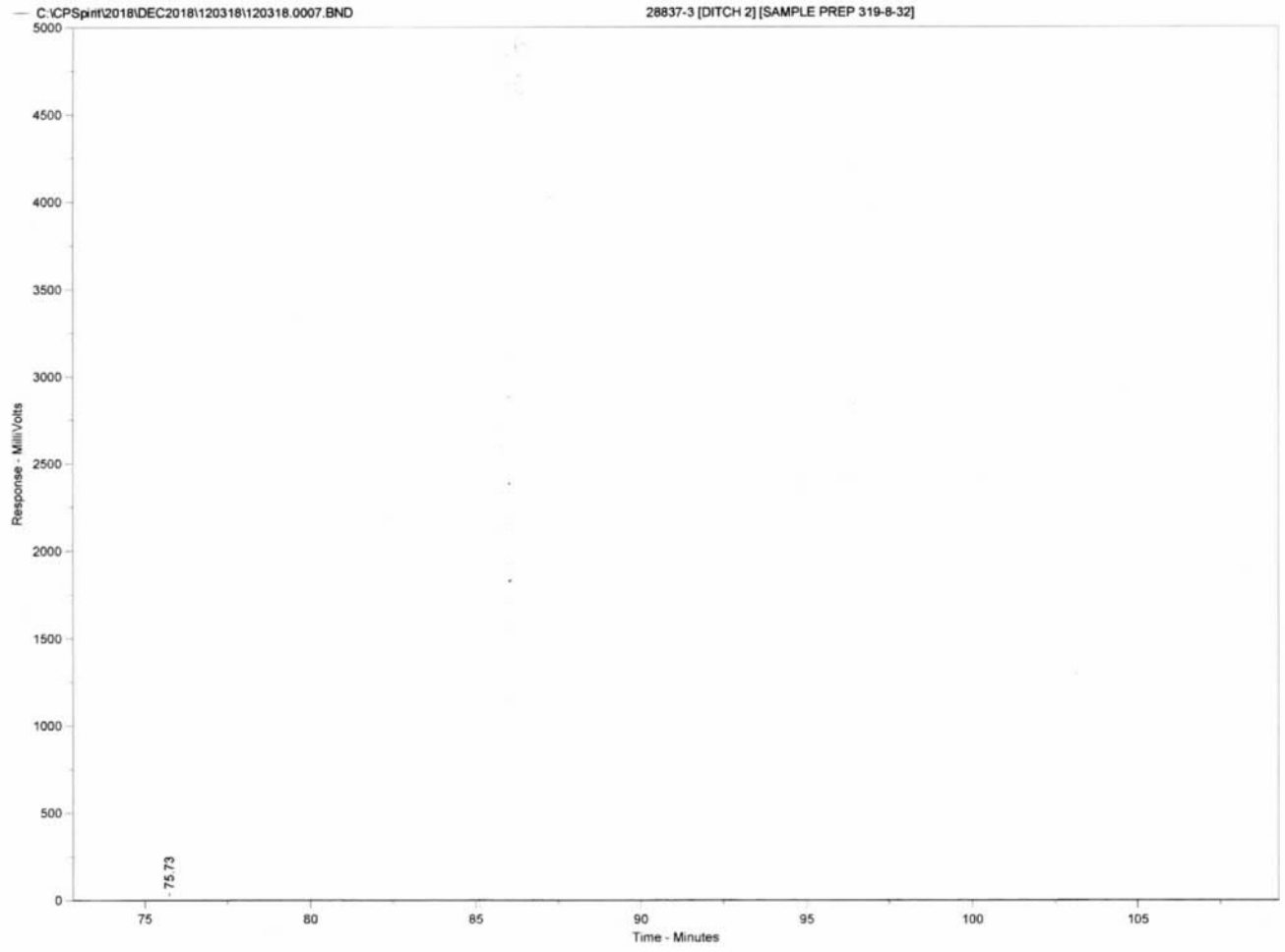
28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]
Response - MilliVolts
Time - Minutes
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
40
45
50
55
60
65
70
36.48
36.70
36.85 77
37.07
37.16
37.47 78
37.65
37.87
37.95
38.04
38.31
38.38
38.53 79
38.74
38.90 80
39.03
39.23
39.37
39.53 81 82
39.69
39.92
40.02 83 84
40.22
40.34 85
40.68
40.98
41.14
41.25 86
41.39
41.63
41.72
41.93
n-C11
i-C11 87 88
42.04
42.23
42.36
42.46
42.55
42.66
43.10
43.31
43.46
43.62 89
43.54
43.84
44.05
44.14
44.30
44.53
44.60
44.78
44.97
45.12 90
45.37
45.57
45.66
45.85
46.03
46.09
46.17
46.34
n-C12
46.57
46.64
46.82
46.98
47.18
47.30
i-C13
47.52
47.60
47.73
47.82
48.00
48.23
48.59
48.73
48.88
48.97
i-C14
49.12
49.39
49.59
49.70
50.11
50.22
50.29 91 92 n-C13
50.66
50.89
51.21
51.71
52.02
52.16
52.35
i-C15
52.56
52.75
53.08 n-C14
53.37
54.29
54.60 i-C16
55.35 n-C15
56.31
57.29 n-C16
58.21 i-C18
59.00
59.18 n-C17 Pristane
60.57
60.79 n-C18 Phytane
62.01 n-C19
63.35 n-C20
63.91
64.29 IS #3
64.62 n-C21
65.83 n-C22
66.99 n-C23
68.16 n-C24
69.40
69.73 n-C25
70.74 n-C26

Chrom Perfect Chromatogram Report



Sample Name = **28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

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Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\CALIBRATIONS\2018\120418 cal

Date Taken (end) = 12/4/2018 6:01:01 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret Time	Area %	Area
2	5.92	0.0079	22752.01
3	6.08	0.0015	4203.36
4	6.16	0.2253	647879.60
5	6.25	0.0053	15240.13
	6.28	0.0078	22499.73
6	6.38	0.0112	32301.38
7	6.76	0.0152	43795.70
8	7.03	2.2722	6535398.00
9	7.28	0.0602	173243.30
10	7.40	0.1757	505338.30
11	7.50	2.0222	5816409.00
12	7.66	0.3007	864887.80
13	7.84	0.1531	440485.60
14	7.96	0.5675	1632212.00
CS2	8.35	0.2639	758901.70
15	8.45	0.3623	1042103.00
16	8.94	0.0523	150454.70
	9.04	0.0220	63338.32
	9.10	0.0354	101942.40
	9.31	0.2651	762616.20
17	9.36	0.7780	2237705.00
18	9.53	2.9257	8415074.00
19	10.10	1.8790	5404420.00
	10.30	0.1675	481796.80
20	10.89	2.4148	6945419.00
	10.97	0.1550	445812.90
	11.10	0.2124	610844.50
21	11.21	0.2671	768374.60
	11.32	0.0526	151420.20
22	11.37	0.1843	530125.20
	11.48	0.0333	95725.50
23	11.57	0.1152	331232.50
24	11.89	0.2919	839625.00
25	12.12	0.1276	366894.00
26	12.25	1.6477	4739084.00
27	12.46	0.5667	1630018.00
	12.75	0.0438	125875.80
	13.20	0.0071	20457.81
	13.39	0.0119	34174.19
	13.54	0.2699	776217.30
28	13.58	0.6894	1982882.00
29	13.92	0.1638	471075.30
30	14.15	0.7453	2143700.00
	14.27	0.0335	96492.34
	14.48	0.0179	51551.94
	14.64	0.0667	191953.90
31	14.76	1.8917	5440856.00
32	14.85	0.8431	2424999.00
	15.00	0.0948	272560.50
	15.14	0.0384	110409.30
33	15.32	2.1095	6067282.00
	15.51	0.0367	105525.30
	15.69	0.4863	1398727.00
34A	15.87	0.4077	1172613.00
	15.96	0.2162	621961.00
34B	16.05	0.4044	1163238.00
35	16.19	2.3970	6894220.00
	16.55	0.0514	147814.50

Peak Name	Ret. Time	Area %	Area
IS #1	16 71	1 0321	2968447.00
	16 79	0 2219	638265 10
36	16 95	2 0908	6013521 00
	17.05	0.2316	666131.50
	17 11	0.1083	311375.10
	17 24	0 0762	219256 90
	17 34	0 0731	210235.20
	17 55	0 2140	615589 30
	17 81	0 1019	293126 90
	18 08	0 0174	50060 11
	18 18	0 2408	692616.30
37	18 25	1 1696	3364042 00
	18 45	0 1904	547512 10
	18 69	0 0121	34917 17
	18 84	0 0137	39448.40
	19 04	0 3034	872766 90
38	19 14	0 5279	1518217 00
39	19 27	0 7717	2219501 00
	19 65	0 2097	603169.20
	19.74	0 0758	218088 90
	20.08	0 0454	130644.10
	20.15	0 1400	402568.60
40	20.38	1 2688	3649399 00
	20.50	0 0713	204978.60
41A	20.71	7.2670	20901480 00
42	21.11	0 5673	1631602 00
	21.19	0.1463	420684 30
	21 36	0.0956	275002.80
43	21 54	1.1114	3196529 00
44	21 64	0.4325	1243969 00
45	21 75	0 1903	547241.90
	21 94	0.1452	417612.60
46B	22 07	1 0715	3081777 00
46A	22 14	0.6538	1880351 00
	22 31	0 1718	494272.60
	22 48	0 0429	123517 10
	22 67	0 0409	117616 70
47	22 79	0 5011	1441217.00
	22 90	0 2420	695951 00
	23.05	0 1743	501304 30
48	23 13	0 1529	439808 50
	23.26	0 0653	187849 90
	23.40	0 0969	278807 70
	23 48	0 1781	512208 00
	23 67	0 1512	434745 10
49	23 88	1 2623	3630761 00
	23 96	0 2966	853228 10
	24 11	0.0271	77865 62
	24 25	0 1597	459254 90
	24 33	0.0615	176942 90
	24 43	0.0975	280346 30
	24 70	0.0298	85574 62
	24 85	0.0296	85183.73
50	24 95	0 0993	285625 90
	25.11	0 1543	443674.90
	25.38	0 0175	50421 17
51	25 44	0 1256	361348.80
	25.53	0 1083	311371.60
	25 69	0 0142	40983.56
52	25.87	0 5379	1547062 00
	26 09	0 0901	259161.00
	26 22	0 1093	314497 50
53	26 31	0 2924	841084 20
	26 39	0 1084	311669 40
	26 53	0 0499	143566 80
	26 62	0 0685	197148 90
	26 71	0 0556	160018 60
	26 82	0 0256	73693 03
54	27 07	1 8375	5284970.00
	27.23	0 1455	418437 50

Peak Name	Ret Time	Area %	Area
	27 36	0 0480	138091 00
	27 46	0 0316	90925 57
55	27.70	6 9428	19968850.00
	27 96	0.0781	224630 00
	28 04	0 0825	237315 80
56	28 15	0 3824	1099941.00
57	28 22	0.4572	1314988.00
	28 31	0.0234	67275 30
	28 49	0.0139	39937 67
58	28.57	0.0859	247157 50
59	28 68	0.5470	1573182.00
	28 79	0 0517	148581 60
	28 94	0.0706	203042.60
60	29.11	2.7659	7955416.00
	29.31	0 0237	68036.20
	29.40	0 1081	310842.90
	29 50	0 1866	536656.80
	29 57	0 0641	184454.70
	29 65	0 0753	216621.90
	29 79	0 0191	54986 38
	29 88	0 0527	151544 80
	29 99	0 0325	93545.69
	30 10	0 0104	29909 72
	30 21	0.0223	64212 21
62	30 40	0 7200	2070882 00
I S #2	30 55	0.9431	2712517.00
	30 69	0.1450	417043.80
	30 80	0 0262	75405 84
	30 87	0 0501	144032 30
63	31 11	0 1537	442088 20
	31 23	0.0541	155654 70
	31 37	0.0538	154697 30
64	31.45	0.0626	180022 60
	31.56	0 0737	212056 70
	31 69	0 0093	26745 36
	31 91	0.0216	62201 79
	31 99	0 1217	350090 50
	32 10	0 0772	222145 50
	32 24	0 0503	144667 10
	32 32	0 0896	257784 30
65	32 54	0 1349	388060 50
	32 79	0 0323	92891 88
66	32 91	0 7818	2248544 00
	33 12	0 0285	81989 09
	33 20	0 0356	102486 90
67	33 41	2 3846	6858612.00
68	33 52	1 0743	3089915 00
69	33.85	1 2515	3599599 00
	34.06	0 1227	352944 30
70	34.16	0 2061	592720 90
	34.25	0.1363	391890.90
71	34 31	0 2107	605877.40
	34.41	0 8640	2485051 00
	34.51	0.0858	246638.30
	34 73	0 2921	840157.20
	34 96	0.0273	78414.59
	35 04	0 0221	63605 89
72	35 14	0.0189	54366.13
73	35 36	4.0458	11636720 00
	35 52	0 0910	261777.70
	35 76	0.0221	63675.44
74	36 00	0 0317	91304.35
75	36 16	0.0756	217328 90
76	36 32	0.4005	1151936.00
	36.48	0 0090	25775.18
	36 70	0 0112	32194.91
77	36.85	1.0332	2971716 00
	37.07	0 0442	127191.50
	37.16	0 0814	234045.90
	37.47	0 5439	1564267 00

Peak Name	Ret. Time	Area %	Area
78	37.66	0.0853	245309 80
	37 87	0.0877	252264 70
	37 95	0.0667	191784 40
	38 04	0.0433	124528 60
	38 31	0 1041	299523 60
	38 38	0 2504	720138 20
79	38.53	0 6937	1995164.00
	38 74	0 4711	1354981 00
80	38 90	0 5896	1695813.00
	39.03	0 0859	247131 70
	39.23	0 0485	139518 20
81	39 37	0 2022	581569 20
	39.53	0 1880	540592 90
82	39.69	0 1011	290711 50
83	39 92	0 5215	1499826.00
84	40 02	0 5618	1615961 00
	40 22	0 1300	373793 40
85	40 34	0 9481	2726981.00
	40 68	0 1353	389137.10
	40.98	0 0272	78183.46
86	41 14	0.0329	94483 79
	41 25	0 1185	340820.50
	41.39	0.2039	586467.60
	41 63	0.0297	85534.32
n-C11	41 72	0.2242	644725.70
i-C11	41 93	0.0131	37579.48
87	42.04	0.3701	1064423 00
88	42.23	0.4960	1426645 00
	42.36	0 0245	70576.43
	42 46	0 0067	19316.23
	42 55	0 0082	23646 33
	42 66	0 0081	23298 18
	43 10	0 4592	1320810.00
	43 31	0 1088	312830 20
	43 46	0 1218	350452 50
	43 54	0 0761	218881 90
	43 62	0 4543	1306802.00
89	43 84	0 3222	926810 80
	44 05	0.0502	144330 90
	44 14	0.1494	429744 10
	44.30	0 1616	464745 50
	44.53	0 0831	238923 40
	44.60	0.1430	411345 10
	44.78	0 0598	172039 30
	44.97	0 1689	485825 10
90	45 12	0.3934	1131426 00
	45.37	0 1462	420451.60
	45.57	0 1965	565099 30
	45 66	0 1064	306089.60
	45 85	0 1167	335602.20
	46 03	0 0976	280680.30
	46 09	0 1318	379042.90
	46 17	0 0883	253951.60
	46.34	0 0247	71165 97
	46.57	0 0521	149905 50
n-C12	46.64	0 1289	370851 10
	46.82	0 0343	98725 65
	46 98	0.0400	115172 80
	47 18	0.0138	39831 28
i-C13	47 30	0.0924	265848 20
	47 52	0.0481	138296 90
	47 60	0.0721	207481 90
	47 73	0 0131	37643 86
	47 82	0 0096	27520 23
	48.00	0 0530	152558 60
	48 23	0 1537	442014 70
	48.59	0 0371	106664 60
	48.73	0 1099	316222.00
	48.88	0 0235	67491.11
	48 97	0 0272	78355.65

Peak Name	Ret. Time	Area %	Area
	49 12	0.0434	124735 40
i-C14	49 39	0 0966	277767 00
	49.59	0.0133	38190.18
91	49.70	0.2994	861047.50
	50 11	0 0091	26134 87
92	50 22	0 0842	242185.30
n-C13	50 29	0 0616	177104.10
	50.66	0 0338	97130 49
	50 89	0.0167	48135 59
	51 21	0.0088	25221 02
	51 71	0 0071	20450.81
	52.02	0 0041	11726 26
	52.16	0.0071	20495 40
	52 35	0 0091	26036 73
i-C15	52 56	0 0064	18441 79
	52 75	0 0177	50905 64
n-C14	53 08	0.0376	108070.60
	53.37	0 0213	61203.38
	54.29	0.0107	30684.45
i-C16	54 60	0 0055	15872 71
n-C15	55 35	0 0062	17858 54
	56 31	0 0044	12794 10
n-C16	57 29	0 0052	14845.48
i-C18	58 21	0.0026	7611.91
n-C17	59 00	0 0044	12687 43
Pristane	59 18	0 0031	9039 91
n-C18	60.57	0 0027	7703.89
Phytane	60.79	0.0018	5190.22
n-C19	62 01	0.0027	7813.23
n-C20	63 35	0 0020	5725 28
	63 91	0 0039	11221 58
IS #3	64 29	0 5322	1530662.00
n-C21	64.62	0 0012	3408 94
n-C22	65 83	0.0009	2473.55
n-C23	66 99	0.0006	1627.20
n-C24	68 16	0 0005	1339 14
n-C25	69.40	0 0002	675 91
	69.73	0.0415	119400 70
n-C26	70 74	0.0001	397.36
	75 73	0 0347	99816.68

Total Area = 2 876213E+08 Total Height = 8 957231E+07 Total Amount = 0

12/3/2018

Pace ID	28837-4
Sample ID	MWS
Evaporation	
n-Pentane / n-Heptane	1.92
2-Methylpentane / 2-Methylheptane	3.58
Waterwashing	
Benzene / Cyclohexane	1.12
Toluene / Methylcyclohexane	5.70
Aromatics / Total Paraffins (n+iso+cyc)	0.64
Aromatics / Naphthenes	5.07
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	10.19
3-Methylhexane / n-Heptane	1 01
Methylcyclohexane / n-Heptane	0 59
Isoparaffins + Naphthenes / Paraffins	2.49
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	1 87
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	16.56
% Isoparaffinic	33 93
% Aromatic	37.15
% Naphthenic	7.32
% Olefinic	5.03

12/3/2018

Pace ID		28837-4
Sample ID		MWS
		Relative Area %
1	Propane	0.00
2	Isobutane	0.38
3	Isobutene	0.05
4	Butane/Methanol	3.87
5	trans-2-Butene	0.07
6	cis-2-Butene	0.11
7	3-Methyl-1-butene	0.07
8	Isopentane	6.75
9	1-Pentene	0.18
10	2-Methyl-1-butene	0.50
11	Pentane	4.56
12	trans-2-Pentene	0 71
13	cis-2-Pentene/t-Butanol	0.36
14	2-Methyl-2-butene	1.26
15	2,2-Dimethylbutane	0.58
16	Cyclopentane	0.11
17	2,3-Dimethylbutane/MTBE	1 18
18	2-Methylpentane	4.28
19	3-Methylpentane	2.67
20	Hexane	3.24
21	trans-2-Hexene	0.37
22	3-Methylcyclopentene	0.26
23	3-Methyl-2-pentene	0 16
24	cis-2-Hexene	0.40
25	3-Methyl-trans-2-pentene	0.15
26	Methylcyclopentane	2.21
27	2,4-Dimethylpentane	0.70
28	Benzene	1 03
29	5-Methyl-1-hexene	0.19
30	Cyclohexane	0.92
31	2-Methylhexane/TAME	2.18
32	2,3-Dimethylpentane	0.96
33	3-Methylhexane	2.41
34A	1-trans-3-Dimethylcyclopentane	0 49
34B	1-cis-3-Dimethylcyclopentane	0.49
35	2,2,4-Trimethylpentane	2.60
I.S. #1	α,α,α-Trifluorotoluene	0.00

12/3/2018

Pace ID		28837-4
Sample ID		MWS
		Relative Area %
36	n-Heptane	2.38
37	Methylcyclohexane	1.39
38	2,5-Dimethylhexane	0.57
39	2,4-Dimethylhexane	0.84
40	2,3,4-Trimethylpentane	1 34
41	Toluene/2,3,3-Trimethylpentane	7.94
42	2,3-Dimethylhexane	0.60
43	2-Methylheptane	1.20
44	4-Methylheptane	0.46
45	3,4-Dimethylhexane	0.20
46A	3-Ethyl-3-methylpentane	0.72
46B	1,4-Dimethylcyclohexane	1.13
47	3-Methylheptane	0.50
48	2,2,5-Trimethylhexane	0.16
49	n-Octane	1.33
50	2,2-Dimethylheptane	0.09
51	2,4-Dimethylheptane	0.15
52	Ethylcyclohexane	0.58
53	2,6-Dimethylheptane	0.31
54	Ethylbenzene	1.85
55	m+p Xylenes	7.26
56	4-Methyloctane	0 42
57	2-Methyloctane	0.52
58	3-Ethylheptane	0.11
59	3-Methyloctane	0.61
60	o-Xylene	2.74
61	1-Nonene	0.16
62	n-Nonane	0.77
I S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.15
64	3,3,5-Trimethylheptane	0.07
65	2,4,5-Trimethylheptane	0.14
66	n-Propylbenzene	0.69
67	1-Methyl-3-ethylbenzene	2.35
68	1-Methyl-4-ethylbenzene	1.04
69	1,3,5-Trimethylbenzene	1 23
70	3,3,4-Trimethylheptane	0.21

12/3/2018

Pace ID		28837-4
Sample ID		MWS
		Relative Area %
71	1-Methyl-2-ethylbenzene	0 22
72	3-Methylnonane	0.02
73	1,2,4-Trimethylbenzene	3.92
74	Isobutylbenzene	0.03
75	sec-Butylbenzene	0.07
76	n-Decane	0.41
77	1,2,3-Trimethylbenzene	1 01
78	Indan	0.09
79	1,3-Diethylbenzene	0.70
80	1,4-Diethylbenzene	0.61
81	n-Butylbenzene	0.19
82	1,3-Dimethyl-5-ethylbenzene	0.12
83	1,4-Dimethyl-2-ethylbenzene	0.53
84	1,3-Dimethyl-4-ethylbenzene	0.58
85	1,2-Dimethyl-4-ethylbenzene	0.94
86	Undecene	0 03
87	1,2,4,5-Tetramethylbenzene	0.36
88	1,2,3,5-Tetramethylbenzene	0.49
89	1,2,3,4-Tetramethylbenzene	0.32
90	Naphthalene	0.38
91	2-Methyl-naphthalene	0.23
92	1-Methyl-naphthalene	0.07
I.S.#3	5α-Androstane	0 00

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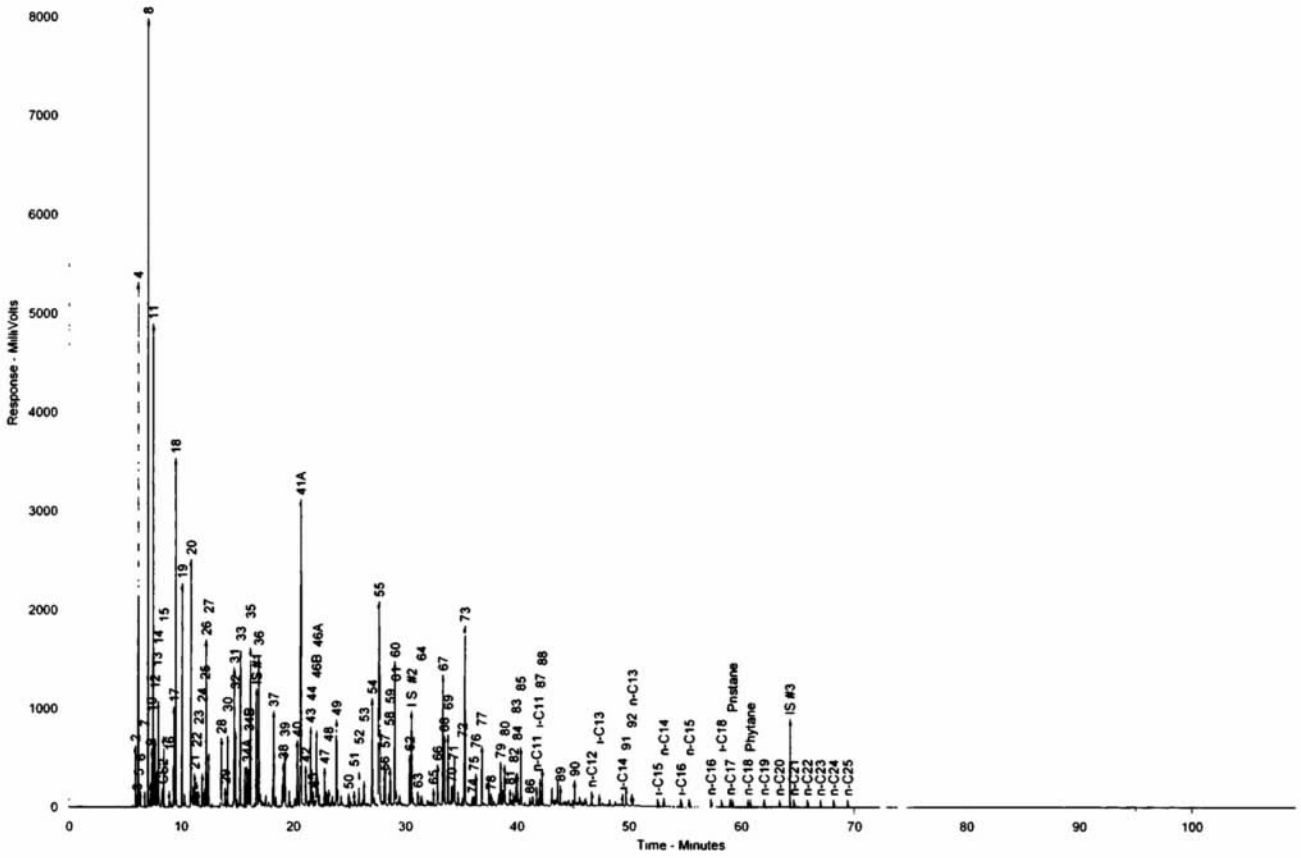

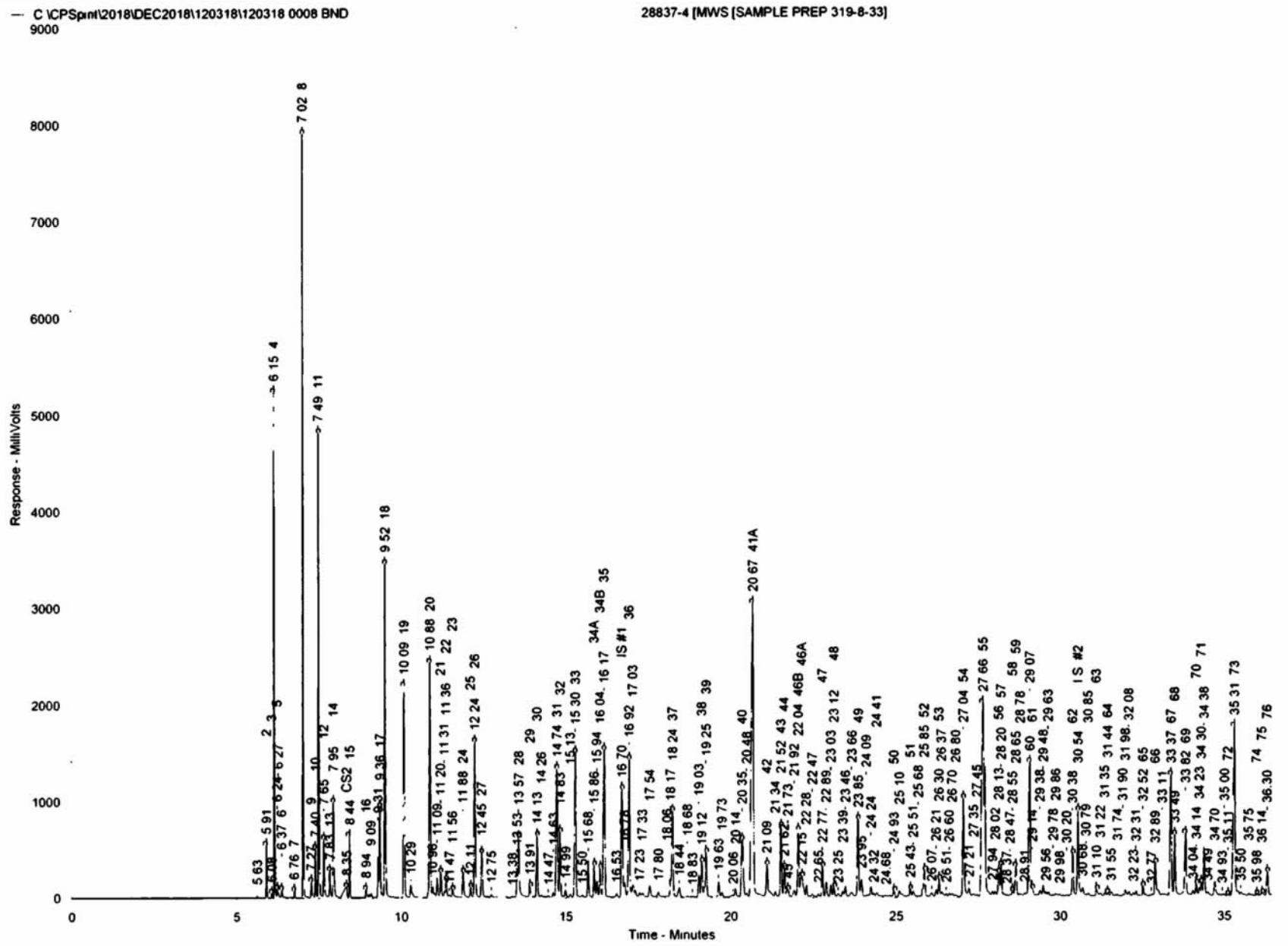
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28837-4 [MWS [SAMPLE PREP 319-8-33]
Response - MilliVolts
Time - Minutes
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
0
5
10
15
20
25
30
35
5 63
5 91
6 15 4
6 37
6 76 7
7 02 8
7 49 11
7 95
8 44 CS2 15
8 94
9 09 16
9 36 17
9 52 18
10 09 19
10 29
10 88 20
11 09
11 20
11 31
11 36 21 22 23
11 47
11 56
11 88 24
12 11
12 24 25 26
12 45 27
12 75
13 38
13 53
13 57 28 29 30
13 91
14 13 14 26
14 47
14 63
14 74 31 32
14 99
15 13
15 30 33
15 50
15 68
15 86
15 94
16 04
16 17 34A 34B 35
16 53
16 70
16 92 17 03 IS #1 36
17 23
17 33
17 54
17 80
18 06
18 17
18 24 37
18 44
18 68
18 83
19 03
19 12
19 25 38 39
19 63
19 73
20 06
20 14
20 35
20 48 40
20 67 41A
21 09
21 34
21 52 43 44
21 62
21 73
21 92
22 04 46B 46A
22 15
22 28
22 47
22 65
22 77
22 89
23 03
23 12 47 48
23 25
23 39
23 46
23 66 49
23 85
23 95
24 09 24 41
24 24
24 32
24 68
24 93
25 10 50
25 43
25 51
25 68
25 85 52
26 07
26 21
26 30
26 37 53
26 51
26 60
26 70
26 80
27 04 54
27 21
27 35
27 45
27 66 55
27 94
28 02
28 13
28 20 56 57
28 37
28 47
28 55
28 65
28 78 58 59
28 91
29 14
29 29
29 38
29 48
29 63
29 56
29 78
29 86
29 96
30 20
30 38
30 54 62 I S #2
30 68
30 79
30 85 63
31 10
31 22
31 35
31 44 64
31 55
31 74
31 90
31 98
32 08
32 23
32 31
32 52 65
32 77
32 89
33 11 66
33 49
33 82 69
33 37 67 68
34 04
34 14
34 23
34 30
34 38 70 71
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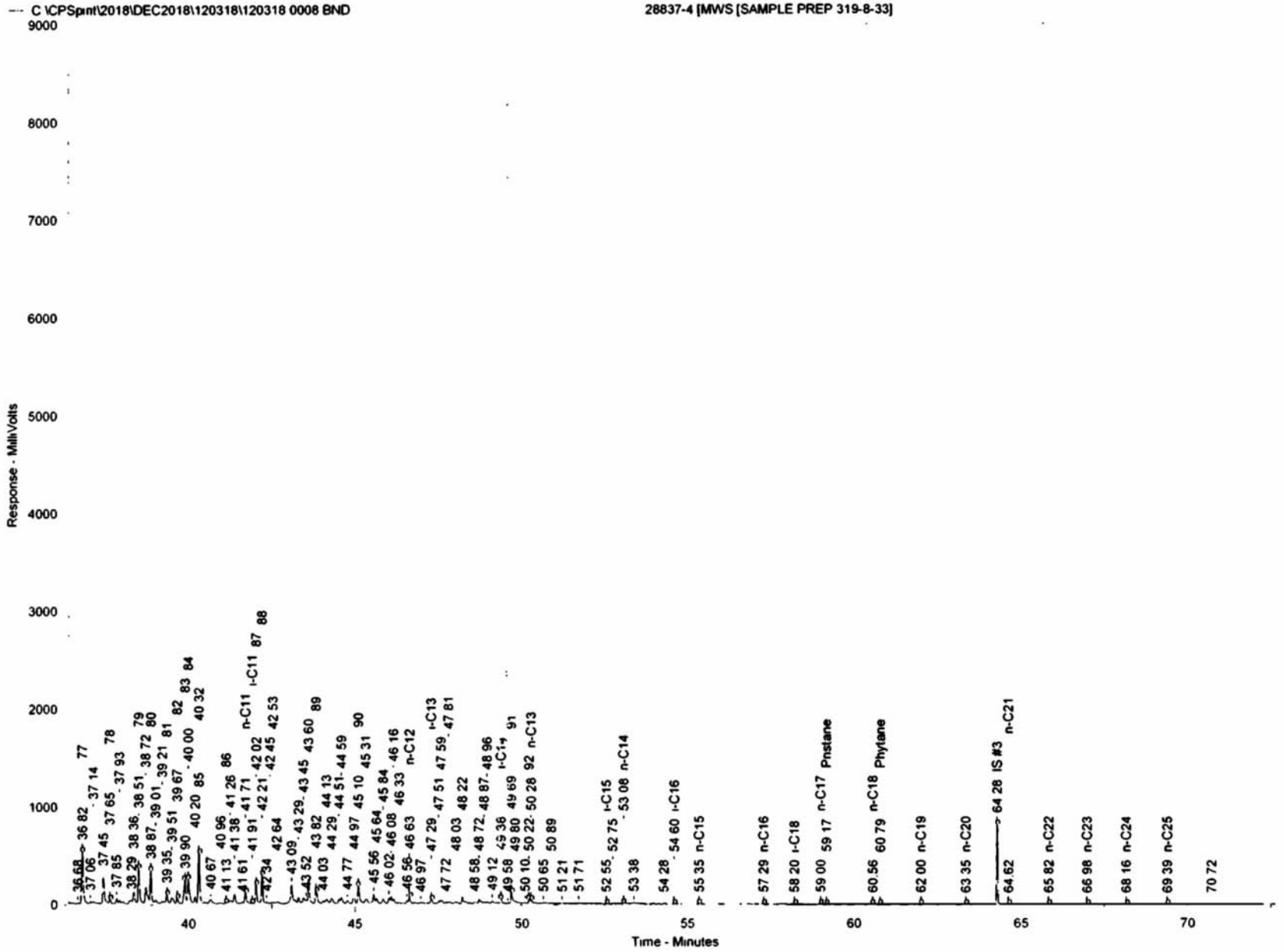
35 00 72
35 31 73
35 50
35 75
35 98
36 14
36.30 74 75 76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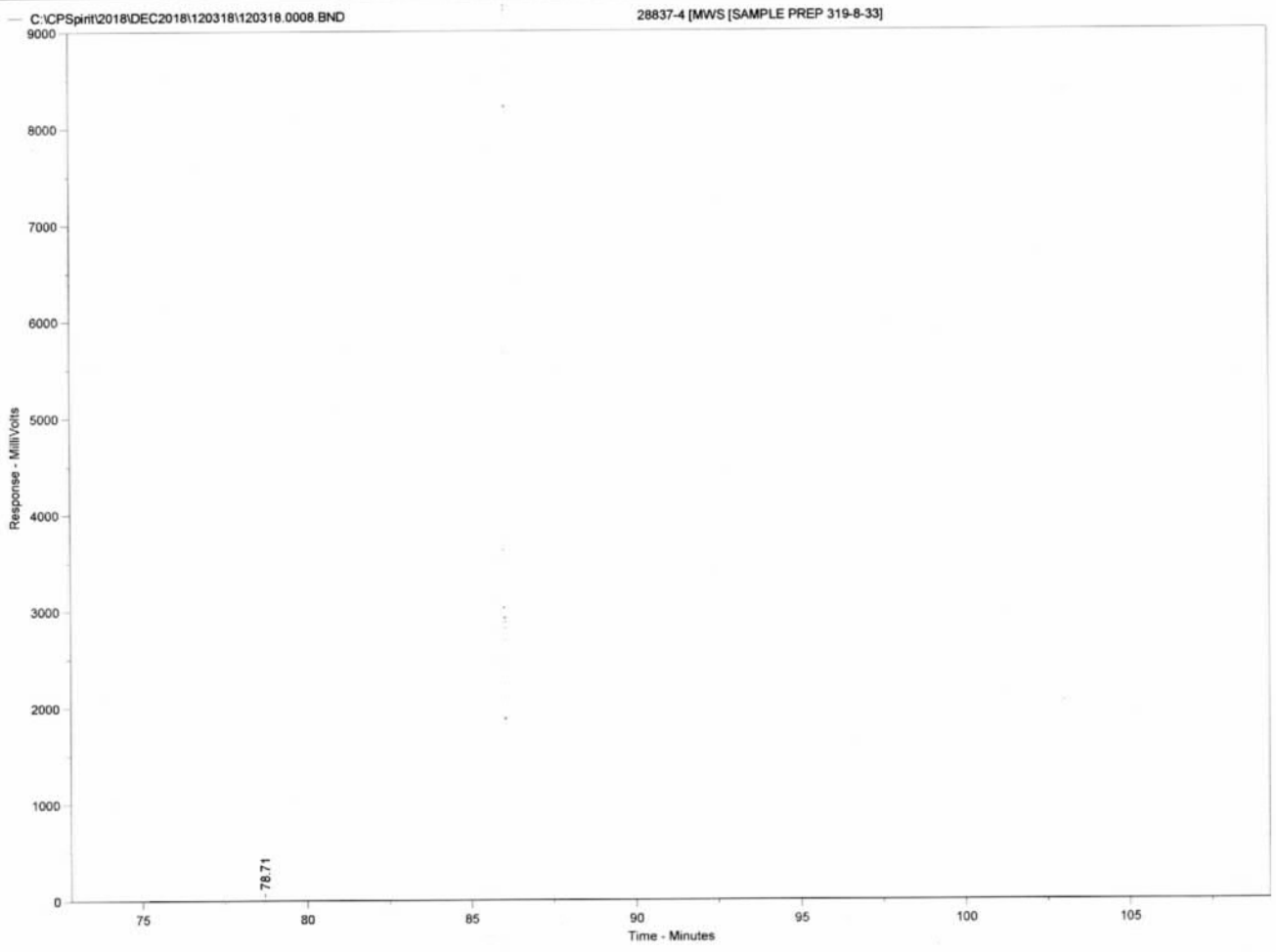
28837-4 [MWS [SAMPLE PREP 319-8-33]
Response - MilliVolts
Time - Minutes
n-C11
i-C11
n-C12
i-C13
n-C13
i-C15
n-C14
i-C16
n-C15
n-C16
i-C18
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
IS #3
n-C21
n-C22
n-C23
n-C24
n-C25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28837-4 [MWS [SAMPLE PREP 319-8-33]
Response - MilliVolts
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
78.71
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **28837-4 [MWS [SAMPLE PREP 319-8-33]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2018\DEC2018\120318\120318.0008.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\CALIBRATIONS\2018\120418.cal

Date Taken (end) = 12/4/2018 8:02:40 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
	5.63	0.0127	28051.56
2	5.91	0.3069	677677.00
3	6.08	0.0380	83981.02
4	6.15	3.0981	6842147.00
5	6.24	0.0539	119077.40
	6.27	0.0193	42644.79
6	6.37	0.0865	190951.20
7	6.76	0.0566	124925.70
8	7.02	5.4071	11941500.00
9	7.27	0.1444	318897.30
10	7.40	0.3983	879599.50
11	7.49	3.6488	8058192.00
12	7.65	0.5685	1255443.00
13	7.83	0.2871	634107.40
14	7.95	1.0059	2221618.00
CS2	8.35	0.3440	759635.40
15	8.44	0.4655	1028088.00
16	8.94	0.0876	193520.60
	9.09	0.0815	180036.20
	9.31	0.3702	817488.30
17	9.36	0.9415	2079176.00
18	9.52	3.4254	7564876.00
19	10.09	2.1408	4727937.00
	10.29	0.2039	450295.80
20	10.88	2.5957	5732554.00
	10.96	0.1783	393724.70
	11.09	0.2403	530788.00
21	11.20	0.2990	660377.10
	11.31	0.0640	141239.30
22	11.36	0.2077	458613.80
	11.47	0.0406	89738.99
23	11.56	0.1301	287386.20
24	11.88	0.3193	705137.10
25	12.11	0.1237	273149.90
26	12.24	1.7733	3916333.00
27	12.45	0.5598	1236277.00
	12.75	0.0463	102344.00
	13.38	0.0120	26466.86
	13.53	0.2829	624720.60
28	13.57	0.8279	1828292.00
29	13.91	0.1550	342338.60
30	14.13	0.7368	1627170.00
	14.26	0.0329	72704.23
	14.47	0.0183	40476.34
	14.63	0.0636	140480.30
31	14.74	1.7428	3848909.00
32	14.83	0.7693	1698998.00
	14.99	0.0949	209510.60
	15.13	0.0402	88790.97
33	15.30	1.9282	4258300.00
	15.50	0.0357	78953.07
	15.68	0.4712	1040572.00
34A	15.86	0.3929	867768.00
	15.94	0.1961	433171.50
34B	16.04	0.3933	868665.10
35	16.17	2.0839	4602273.00
	16.53	0.0467	103218.80
IS #1	16.70	1.4126	3119596.00

Peak Name	Ret Time	Area %	Area
	16 78	0.2182	481967 50
36	16.92	1.9025	4201718.00
	17.03	0.3184	703171 30
	17 23	0 0688	151856.70
	17 33	0 0709	156550 30
	17.54	0 1982	437710 60
	17 80	0 0942	207936 40
	18.06	0 0170	37552.73
	18.17	0 2337	516056.70
37	18.24	1.1155	2463656 00
	18.44	0.1732	382466.60
	18 68	0.0114	25135.48
	18 83	0.0129	28469 85
	19 03	0.2776	613054 10
38	19 12	0 4565	1008230.00
39	19 25	0 6707	1481182.00
	19 63	0 1915	423025 10
	19.73	0 0641	141562 10
	20.06	0 0397	87775 28
	20.14	0 1271	280765 10
40	20.35	1 0702	2363512.00
	20.48	0 0624	137818 50
41A	20 67	6 3611	14048440 00
42	21 09	0.4831	1066832 00
	21 34	0 0829	183097 00
43	21 52	0 9569	2113370 00
44	21 62	0 3704	818103.30
45	21 73	0 1637	361451.10
	21 92	0 1241	274144.10
46B	22.04	0 9042	1996847 00
46A	22.15	0 5783	1277238 00
	22 28	0 1495	330058 50
	22.47	0 0370	81694.21
	22 65	0 0327	72121 04
47	22 77	0 4025	888919 00
	22 89	0 2022	446472 50
	23 03	0.1452	320647.30
48	23 12	0.1267	279846.20
	23 25	0 0453	100076 70
	23 39	0 0712	157333.40
	23 46	0 1453	320904 20
	23 66	0 0984	217360 70
49	23 85	1 0654	2352993 00
	23 95	0 2520	556456 10
	24 09	0 0106	23316 12
	24 24	0 1369	302404 40
	24 32	0 0361	79738 90
	24.41	0 0474	104622 00
	24.68	0.0131	28826 07
50	24.93	0 0728	160824 90
	25 10	0.1277	282065 50
51	25 43	0.1168	258031 40
	25.51	0 0905	199918 40
	25 68	0.0099	21800.88
52	25 85	0 4608	1017574 00
	26 07	0 0739	163299 80
	26.21	0 0954	210578.80
53	26 30	0 2444	539836.10
	26 37	0 0915	202122.70
	26 51	0 0426	94132.50
	26 60	0 0569	125680 10
	26.70	0 0476	105209.10
	26.80	0 0214	47260 51
54	27 04	1 4814	3271751.00
	27 21	0.1436	317236 10
	27 35	0.0573	126440 20
	27 45	0 0326	72024 57
55	27 66	5.8107	12832860.00
	27 94	0.0827	182659 30
	28 02	0.0903	199462 40

Peak Name	Ret Time	Area %	Area
56	28.13	0 3342	738154.80
57	28 20	0 4161	918930 30
	28 37	0 0264	58219.73
	28 47	0 0284	62646.98
58	28 55	0 0889	196293.20
59	28 65	0 4885	1078746.00
	28 78	0 0662	146210.90
	28 91	0 0502	110845.00
60	29 07	2 1930	4843296 00
61	29 14	0 1319	291384.50
	29 38	0.1072	236783.60
	29 48	0 1683	371779.70
	29 56	0 0591	130528.60
	29 63	0 0779	171992.20
	29 78	0 0234	51715 30
	29 86	0.0525	116052.50
	29 98	0 0319	70523.69
	30 20	0 0219	48324 50
62	30 38	0 6177	1364186 00
I S. #2	30 54	1 2902	2849411.00
	30.68	0.1411	311689.30
	30.79	0 0282	62251.26
	30.85	0 0526	116212.40
63	31.10	0 1184	261588 20
	31.22	0 0512	112991.40
	31.35	0 0513	113238.40
64	31.44	0 0579	127838.20
	31.55	0 0712	157266 70
	31.74	0 0390	86174 35
	31 90	0 0181	40036.56
	31 98	0 0992	219009.10
	32 08	0 0610	134680.00
	32.23	0 0370	81630 18
	32 31	0.0590	130256.70
65	32 52	0.1158	255705.00
	32 77	0.0148	32771.47
66	32 89	0 5533	1221971 00
	33 11	0 0078	17220 48
67	33 37	1.8801	4152239 00
68	33 49	0.8352	1844413 00
69	33 82	0 9868	2179280 00
	34 04	0 0976	215614.40
70	34 14	0 1671	368928.20
	34 23	0 1040	229758 80
71	34 30	0 1785	394176.70
	34 38	0 6680	1475275 00
	34 49	0 0717	158345.40
	34.70	0 2437	538172 00
	34 93	0 0211	46668 69
	35.00	0 0176	38971.55
72	35.11	0 0161	35514 14
73	35.31	3 1359	6925513.00
	35 50	0 0344	75908 12
	35 75	0 0180	39717 84
74	35 98	0 0246	54379 01
75	36 14	0 0566	125085 00
76	36 30	0 3320	733178 20
	36 68	0 0096	21123 71
77	36 82	0 8107	1790473 00
	37 06	0 0330	72971 46
	37 14	0.0606	133933 60
	37 45	0 4299	949407 80
78	37 65	0 0701	154828 40
	37 85	0.0563	124437 90
	37 93	0 0313	69048 41
	38 29	0.0871	192300 00
	38.36	0.1866	412098 60
79	38.51	0.5604	1237738.00
	38.72	0.3612	797793 30
80	38.87	0 4850	1071159.00

Peak Name	Ret Time	Area %	Area
	39.01	0 0736	162653.30
	39 21	0 0398	87801 55
81	39 35	0 1555	343357 70
	39 51	0 1563	345205 70
82	39.67	0 0956	211158 80
83	39 90	0.4209	929519.90
84	40 00	0 4621	1020638 00
	40 20	0 1093	241337.90
85	40 32	0 7538	1664768 00
	40.67	0 1125	248506 10
	40 96	0 0228	50270 80
86	41 13	0.0226	49855.45
	41 26	0 0907	200293 30
	41 38	0 1628	359464.50
	41.61	0.0238	52618 83
n-C11	41.71	0.1856	409880.00
i-C11	41.91	0.0100	22187 98
87	42.02	0.2902	640858.50
88	42 21	0.3958	874174 50
	42.34	0 0198	43765.24
	42 45	0 0052	11511.37
	42 53	0 0067	14795.17
	42 64	0 0066	14672 99
	43.09	0 4354	961485 70
	43 29	0 1186	262019 50
	43 45	0.1017	224663 70
	43.52	0.0575	126967 60
	43.60	0 3782	835249.40
89	43 82	0 2595	573014 20
	44 03	0.0427	94284 05
	44 13	0.1177	259978 40
	44 29	0 1326	292765 50
	44 51	0 0657	145064 70
	44 59	0 1158	255800.80
	44 77	0 0473	104412 70
	44 97	0 1288	284535.60
90	45.10	0 3062	676323.20
	45.31	0 1212	267720.60
	45 56	0.1626	359062.40
	45 64	0.0864	190906 10
	45 84	0.0902	199197 20
	46.02	0.0793	175220 30
	46 08	0 1042	230226.80
	46 16	0.0688	151964 50
	46 33	0 0146	32340 29
	46 56	0 0366	80902 21
n-C12	46.63	0 0934	206181.90
	46.97	0 0300	66338 74
i-C13	47.29	0 0859	189688 90
	47 51	0 0315	69584.05
	47 59	0 0656	144950.80
	47 72	0 0173	38253.78
	47 81	0.0381	84162.05
	48 03	0.0445	98222.18
	48 22	0 0695	153564.00
	48 58	0 0289	63902 35
	48 72	0 0897	198123 90
	48.87	0 0194	42872 38
	48.96	0 0227	50037 68
	49.12	0 0326	71978 91
i-C14	49 38	0 0767	169390 30
	49.58	0 0106	23457 02
91	49 69	0 1818	401520 30
	49 80	0.0627	138471 70
	50 10	0 0077	16964 85
92	50 22	0.0527	116430 00
n-C13	50 28	0.0499	110298.60
	50.65	0.0248	54865.04
	50.89	0 0132	29160.63
	51.21	0.0065	14380 54

Peak Name	Ret Time	Area %	Area
	51 71	0.0059	13117.61
i-C15	52 55	0.0046	10067.16
	52 75	0.0103	22694.41
n-C14	53.08	0.0254	56115.18
	53 38	0.0123	27154.67
	54 28	0.0064	14232 32
i-C16	54 60	0 0036	7941.05
n-C15	55 35	0 0053	11702.52
n-C16	57 29	0 0035	7731 04
i-C18	58 20	0 0017	3645 28
n-C17	59.00	0 0027	5868 82
Pristane	59.17	0 0018	3907 78
n-C18	60 56	0 0018	4047 56
Phytane	60 79	0 0010	2228.75
n-C19	62.00	0 0016	3566.87
n-C20	63 35	0 0012	2707 74
IS #3	64.28	0 7478	1651510 00
n-C21	64.62	0 0007	1644.97
n-C22	65 82	0 0006	1294 94
n-C23	66.98	0 0004	812 03
n-C24	68 16	0.0003	676 45
n-C25	69.39	0 0001	308 70
	70 72	0 0001	162 08
	78 71	0 1935	427396 30

Total Area = 2 20848E+08 Total Height = 8 044561E+07 Total Amount = 0

Pace Analytical®
Energy Services™

Oxygenated Gasoline Blending Agents
by GC/MS - SIM mode

MtBE, DIPE, EtBE, tAME, tBA, and ethanol

Pace Analytical® Energy Services™

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave., Suite 100
Huntersville, NC 28078

Project: **Broad River AMOCO**

Project #: **92408471**
Collected by: **0**

Lab ID: **28837-1**
Collected: **11/20/2018**
Received: **11/28/2018**
Matrix: **Product**

Client ID: **SEWER**

Analyzed: **12/7/2018**
Q Method: **EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	40.0	U
Methyl-t-Butyl Ether (MTBE)	40.0	U
Ethyl-t-Butyl Ether (ETBE)	40.0	U
t-Amyl Methyl Ether (TAME)	40.0	U
t-Butyl Alcohol (TBA)	40.0	U
Methyl Alcohol	40.0	U
Ethanol	40.0	U
MTBE-d3 (Surr)		93.66%

ssRL - Sample Specific Reporting Limit
U : Not Detected
J: value below ssRL

120718-08.D
CJS

Pace Analytical® Energy Services™

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave., Suite 100
Huntersville, NC 28078

Project: **Broad River AMOCO**

Project #: **92408471**
Collected by: **0**

Lab ID: **28837-2**
Collected: **11/20/2018**
Received: **11/28/2018**
Matrix: **Product**

Client ID: **DITCH 1**

Analyzed: **12/7/2018**
Q Method: **EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		109.78%

ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-09.D
CJS

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave., Suite 100
Huntersville, NC 28078

Project: **Broad River AMOCO**

Project #: **92408471**
Collected by: **0**

Lab ID: **28837-3**
Collected: **11/20/2018**
Received: **11/28/2018**
Matrix: **Product**

Client ID: **DITCH 2**

Analyzed: **12/7/2018**
Q Method: **EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		123.87%

ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-10.D
CJS

Pace Analytical®
Energy Services

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave., Suite 100
Huntersville, NC 28078

		Lab ID:	28837-4
		Collected:	11/20/2018
		Received:	11/28/2018
		Matrix:	Product
Project:	Broad River AMOCO	Client ID:	MWS
Project #:	92408471	Analyzed:	12/7/2018
Collected by:	0	Q Method:	EPA 1624 GC/MS

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		115.37%

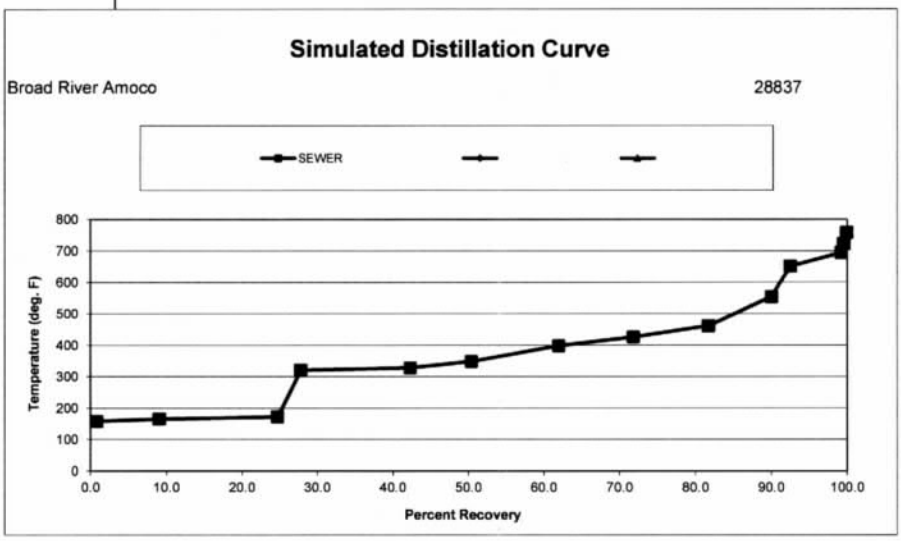
ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-11.D
CJS

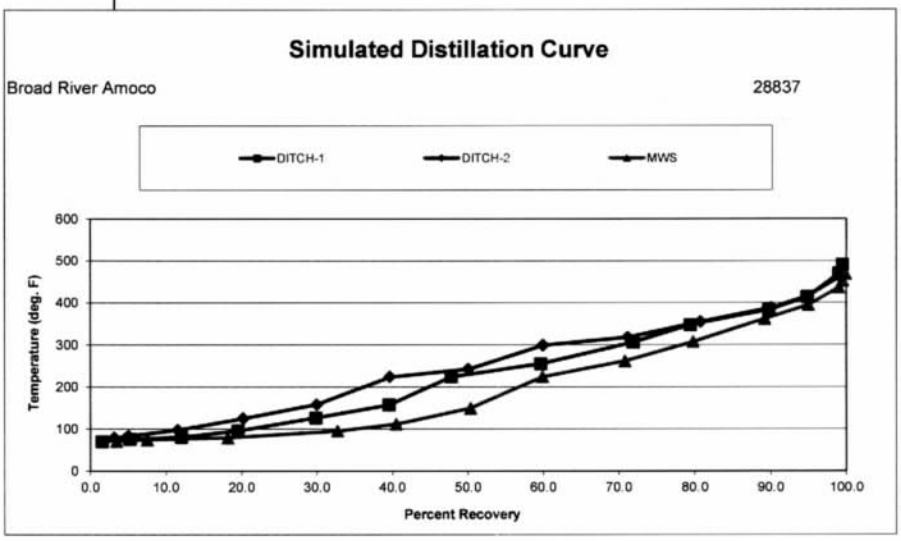
Pace Analytical®
Energy Services™

Simulated Distillation

SEWER											
% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.
0.78	158.00										
9.07	165.06										
24.72	172.12										
27.80	320.40										
42.31	327.46										
50.43	348.64										
61.98	398.07										
71.82	426.31										
81.74	461.62										
90.05	553.41										
92.52	652.26										
99.20	694.62										
99.55	722.86										
99.93	758.17										



DITCH-1		DITCH-2		MWS									
% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.
1.55	70.04	3.12	78.48	3.44	70.27								
5.24	75.16	5.04	83.15	7.52	74.43								
12.07	80.28	11.57	97.17	18.17	78.58								
19.55	95.66	20.23	125.20	32.71	95.20								
29.86	126.40	29.97	157.91	40.51	111.82								
39.57	157.14	39.67	223.32	50.35	149.21								
47.82	223.75	50.09	242.01	59.91	223.99								
59.66	254.50	59.96	298.07	70.81	261.38								
71.90	305.73	71.20	316.76	79.78	307.07								
79.45	346.73	80.80	354.14	89.25	361.08								
89.80	382.59	90.11	386.85	94.99	394.32								
94.83	413.34	94.94	414.88	98.97	435.86								
99.04	469.70	99.07	461.60	99.55	452.48								
99.51	490.19	99.48	470.95	99.91	469.10								



Chain of Custody

28837

Workorder: 92408471 **Workorder Name:** BROAD RIVER AMOCO 58456 **Results Requested By:** 12/21/2018

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
Phone (704)875-9092
Email: trey.carter@pacelabs.com

Pace Energy
220 William Pitt Way
Pittsburgh, PA 15238

P.O.__TC 17853_____

State of Sample Origin: SC

					Unpreserved						Fingerprint Analysis												LAB USE ONLY
1	SEWER	11/20/2018 12:00	92408471001	Water	1						X												
2	DITCH 1	11/20/2018 12:15	92408471002	Water	1						X												
3	DITCH 2	11/20/2018 19:45	92408471003	Water	1						X												
4	MWS	11/20/2018 17:15	92408471004	Water	1						X												
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	MG 11-27-18	1800	Lon PACE	11.28.18
2				1210
3				

Requested analyses: ASTM D3328 C3-C36 (Whole Oil), including PIANO
EPA 1624 Oxy Bending Agents
ASTM 2887 Simulated Distillation

Cooler Temperature on Receipt 2 °C | **Custody Seal** Y or (N) | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

Cooler Receipt Form

Client Name: Pace **Project:** Broad River Amoco **Lab Work Order:** 28837

A. Shipping/Container Information (circle appropriate response)

Courier: (FedEx) UPS USPS Client Other:_____ **Air bill Present:** (Yes) No

Tracking Number: 439422073745

Custody Seal on Cooler/Box Present: Yes (No) **Seals Intact:** Yes No

Cooler/Box Packing Material: (Bubble Wrap) Absorbent Foam Other:_____

Type of Ice: (Wet) Blue None **Ice Intact:** (Yes) Melted

Cooler Temperature: 2°C **Radiation Screened:** Yes (No) **Chain of Custody Present:** (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	
Headspace present?			✓	

Comments:_____

Cooler contents examined/received by: LG **Date:** 11.28.18

Project Manager Review: ERJ **Date:** 11-28-18

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

December 19, 2018

Robert Dunn
SCHDEC
2600 Bull St
Columbia, SC 29201

RE: Project: BROAD RIVER AMOCO 58456
Pace Project No.: 92408471

Dear Robert Dunn:
Enclosed are the analytical results for sample(s) received by the laboratory on November 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,

Trey Carter
trey.carter@pacelabs.com
(704)875-9092
Project Manager

Enclosures

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

SAMPLE SUMMARY

Project BROAD RIVER AMOCO 58456
Pace Project No.: 92408471

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92408471001	SEWER	Water	11/20/18 12 00	11/21/18 09 36
92408471002	DITCH 1	Water	11/20/18 12 15	11/21/18 09 36
92408471003	DITCH 2	Water	11/20/18 19 45	11/21/18 09 36
92408471004	MWS	Water	11/20/18 17 15	11/21/18 09 36

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project:
Pace Project No.:

Method:
Description:
Client:
Date:

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

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Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: SCDHEC **Project #:** WO# : 92408471

92408471

Courier: ☐ Commercial ☑ Pace ☐ Fed Ex ☐ UPS ☐ USPS ☐ Other: ☐ Client

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: TF 11-21-18

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☐ IR Gun ID: 92T045 **Type of Ice:** ☐ Wet ☐ Blue ☑ None

Cooler Temp (°C): 17.4 **Correction Factor: Add/Subtract (°C)** -0.1

Cooler Temp Corrected (°C): 17.3

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☐ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: P/WT	☑ Yes	☐ No	☐ N/A	9.
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: TC **Date:** 11/27/18

Project Manager SRF Review: TC **Date:** 11/27/18

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # **WO#: 92408471**

PM: RWC Due Date: 12/21/18

CLIENT: 92-SCDHEC

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A – lab)	SPZT-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1												—																	
2												—																	
3												—																	
4												—																	
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

1885315

Section A
Required Client Information:

Company: SC DHEC
Address: 2600 Bull Street
Columbia, SC 29201
Email To: dunnra@dhec.sc.gov
Phone: 898-0671 Fax:
Requested Due Date/TAT:

Section B
Required Project Information:

Report To: Robert Dunn
Copy To:
Purchase Order No.: 4600671671
Project Name: Broad River Amoco
Project Number: CA# 58456

Section C
Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: Trey Carter
Pace Profile #: 849-4

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER

Site Location STATE: SC

Section D
Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	ASTM D3328	EPA 1624 mod.	ASTM 2887	EPA 8260 Mod GC/MS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92408471
1	Sewer	P/WT				11/20/18	1200		1	1									1	1	1	1		250mL Jar 001
2	Ditch 1	P/WT				11/20/18	1215		1	1									1	1	1	1		002
3	Ditch 2	P/WT				11/20/18	1945		1	1									1	1	1	1		003
4	MW5	P				11/20/18	1715		1	1									1	1	1	1		004
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
unpreserved 250 mL jars, no vials	Tiffany M. Dillmon			[illegible] / Pace	11-20-18	530				
	[illegible] / Pace	11-20-18	1441	[illegible]	11-20-18	1441	17.3	N	N	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Cone White
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/20/18

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

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

December 19, 2018

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave
Suite 100
Huntersville, NC 28078

RE: Broad River Amoco 58456
Project Number: 92408471

Pace Analytical received four samples on November 28, 2018 for analysis labeled Sewer, Ditch1, Ditch2, and MWS. Per client request, the following analysis was performed:

1. **(C3-C36) Whole-Oil Molecular Characterization Gas Chromatography "Fingerprint" by GC/FID**
2. **Oxygenated Gasoline Blending Agents by GC/MS - SIM mode**
3. **Simulated Distillation**

The sample analysis was performed in house under laboratory number **28837**.

Please call the lab at 412-826-5245, or you may email any questions or concerns to Ruth Welsh@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Ruth Welsh

Ruth Welsh
Customer Service

Pace Analytical®
Energy Services™

(C3-C36) Whole-Oil Molecular Characterization
Gas Chromatography "Fingerprint"
by GC/FID

Includes Semi-quantitative screening of over 90 gasoline range PIANO compounds

Pace ID	28837-1
Sample ID	SEWER
Evaporation	
n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.01
Waterwashing	
Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	2.34
Aromatics / Total Paraffins (n+iso+cyc)	3.75
Aromatics / Naphthenes	33.74
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	1092.08
3-Methylhexane / n-Heptane	0.10
Methylcyclohexane / n-Heptane	0.14
Isoparaffins + Naphthenes / Paraffins	1.98
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	1.38
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	7.00
% Isoparaffinic	11.52
% Aromatic	78.16
% Naphthenic	2.32
% Olefinic	1.01

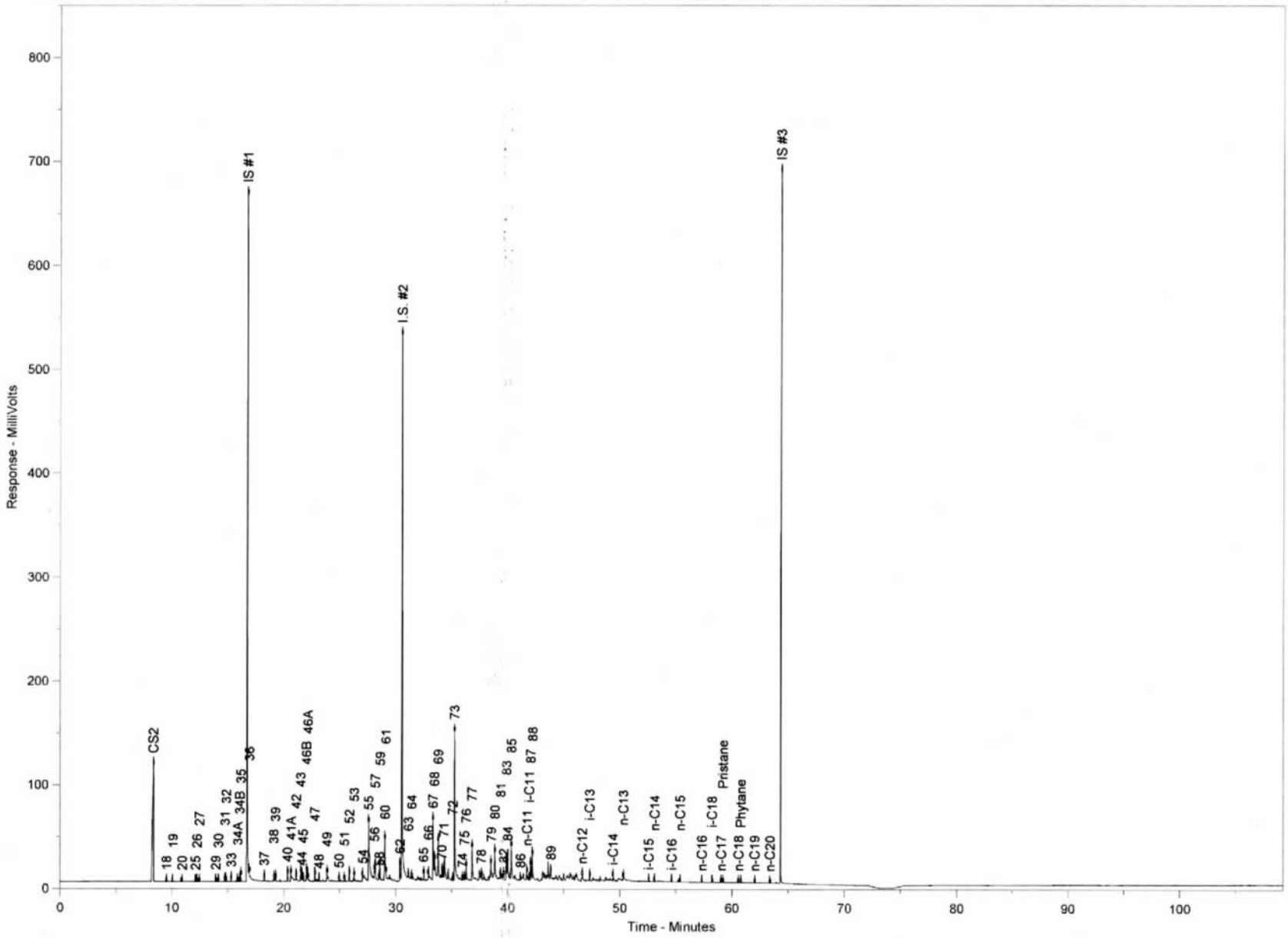
Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
1	Propane	0.00
2	Isobutane	0 00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0 00
18	2-Methylpentane	0.01
19	3-Methylpentane	0.01
20	Hexane	0 01
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.02
27	2,4-Dimethylpentane	0.02
28	Benzene	0.00
29	5-Methyl-1-hexene	0.01
30	Cyclohexane	0.03
31	2-Methylhexane/TAME	0.17
32	2,3-Dimethylpentane	0 11
33	3-Methylhexane	0.27
34A	1-trans-3-Dimethylcyclopentane	0.04
34B	1-cis-3-Dimethylcyclopentane	0.05
35	2,2,4-Trimethylpentane	0.55
I.S. #1	α,α,α-Trifluorotoluene	0.00

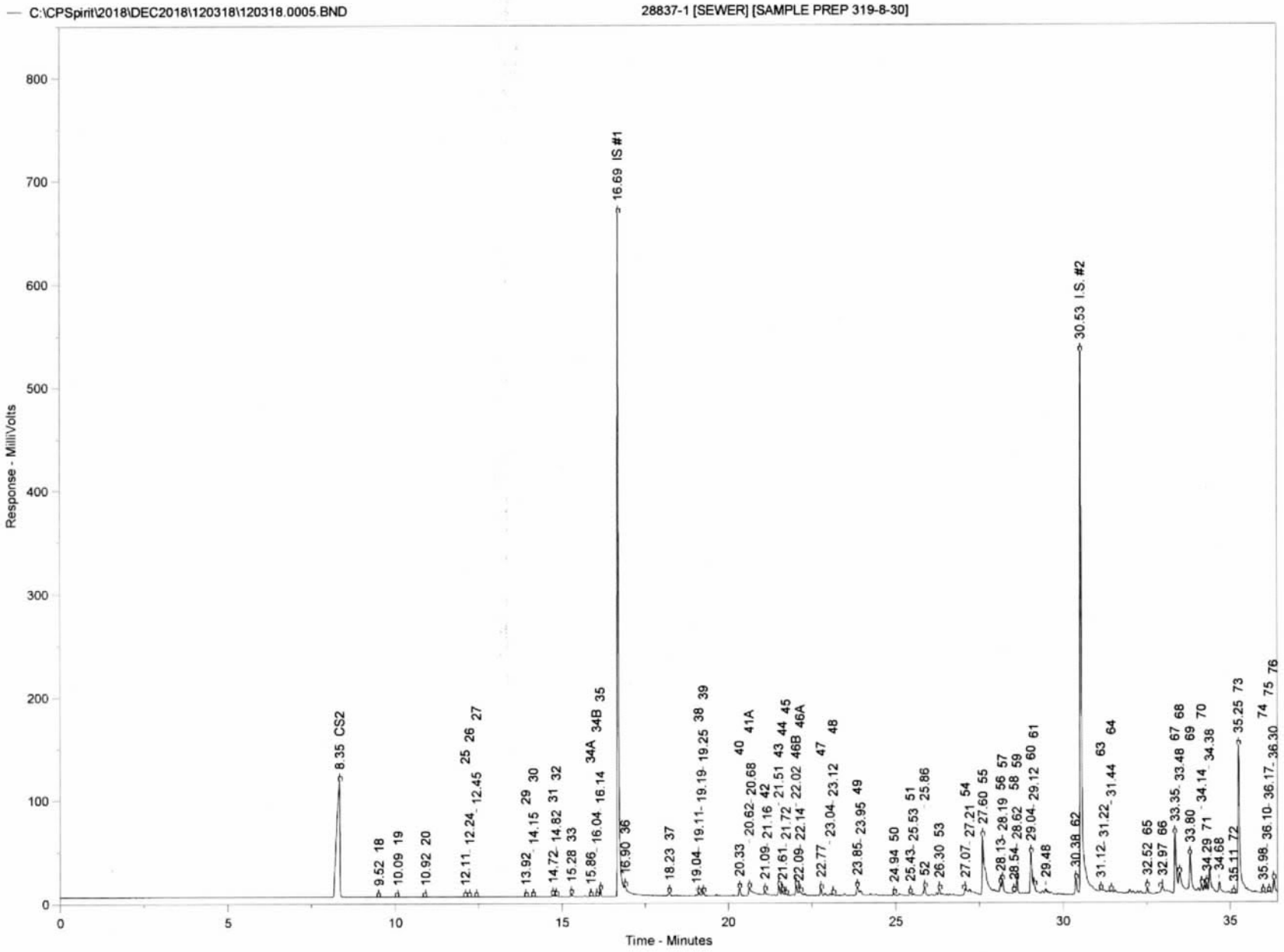
Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
36	n-Heptane	2.74
37	Methylcyclohexane	0.39
38	2,5-Dimethylhexane	0.28
39	2,4-Dimethylhexane	0 35
40	2,3,4-Trimethylpentane	0 76
41	Toluene/2,3,3-Trimethylpentane	0.92
42	2,3-Dimethylhexane	0 54
43	2-Methylheptane	0.88
44	4-Methylheptane	0 41
45	3,4-Dimethylhexane	0.19
46A	3-Ethyl-3-methylpentane	0.36
46B	1,4-Dimethylcyclohexane	0.89
47	3-Methylheptane	0.56
48	2,2,5-Trimethylhexane	0.13
49	n-Octane	1.04
50	2,2-Dimethylheptane	0.16
51	2,4-Dimethylheptane	0.23
52	Ethylcyclohexane	0.90
53	2,6-Dimethylheptane	0.44
54	Ethylbenzene	0.76
55	m+p Xylenes	10 14
56	4-Methyloctane	0.78
57	2-Methyloctane	1.08
58	3-Ethylheptane	0.19
59	3-Methyloctane	1.37
60	o-Xylene	4.44
61	1-Nonene	0 87
62	n-Nonane	1.71
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.28
64	3,3,5-Trimethylheptane	0.15
65	2,4,5-Trimethylheptane	0.53
66	n-Propylbenzene	0.64
67	1-Methyl-3-ethylbenzene	6.83
68	1-Methyl-4-ethylbenzene	4.33
69	1,3,5-Trimethylbenzene	5.40
70	3,3,4-Trimethylheptane	0.92

Pace ID		28837-1
Sample ID		SEWER
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.92
72	3-Methylnonane	0.11
73	1,2,4-Trimethylbenzene	15.38
74	Isobutylbenzene	0 13
75	sec-Butylbenzene	0.19
76	n-Decane	1.51
77	1,2,3-Trimethylbenzene	4.22
78	Indan	0.53
79	1,3-Diethylbenzene	2.54
80	1,4-Diethylbenzene	2.66
81	n-Butylbenzene	0.50
82	1,3-Dimethyl-5-ethylbenzene	0.53
83	1,4-Dimethyl-2-ethylbenzene	2 40
84	1,3-Dimethyl-4-ethylbenzene	3.16
85	1,2-Dimethyl-4-ethylbenzene	5.25
86	Undecene	0.12
87	1,2,4,5-Tetramethylbenzene	1.92
88	1,2,3,5-Tetramethylbenzene	2.99
89	1,2,3,4-Tetramethylbenzene	1.12
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0 00
92	1-Methyl-naphthalene	0 00
I.S.#3	5α-Androstane	0.00

C:\CPSpirit\2018\DEC2018\120318\120318.0005.BND

28837-1 [SEWER] [SAMPLE PREP 319-8-30]

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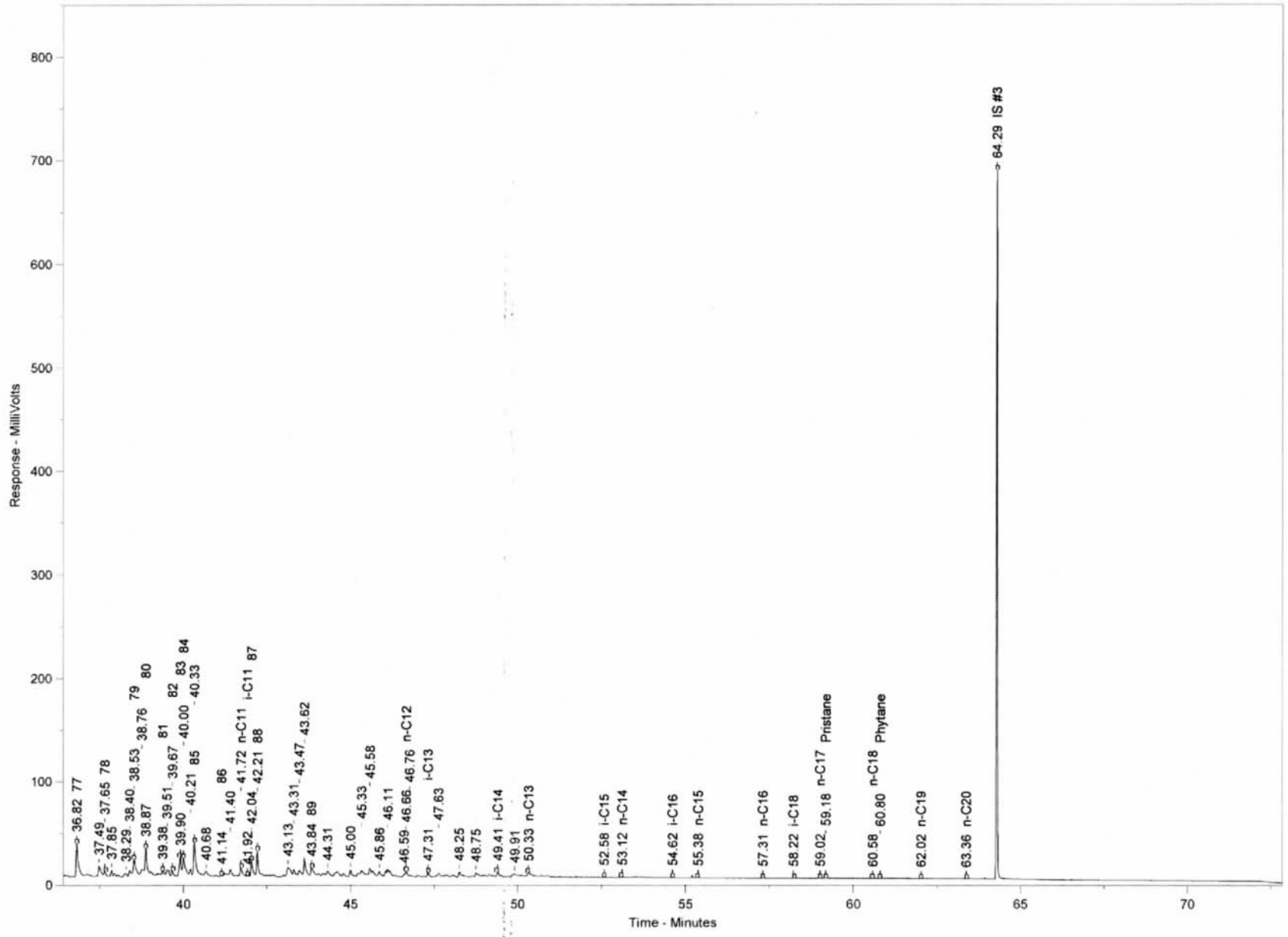
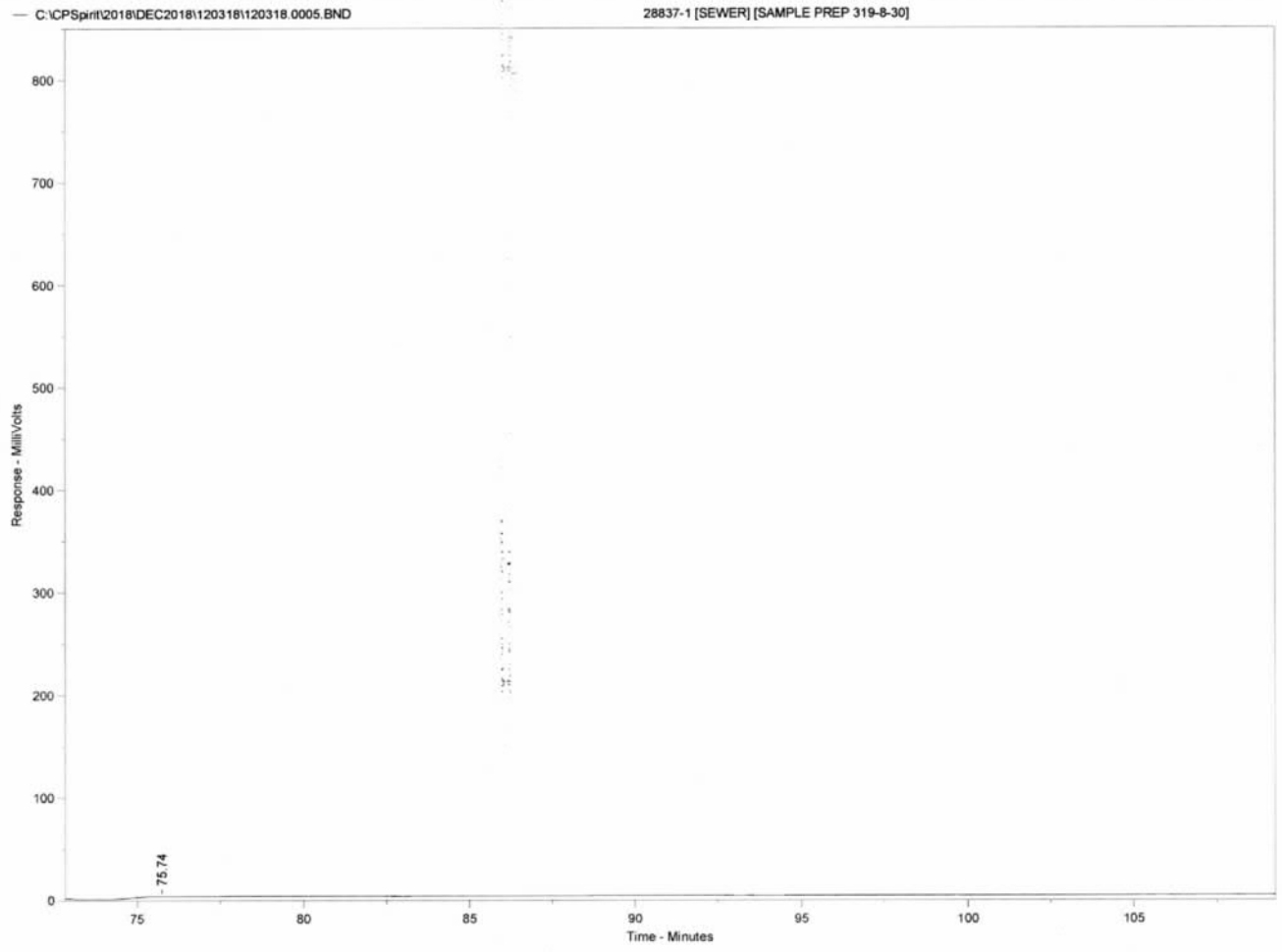
28837-1 [SEWER] [SAMPLE PREP 319-8-30]
Response - MilliVolts
Time - Minutes
8.35 CS2
16.69 IS #1
30.53 I.S. #2

C:\CPSpirit\2018\DEC2018\120318\120318.0005.BND

28837-1 [SEWER] [SAMPLE PREP 319-8-30]



Chrom Perfect Chromatogram Report



Sample Name = **28837-1 [SEWER] [SAMPLE PREP 319-8-30]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2018\DEC2018\120318\120318.0005.RAW**
Method File Name = C \CPSpirit\C344 met
Calibration File Name = C.\CPSpirit\2018\DEC2018\120318\120318 0005 BND

Date Taken (end) = 12/4/2018 1 54 50 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
CS2	8 35	7.4488	763682 40
18	9.52	0.0017	177 75
19	10 09	0 0020	208.35
20	10.92	0 0026	268.37
25	12 11	0.0014	139.32
26	12 24	0 0068	699 31
27	12 45	0.0057	589 09
29	13.92	0.0031	316 30
30	14.15	0 0092	946 88
31	14.72	0 0548	5621.02
32	14 82	0 0341	3498 74
33	15 28	0 0852	8736 24
34A	15 86	0.0132	1352 27
34B	16 04	0.0145	1481 84
35	16.14	0 1726	17698 50
IS #1	16.69	18.0985	1855530 00
36	16 90	0 8672	88905.10
37	18 23	0 1247	12780.26
	19 04	0 0284	2912 86
38	19 11	0.0899	9220 52
	19 19	0.0182	1863 95
39	19.25	0 1116	11439 02
40	20 33	0 2392	24525 71
41A	20 62	0 2913	29870.33
	20 68	0 3947	40469.67
42	21 09	0 1698	17411.63
	21 16	0.0433	4442 38
43	21 51	0.2788	28583 18
44	21 61	0 1286	13181 04
45	21 72	0 0596	6107 95
46B	22 02	0 2814	28845.99
	22 09	0 0784	8034.40
46A	22.14	0.1133	11613.83
47	22.77	0.1784	18286 51
	23 04	0.0457	4680 65
48	23 12	0 0415	4255 21
49	23 85	0 3280	33631 71
	23 95	0 1581	16207 61
50	24.94	0 0504	5164.73
51	25.43	0 0732	7508.23
	25.53	0 0506	5190.87
52	25 86	0 2838	29092.03
53	26 30	0.1403	14385 19
54	27 07	0 2406	24666 08
	27 21	0 5844	59916.31
55	27.60	3 2096	329061 60
56	28.13	0 2464	25261 60
57	28.19	0.3406	34916.99
58	28 54	0.0595	6103.62
59	28 62	0.4344	44539 49
60	29 04	1.4063	144180 50
61	29 12	0 2750	28198 03
	29.48	0 1003	10282 59
62	30.38	0 5403	55390 56
I S. #2	30 53	17 0677	1749856 00
63	31 12	0.0879	9008.47
	31 22	0 0551	5647.15
64	31 44	0.0462	4736 05

Peak Name	Ret. Time	Area %	Area
65	32.52	0.1666	17076.99
66	32.97	0 2037	20879.37
67	33.35	2 1615	221608.60
68	33.48	1 3725	140713.30
69	33 80	1 7089	175202 40
70	34 14	0 2899	29722 58
71	34 29	0 2902	29750 98
	34 38	1 0933	112088 60
	34 68	0 4012	41133 15
72	35 11	0.0343	3519 17
73	35 25	4.8711	499407.30
74	35 98	0 0412	4223 84
	36.10	0 0205	2097 65
75	36.17	0 0615	6302 23
76	36.30	0 4778	48981 07
77	36.82	1.3348	136845 50
	37 49	0 4993	51190 63
78	37 65	0 1672	17139 78
	37 85	0 1214	12442 20
	38 29	0.1654	16955 43
	38 40	0.2145	21994.46
79	38 53	0.8050	82530.37
	38 76	0 2192	22476.23
80	38.87	0.8408	86201.41
81	39.38	0 1568	16076 24
	39.51	0 2950	30243 20
82	39.67	0 1666	17083 81
83	39 90	0 7589	77805 90
84	40 00	1 0018	102704 60
	40 21	0 2547	26108 38
85	40 33	1 6617	170363 80
	40 68	0 3038	31147.05
86	41 14	0.0394	4039.52
	41 40	0.4991	51167 30
n-C11	41.72	0.3267	33493 39
i-C11	41.92	0.0178	1820 63
87	42.04	0 6087	62404 43
88	42.21	0 9464	97027 64
	43.13	0 5965	61154 64
	43.31	0 2652	27192 70
	43 47	0 2532	25962 14
	43 62	0 6779	69502.20
89	43 84	0.3550	36396.87
	44 31	0.1982	20318.13
	45 00	0 2751	28207 60
	45 33	0 3591	36816.57
	45 58	0 1375	14100 88
	45 86	0 1384	14186 23
	46 11	0 1873	19207 30
	46 59	0 0803	8227 64
n-C12	46.66	0 2327	23857 91
	46.76	0.0757	7758 97
i-C13	47.31	0 1658	16995 17
	47.63	0 1522	15604.84
	48 25	0 2893	29660.80
	48 75	0 1515	15528.86
i-C14	49 41	0 1593	16336.09
	49 91	0 2954	30285 31
n-C13	50 33	0 3187	32674 13
i-C15	52 58	0.0161	1651 07
n-C14	53 12	0.0323	3311 86
i-C16	54 62	0 0122	1255 68
n-C15	55 38	0.0157	1611 12
n-C16	57 31	0.0096	983 93
i-C18	58 22	0.0068	693.80
n-C17	59 02	0 0087	887.89
Pristane	59 18	0.0075	767.50
n-C18	60.58	0 0073	744.19
Phytane	60.80	0 0066	672 02
n-C19	62.02	0 0068	697 53

Peak Name	Ret Time	Area %	Area
n-C20	63 36	0 0036	371.38
IS #3	64 29	13.2864	1362179 00
	75 74	1 3005	133331 00

Total Area = 1.025242E+07 Total Height = 3018795 Total Amount = 0 7545941

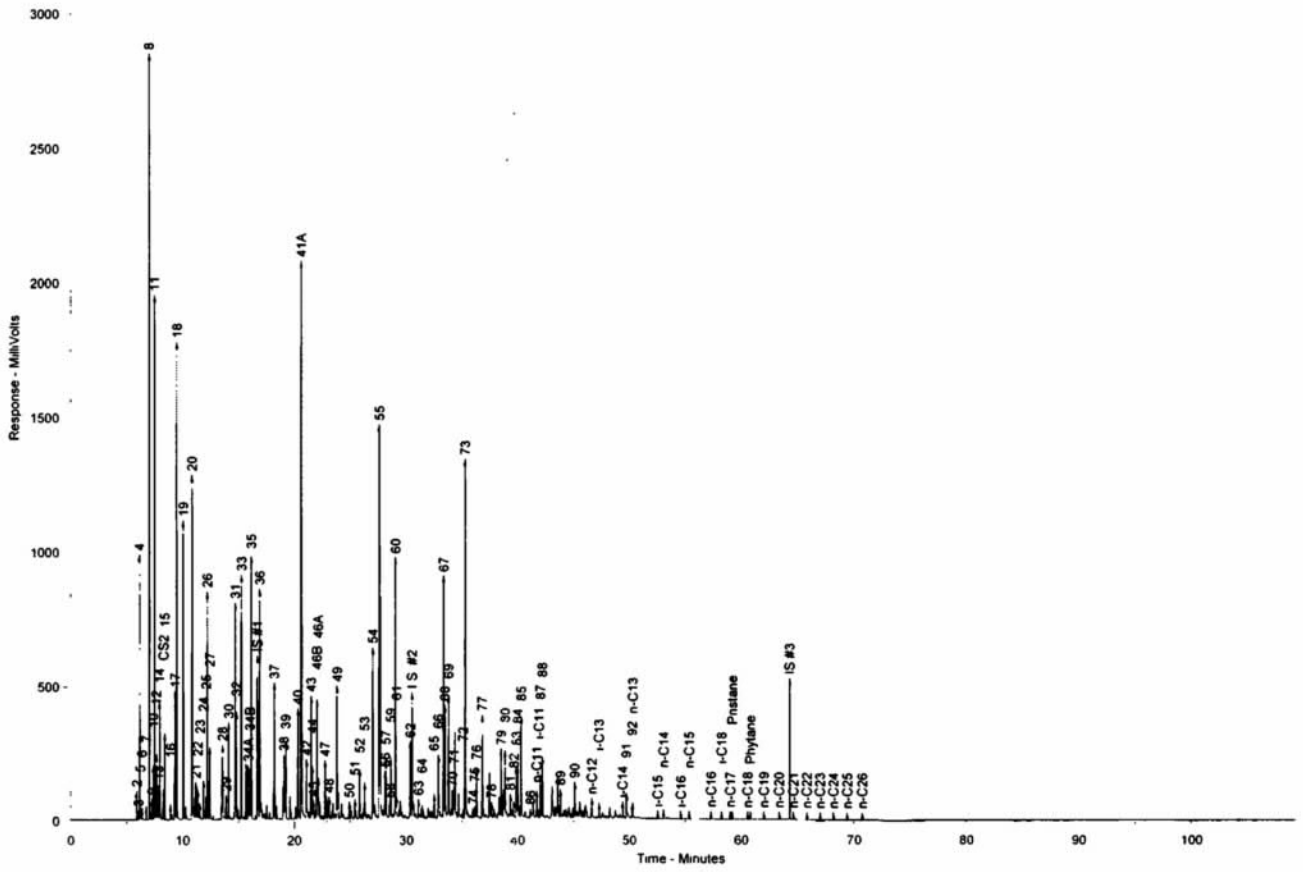
Pace ID	28837-2
Sample ID	DITCH 1
Evaporation	
n-Pentane / n-Heptane	1.43
2-Methylpentane / 2-Methylheptane	3.04
Waterwashing	
Benzene / Cyclohexane	0.99
Toluene / Methylcyclohexane	6.01
Aromatics / Total Paraffins (n+iso+cyc)	0.82
Aromatics / Naphthenes	5.85
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	11.48
3-Methylhexane / n-Heptane	1.03
Methylcyclohexane / n-Heptane	0.58
Isoparaffins + Naphthenes / Paraffins	3.02
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	2.01
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	13.12
% Isoparaffinic	32 23
% Aromatic	43.20
% Naphthenic	7.39
% Olefinic	4.07

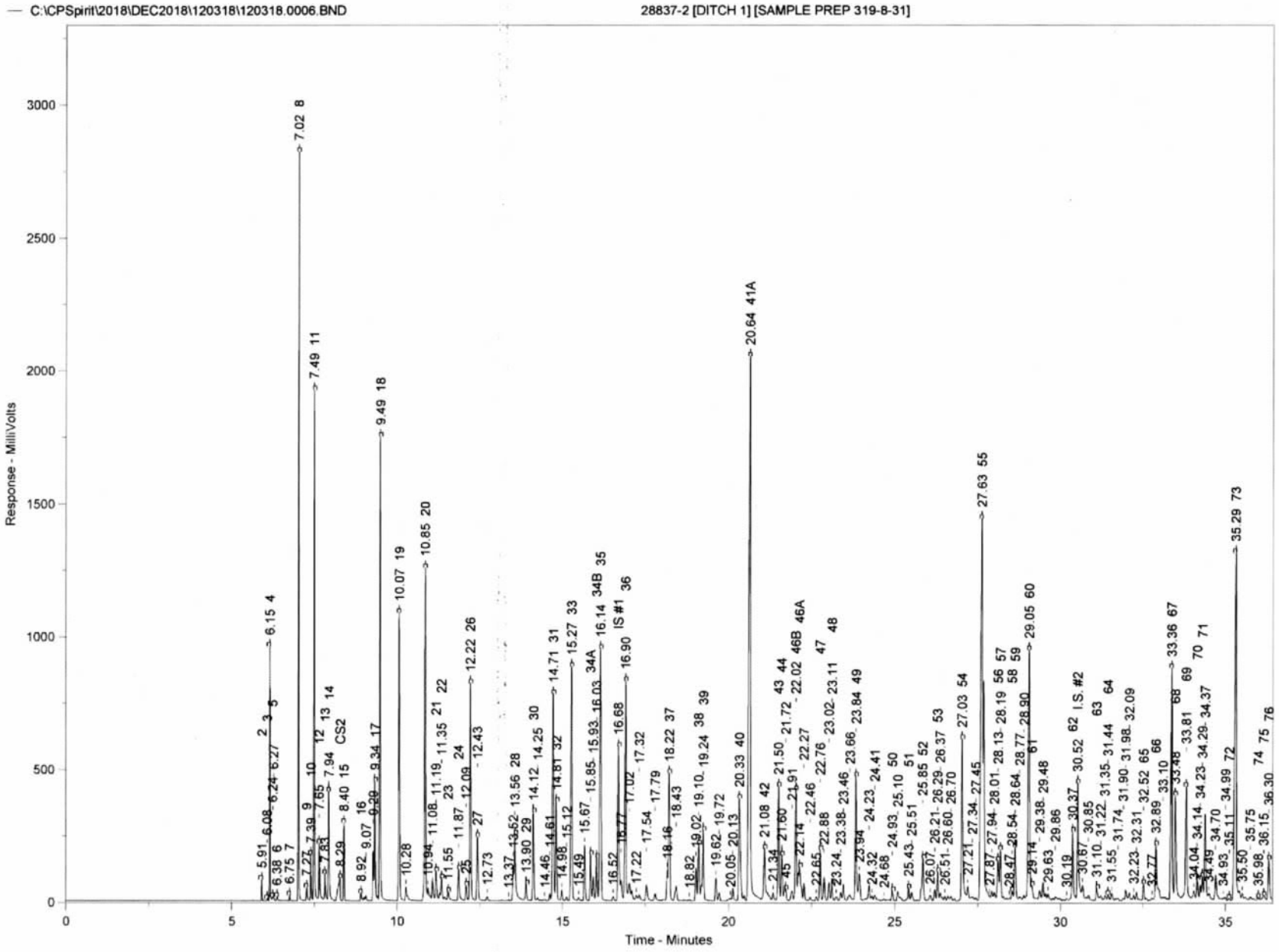
Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
1	Propane	0.00
2	Isobutane	0.11
3	Isobutene	0.01
4	Butane/Methanol	1.36
5	trans-2-Butene	0.02
6	cis-2-Butene	0.03
7	3-Methyl-1-butene	0.04
8	Isopentane	4.58
9	1-Pentene	0.12
10	2-Methyl-1-butene	0.33
11	Pentane	3.47
12	trans-2-Pentene	0.52
13	cis-2-Pentene/t-Butanol	0.27
14	2-Methyl-2-butene	0.96
15	2,2-Dimethylbutane	0.52
16	Cyclopentane	0.08
17	2,3-Dimethylbutane/MTBE	1.07
18	2-Methylpentane	3 94
19	3-Methylpentane	2.50
20	Hexane	3.04
21	trans-2-Hexene	0.33
22	3-Methylcyclopentene	0.32
23	3-Methyl-2-pentene	0.16
24	cis-2-Hexene	0 37
25	3-Methyl-trans-2-pentene	0.16
26	Methylcyclopentane	2.11
27	2,4-Dimethylpentane	0.72
28	Benzene	0.91
29	5-Methyl-1-hexene	0.21
30	Cyclohexane	0.92
31	2-Methylhexane/TAME	2.24
32	2,3-Dimethylpentane	1.04
33	3-Methylhexane	2.51
34A	1-trans-3-Dimethylcyclopentane	0.50
34B	1-cis-3-Dimethylcyclopentane	0.49
35	2,2,4-Trimethylpentane	2.86
I.S. #1	α,α,α-Trifluorotoluene	0.00

Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
36	n-Heptane	2.43
37	Methylcyclohexane	1 42
38	2,5-Dimethylhexane	0.62
39	2,4-Dimethylhexane	0.92
40	2,3,4-Trimethylpentane	1.49
41	Toluene/2,3,3-Trimethylpentane	8.55
42	2,3-Dimethylhexane	0.68
43	2-Methylheptane	1.30
44	4-Methylheptane	0.51
45	3,4-Dimethylhexane	0.24
46A	3-Ethyl-3-methylpentane	0.79
46B	1,4-Dimethylcyclohexane	1.24
47	3-Methylheptane	0.58
48	2,2,5-Trimethylhexane	0.18
49	n-Octane	1.45
50	2,2-Dimethylheptane	0.11
51	2,4-Dimethylheptane	0.16
52	Ethylcyclohexane	0.62
53	2,6-Dimethylheptane	0 33
54	Ethylbenzene	2.08
55	m+p Xylenes	8.12
56	4-Methyloctane	0.43
57	2-Methyloctane	0.52
58	3-Ethylheptane	0.10
59	3-Methyloctane	0.66
60	o-Xylene	3.13
61	1-Nonene	0.20
62	n-Nonane	0.87
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.18
64	3,3,5-Trimethylheptane	0.09
65	2,4,5-Trimethylheptane	0.17
66	n-Propylbenzene	0.83
67	1-Methyl-3-ethylbenzene	2 87
68	1-Methyl-4-ethylbenzene	1.31
69	1,3,5-Trimethylbenzene	1 54
70	3,3,4-Trimethylheptane	0.25

Pace ID		28837-2
Sample ID		DITCH 1
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.26
72	3-Methylnonane	0.03
73	1,2,4-Trimethylbenzene	4.93
74	Isobutylbenzene	0.04
75	sec-Butylbenzene	0.09
76	n-Decane	0.49
77	1,2,3-Trimethylbenzene	1.29
78	Indan	0.11
79	1,3-Diethylbenzene	0.88
80	1,4-Diethylbenzene	0.78
81	n-Butylbenzene	0.24
82	1,3-Dimethyl-5-ethylbenzene	0.15
83	1,4-Dimethyl-2-ethylbenzene	0.66
84	1,3-Dimethyl-4-ethylbenzene	0.75
85	1,2-Dimethyl-4-ethylbenzene	1.23
86	Undecene	0.04
87	1,2,4,5-Tetramethylbenzene	0.46
88	1,2,3,5-Tetramethylbenzene	0.61
89	1,2,3,4-Tetramethylbenzene	0.41
90	Naphthalene	0.45
91	2-Methyl-naphthalene	0.26
92	1-Methyl-naphthalene	0.08
I.S.#3	5α-Androstane	0.00

— C:\CPSprnt\2018\DEC2018\120318\120318 0006 BND 28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]

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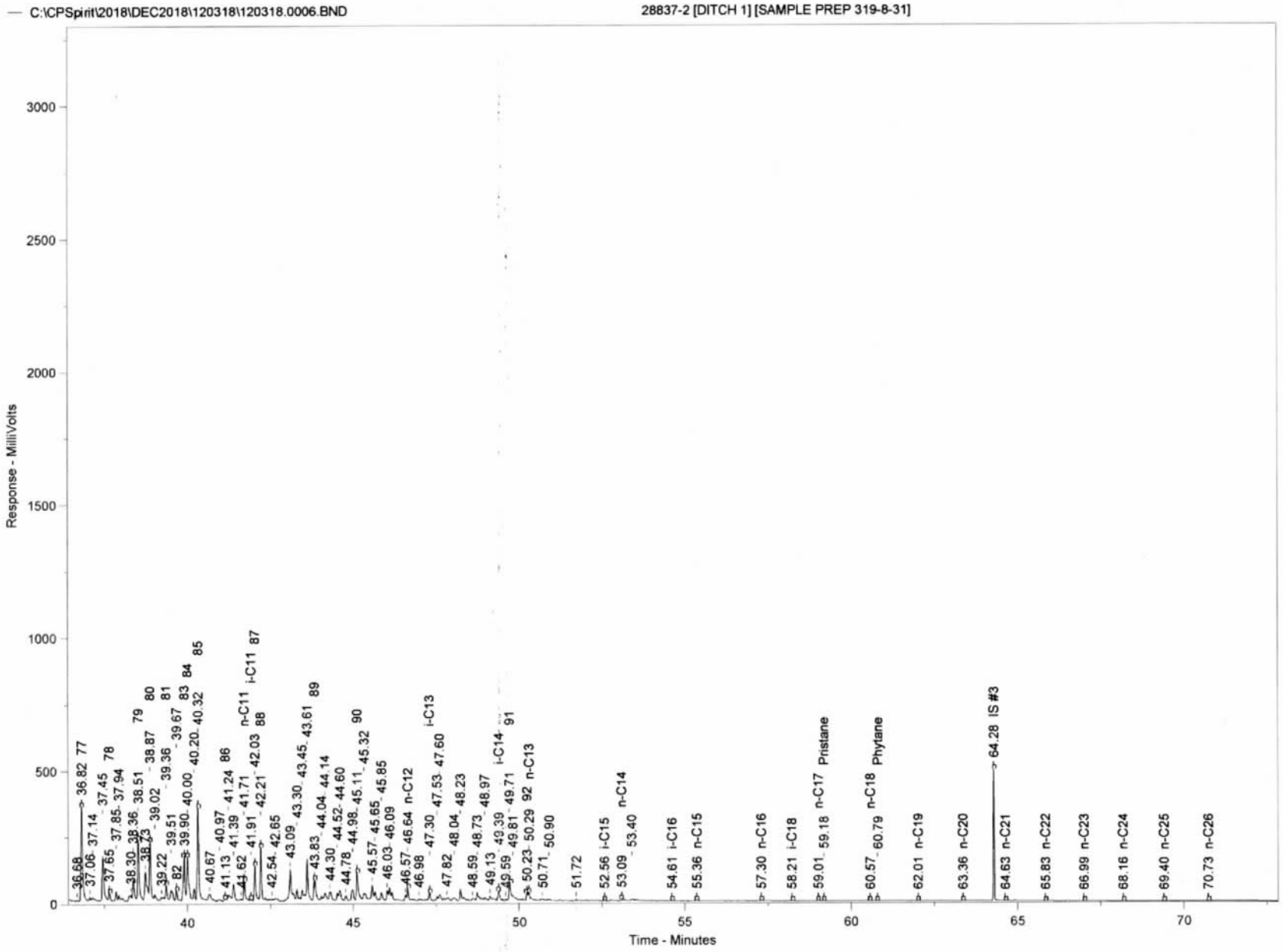
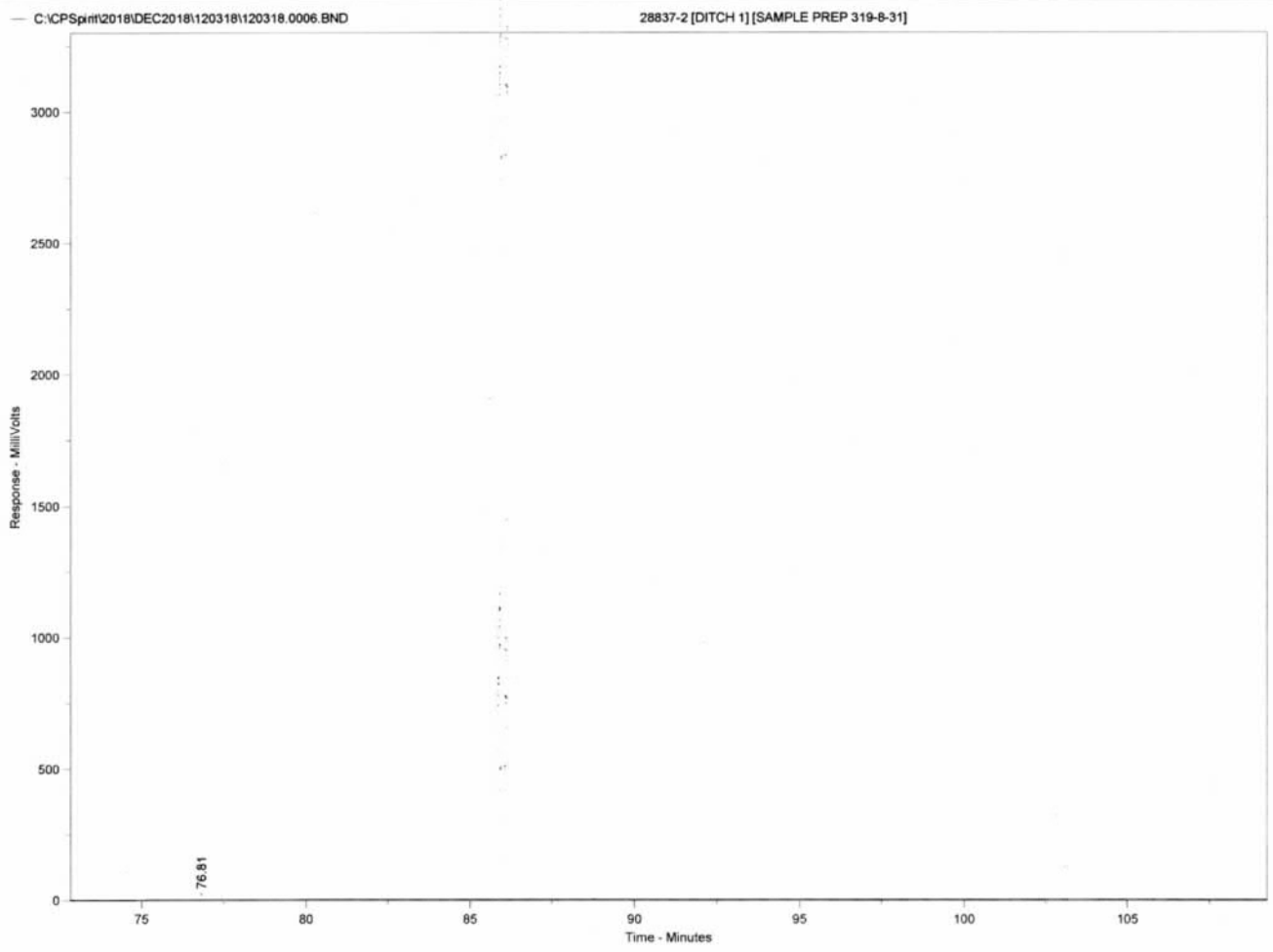
28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]
Response - MilliVolts
Time - Minutes
0
500
1000
1500
2000
2500
3000
0
5
10
15
20
25
30
35
5.91 1
6.08 2
6.24 3
6.27 5
6.15 4
6.38 6
6.75 7
7.02 8
7.23 7.39 9
7.49 11
7.65 10
7.83 12
7.94 13
8.29 14
CS2
8.40 15
8.92 9.07 16
9.34 17
9.49 18
9.28
10.07 19
10.28
10.85 20
10.94 11.08 11.19 11.35 21 22
11.55 23
11.87 24
12.09 25
12.22 26
12.43 27
12.73
13.37 13.62 13.56 28
13.90 29
14.12 14.25 30
14.46 14.61 14.81 32
14.71 31
14.98 15.12
15.27 33
15.49 15.67 15.85 15.93 16.03 34A
16.14 34B 35
IS #1 36
16.52 16.68 16.90
17.02 17.32
17.22 17.54 17.79
18.16 18.43 18.22 37
18.82 19.02 19.10 19.24 38 39
19.62 19.72
20.05 20.13 20.33 40
20.64 41A
21.08 42
21.34 21.50 21.72 43 44
21.60 21.91
22.02 46B 46A
22.14 22.46 22.27
22.65 22.88 22.76 23.02 23.11 47 48
23.24 23.38 23.46 23.66 23.84 49
23.94 24.23 24.41
24.32 24.68
24.93 25.10 50
25.43 25.51 51
25.85 52
26.07 26.21 26.29 26.37 53
26.51 26.60 26.70
27.03 54
27.21 27.34 27.45
27.63 55
27.87 27.94 28.01 28.13 28.19 56 57
28.47 28.54 28.64 28.77 28.90 58 59
29.05 60
29.14 29.38 29.48 61
29.63 29.86
30.19
30.37 30.52 62 I.S. #2
30.67 30.85
31.10 31.22 31.35 31.44 63 64
31.55 31.74 31.90 31.98 32.09
32.23 32.31 32.52 65
32.77
32.89 33.10 66
33.36 67
33.48 68
33.81 69
34.04 34.14 34.23 34.29 34.37 70 71
34.49 34.70
34.93 35.11 34.99 72
35.29 73
35.50 35.75
35.98 36.15 36.30 74 75 76


C:\CPSpirit\2018\DEC2018\120318\120318.0006.BND
28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]
Response - MilliVolts
Time - Minutes
0
500
1000
1500
2000
2500
3000
40
45
50
55
60
65
70
36.68
36.82 77
37.06
37.14
37.45 78
37.65
37.85
37.94
38.30
38.36
38.51
38.73
38.87 79
39.02
39.22
39.36 80
39.51
39.67 81
39.82
39.90
40.00 82
40.20
40.32 83
40.67
40.97 84
41.13
41.24 85
41.39
41.62
41.71 86
41.91
42.03 i-C11 87
42.21
42.54
42.65 88
43.09
43.30
43.45
43.61 89
43.83
44.04
44.14
44.30
44.52
44.60
44.78
44.98
45.11
45.32 90
45.57
45.65
45.85
46.03
46.09
46.57
46.64 n-C12
46.98
47.30
47.53
47.60 i-C13
47.82
48.04
48.23
48.59
48.73
48.97 i-C14 91
49.13
49.39
49.59
49.71
49.81 92 n-C13
50.23
50.29
50.71
50.90
51.72
52.56 i-C15
53.09
53.40 n-C14
54.61 i-C16
55.36 n-C15
57.30 n-C16
58.21 i-C18
59.01
59.18 n-C17 Pristane
60.57
60.79 n-C18 Phytane
62.01 n-C19
63.36 n-C20
64.28 IS #3
64.63 n-C21
65.83 n-C22
66.99 n-C23
68.16 n-C24
69.40 n-C25
70.73 n-C26

Chrom Perfect Chromatogram Report



Sample Name = **28837-2 [DITCH 1] [SAMPLE PREP 319-8-31]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

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Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\CALIBRATIONS\2018\120418.cal

Date Taken (end) = 12/4/2018 3:57:40 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.91	0.0870	101269.90
3	6.08	0.0112	12994.74
4	6.15	1.0793	1255807.00
5	6.24	0.0120	13942.76
	6.27	0.0108	12543.92
6	6.38	0.0224	26079.95
7	6.75	0.0281	32695.55
8	7.02	3.6307	4224589.00
9	7.27	0.0917	106667.40
10	7.39	0.2625	305382.90
11	7.49	2.7549	3205442.00
12	7.65	0.4153	483254.40
13	7.83	0.2126	247377.20
14	7.94	0.7590	883119.60
CS2	8.29	0.3644	423980.50
15	8.40	0.4135	481174.70
16	8.92	0.0634	73752.78
	9.07	0.0422	49060.48
	9.29	0.3035	353100.90
17	9.34	0.8513	990587.30
18	9.49	3.1257	3636951.00
19	10.07	1.9801	2303985.00
	10.28	0.1690	196679.50
20	10.85	2.4102	2804380.00
	10.94	0.1680	195462.00
	11.08	0.2078	241766.60
21	11.19	0.2620	304910.20
22	11.35	0.2528	294116.50
23	11.55	0.1230	143171.30
24	11.87	0.2922	339994.10
25	12.09	0.1270	147821.00
26	12.22	1.6714	1944803.00
27	12.43	0.5682	661162.50
	12.73	0.0484	56355.88
	13.37	0.0114	13270.03
	13.52	0.2431	282890.70
28	13.56	0.7254	844049.10
29	13.90	0.1651	192090.50
30	14.12	0.7314	851084.60
	14.25	0.0341	39672.07
	14.46	0.0193	22443.60
	14.61	0.0630	73282.25
31	14.71	1.7757	2066113.00
32	14.81	0.8207	954942.70
	14.98	0.0960	111746.20
	15.12	0.0390	45365.73
33	15.27	1.9926	2318477.00
	15.49	0.0389	45278.42
	15.67	0.4703	547183.40
34A	15.85	0.3925	456714.30
	15.93	0.2011	234049.40
34B	16.03	0.3908	454739.80
35	16.14	2.2681	2639024.00
	16.52	0.0455	52895.19
IS #1	16.68	1.3252	1541896.00
	16.77	0.2195	255360.40
36	16.90	1.9291	2244626.00
	17.02	0.3421	398070.50

Peak Name	Ret. Time	Area %	Area
	17.22	0.0640	74413.43
	17.32	0.0814	94693.85
	17.54	0.2023	235383.80
	17.79	0.0982	114276.50
	18.16	0.2486	289285.30
37	18.22	1.1271	1311488.00
	18.43	0.1825	212347.00
	18.82	0.0132	15315.31
	19.02	0.2792	324856.50
38	19.10	0.4946	575453.40
39	19.24	0.7256	844303.10
	19.62	0.1975	229757.30
	19.72	0.0711	82762.77
	20.05	0.0414	48136.18
	20.13	0.1296	150839.50
40	20.33	1.1794	1372308.00
41A	20.64	6.7777	7886288.00
42	21.08	0.5397	627938.00
	21.34	0.0910	105937.00
43	21.50	1.0288	1197118.00
44	21.60	0.4049	471139.20
45	21.72	0.1864	216853.50
	21.91	0.1339	155774.00
46B	22.02	0.9857	1146921.00
46A	22.14	0.6266	729128.60
	22.27	0.1624	188994.40
	22.46	0.0368	42798.15
	22.65	0.0350	40707.35
47	22.76	0.4600	535250.90
	22.88	0.2198	255760.50
	23.02	0.1577	183537.00
48	23.11	0.1397	162590.60
	23.24	0.0516	60066.68
	23.38	0.0737	85807.40
	23.46	0.1604	186678.20
	23.66	0.1117	129933.70
49	23.84	1.1464	1333889.00
	23.94	0.2878	334823.00
	24.23	0.1401	162962.90
	24.32	0.0496	57713.77
	24.41	0.0791	92021.75
	24.68	0.0131	15238.96
50	24.93	0.0853	99199.84
	25.10	0.1401	163006.20
51	25.43	0.1289	149946.90
	25.51	0.0978	113785.20
52	25.85	0.4943	575170.60
	26.07	0.0669	77831.19
	26.21	0.0961	111784.30
53	26.29	0.2655	308924.80
	26.37	0.0901	104849.60
	26.51	0.0366	42530.66
	26.60	0.0483	56162.37
	26.70	0.0393	45737.46
54	27.03	1.6494	1919122.00
	27.21	0.1775	206536.20
	27.34	0.0660	76782.57
	27.45	0.0247	28737.75
55	27.63	6.4405	7493930.00
	27.87	0.0044	5064.76
	27.94	0.0673	78315.09
	28.01	0.0646	75130.21
56	28.13	0.3419	397829.70
57	28.19	0.4106	477794.40
	28.47	0.0130	15130.39
58	28.54	0.0807	93913.63
59	28.64	0.5201	605159.90
	28.77	0.0439	51050.46
	28.90	0.0382	44468.40
60	29.05	2.4827	2888818.00

Peak Name	Ret. Time	Area %	Area
61	29.14	0.1567	182295.30
	29.38	0.1036	120541.40
	29.48	0.1733	201649.40
	29.63	0.0653	75985.88
	29.86	0.0314	36514.72
	30.19	0.0183	21253.30
62	30.37	0.6895	802292.00
I.S. #2	30.52	1.1814	1374594.00
	30.67	0.1839	214002.00
	30.85	0.0653	75943.66
63	31.10	0.1444	168029.20
	31.22	0.0610	70982.24
	31.35	0.0598	69583.33
64	31.44	0.0688	80099.43
	31.55	0.0830	96571.77
	31.74	0.0444	51614.93
	31.90	0.0208	24216.21
	31.98	0.1156	134486.50
	32.09	0.0701	81620.84
	32.23	0.0428	49844.89
	32.31	0.0684	79530.55
65	32.52	0.1334	155223.40
	32.77	0.0166	19340.81
66	32.89	0.6555	762690.60
	33.10	0.0128	14835.98
67	33.36	2.2789	2651652.00
68	33.48	1.0384	1208274.00
69	33.81	1.2214	1421126.00
	34.04	0.1247	145080.60
70	34.14	0.2004	233222.90
	34.23	0.1354	157566.00
71	34.29	0.2078	241779.20
	34.37	0.8271	962437.90
	34.49	0.0991	115360.80
	34.70	0.2977	346450.00
	34.93	0.0287	33393.58
	34.99	0.0260	30305.80
72	35.11	0.0215	24991.06
73	35.29	3.9080	4547212.00
	35.50	0.0435	50579.54
	35.75	0.0210	24385.43
74	35.98	0.0292	33966.93
75	36.15	0.0691	80386.63
76	36.30	0.3895	453183.30
	36.68	0.0115	13387.94
77	36.82	1.0228	1190046.00
	37.06	0.0423	49241.29
	37.14	0.0737	85713.46
	37.45	0.5245	610307.80
78	37.65	0.0857	99755.52
	37.85	0.0708	82432.80
	37.94	0.0398	46355.93
	38.30	0.1061	123485.20
	38.36	0.2405	279837.50
79	38.51	0.6940	807553.00
	38.73	0.4420	514240.60
80	38.87	0.6222	724012.40
	39.02	0.1008	117288.20
	39.22	0.0519	60372.07
81	39.36	0.1940	225725.50
	39.51	0.1989	231443.60
82	39.67	0.1201	139784.40
83	39.90	0.5197	604683.40
84	40.00	0.5925	689406.60
	40.20	0.1295	150627.00
85	40.32	0.9720	1131029.00
	40.67	0.1461	170048.90
	40.97	0.0286	33228.87
86	41.13	0.0299	34832.82
	41.24	0.1184	137799.50

Peak Name	Ret. Time	Area %	Area
	41.39	0.2047	238210.50
	41.62	0.0309	35932.18
n-C11	41.71	0.2288	266248.50
i-C11	41.91	0.0128	14896.38
87	42.03	0.3647	424312.70
88	42.21	0.4831	562077.60
	42.54	0.0078	9018.65
	42.65	0.0081	9388.85
	43.09	0.5149	599117.00
	43.30	0.1141	132813.40
	43.45	0.1264	147088.40
	43.61	0.4745	552067.40
89	43.83	0.3213	373862.50
	44.04	0.0466	54208.21
	44.14	0.1324	154006.50
	44.30	0.1560	181572.50
	44.52	0.0733	85335.72
	44.60	0.1363	158574.60
	44.78	0.0506	58844.71
	44.98	0.1489	173213.90
90	45.11	0.3578	416330.10
	45.32	0.1449	168648.90
	45.57	0.1901	221150.90
	45.65	0.1009	117390.90
	45.85	0.0975	113448.20
	46.03	0.0688	80031.07
	46.09	0.0771	89715.38
	46.57	0.0466	54179.45
n-C12	46.64	0.1151	133962.10
	46.98	0.0368	42825.32
i-C13	47.30	0.0939	109276.50
	47.53	0.0411	47768.15
	47.60	0.0921	107148.50
	47.82	0.0554	64468.53
	48.04	0.0572	66556.55
	48.23	0.0859	99965.87
	48.59	0.0321	37389.91
	48.73	0.1135	132119.90
	48.97	0.0287	33435.29
	49.13	0.0385	44784.11
i-C14	49.39	0.0975	113429.90
	49.59	0.0120	13909.91
91	49.71	0.2048	238282.90
	49.81	0.0760	88377.35
92	50.23	0.0656	76286.83
n-C13	50.29	0.1036	120535.70
	50.71	0.0300	34945.43
	50.90	0.0169	19687.99
	51.72	0.0075	8687.61
i-C15	52.56	0.0064	7399.80
n-C14	53.09	0.0325	37814.59
	53.40	0.0157	18219.38
i-C16	54.61	0.0054	6250.93
n-C15	55.36	0.0073	8505.14
n-C16	57.30	0.0045	5229.84
i-C18	58.21	0.0029	3352.14
n-C17	59.01	0.0039	4529.72
Pristane	59.18	0.0037	4355.40
n-C18	60.57	0.0024	2837.76
Phytane	60.79	0.0019	2258.53
n-C19	62.01	0.0022	2606.63
n-C20	63.36	0.0018	2125.96
IS #3	64.28	0.8267	961887.70
n-C21	64.63	0.0010	1160.93
n-C22	65.83	0.0008	965.74
n-C23	66.99	0.0005	622.36
n-C24	68.16	0.0005	563.57
n-C25	69.40	0.0002	260.99
n-C26	70.73	0.0001	132.70
	76.81	0.1324	154011.30

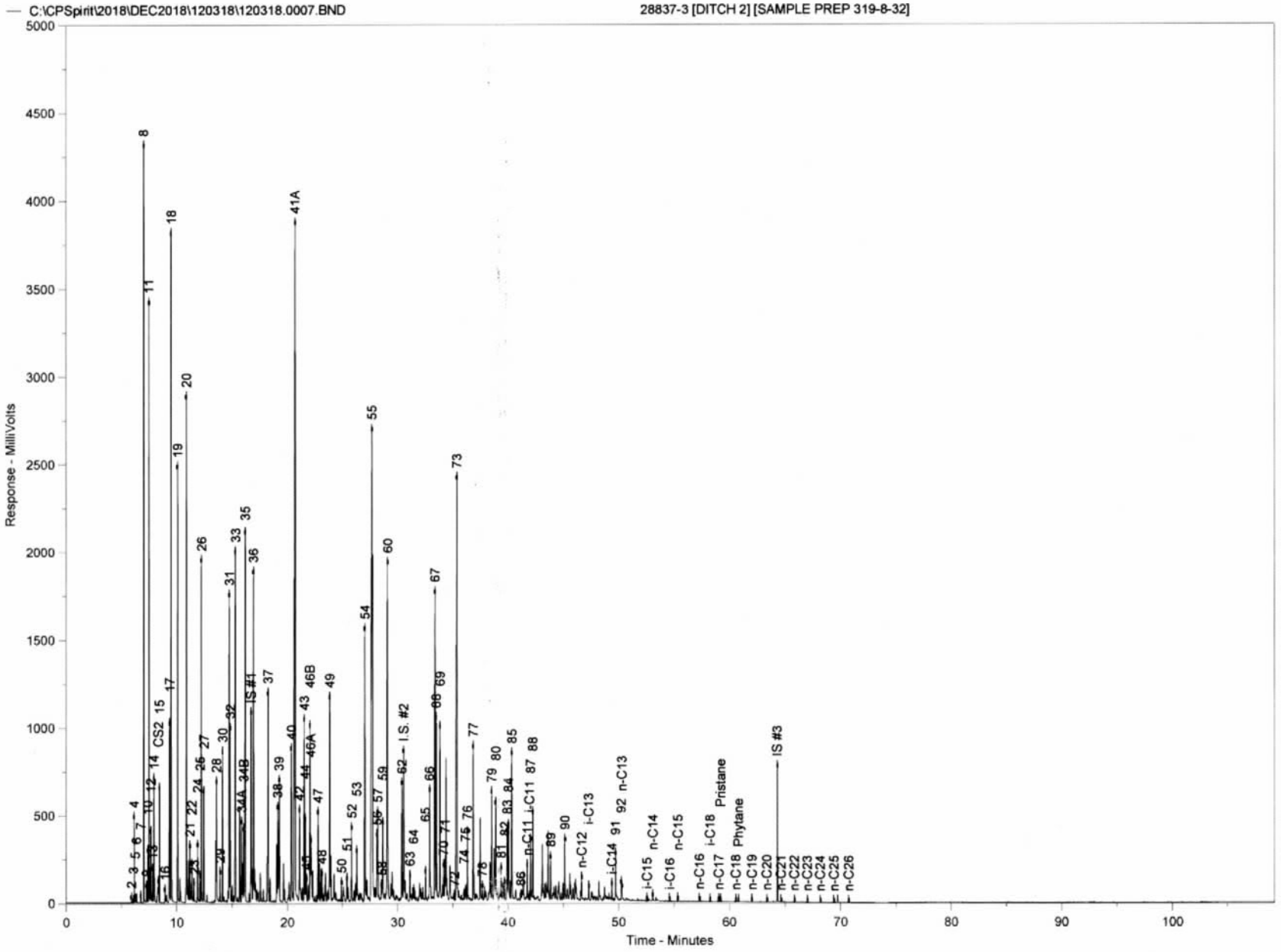
Total Area = 1.163562E+08 Total Height = 4.089352E+07 Total Amount = 0

Pace ID	28837-3
Sample ID	DITCH 2
Evaporation	
n-Pentane / n-Heptane	0.97
2-Methylpentane / 2-Methylheptane	2.63
Waterwashing	
Benzene / Cyclohexane	0.92
Toluene / Methylcyclohexane	6.21
Aromatics / Total Paraffins (n+iso+cyc)	0.91
Aromatics / Naphthenes	6.00
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	13.37
3-Methylhexane / n-Heptane	1.01
Methylcyclohexane / n-Heptane	0.56
Isoparaffins + Naphthenes / Paraffins	3.36
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	2.05
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	11.64
% Isoparaffinic	31.37
% Aromatic	46.14
% Naphthenic	7.69
% Olefinic	3.15

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
1	Propane	0.00
2	Isobutane	0.01
3	Isobutene	0.00
4	Butane/Methanol	0.29
5	trans-2-Butene	0.01
6	cis-2-Butene	0.01
7	3-Methyl-1-butene	0.02
8	Isopentane	2.90
9	1-Pentene	0.08
10	2-Methyl-1-butene	0.22
11	Pentane	2.58
12	trans-2-Pentene	0.38
13	cis-2-Pentene/t-Butanol	0.20
14	2-Methyl-2-butene	0.72
15	2,2-Dimethylbutane	0.46
16	Cyclopentane	0.07
17	2,3-Dimethylbutane/MTBE	0.99
18	2-Methylpentane	3.73
19	3-Methylpentane	2.39
20	Hexane	3.08
21	trans-2-Hexene	0.34
22	3-Methylcyclopentene	0.23
23	3-Methyl-2-pentene	0.15
24	cis-2-Hexene	0.37
25	3-Methyl-trans-2-pentene	0.16
26	Methylcyclopentane	2.10
27	2,4-Dimethylpentane	0.72
28	Benzene	0.88
29	5-Methyl-1-hexene	0.21
30	Cyclohexane	0.95
31	2-Methylhexane/TAME	2.41
32	2,3-Dimethylpentane	1.07
33	3-Methylhexane	2.69
34A	1-trans-3-Dimethylcyclopentane	0.52
34B	1-cis-3-Dimethylcyclopentane	0.52
35	2,2,4-Trimethylpentane	3.05
I.S. #1	α,α,α-Trifluorotoluene	0.00

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
36	n-Heptane	2.66
37	Methylcyclohexane	1.49
38	2,5-Dimethylhexane	0.67
39	2,4-Dimethylhexane	0.98
40	2,3,4-Trimethylpentane	1.62
41	Toluene/2,3,3-Trimethylpentane	9.26
42	2,3-Dimethylhexane	0.72
43	2-Methylheptane	1.42
44	4-Methylheptane	0.55
45	3,4-Dimethylhexane	0.24
46A	3-Ethyl-3-methylpentane	0.83
46B	1,4-Dimethylcyclohexane	1.37
47	3-Methylheptane	0.64
48	2,2,5-Trimethylhexane	0.19
49	n-Octane	1.61
50	2,2-Dimethylheptane	0.13
51	2,4-Dimethylheptane	0.16
52	Ethylcyclohexane	0.69
53	2,6-Dimethylheptane	0.37
54	Ethylbenzene	2.34
55	m+p Xylenes	8.85
56	4-Methyloctane	0.49
57	2-Methyloctane	0.58
58	3-Ethylheptane	0.11
59	3-Methyloctane	0.70
60	o-Xylene	3.52
61	1-Nonene	0.00
62	n-Nonane	0.92
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.20
64	3,3,5-Trimethylheptane	0.08
65	2,4,5-Trimethylheptane	0.17
66	n-Propylbenzene	1.00
67	1-Methyl-3-ethylbenzene	3.04
68	1-Methyl-4-ethylbenzene	1.37
69	1,3,5-Trimethylbenzene	1.59
70	3,3,4-Trimethylheptane	0.26

Pace ID		28837-3
Sample ID		DITCH 2
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.27
72	3-Methylnonane	0.02
73	1,2,4-Trimethylbenzene	5.16
74	Isobutylbenzene	0.04
75	sec-Butylbenzene	0.10
76	n-Decane	0.51
77	1,2,3-Trimethylbenzene	1.32
78	Indan	0.11
79	1,3-Diethylbenzene	0.88
80	1,4-Diethylbenzene	0.75
81	n-Butylbenzene	0.26
82	1,3-Dimethyl-5-ethylbenzene	0.13
83	1,4-Dimethyl-2-ethylbenzene	0.66
84	1,3-Dimethyl-4-ethylbenzene	0.72
85	1,2-Dimethyl-4-ethylbenzene	1.21
86	Undecene	0.04
87	1,2,4,5-Tetramethylbenzene	0.47
88	1,2,3,5-Tetramethylbenzene	0.63
89	1,2,3,4-Tetramethylbenzene	0.41
90	Naphthalene	0.50
91	2-Methyl-naphthalene	0.38
92	1-Methyl-naphthalene	0.11
I.S.#3	5α-Androstane	0.00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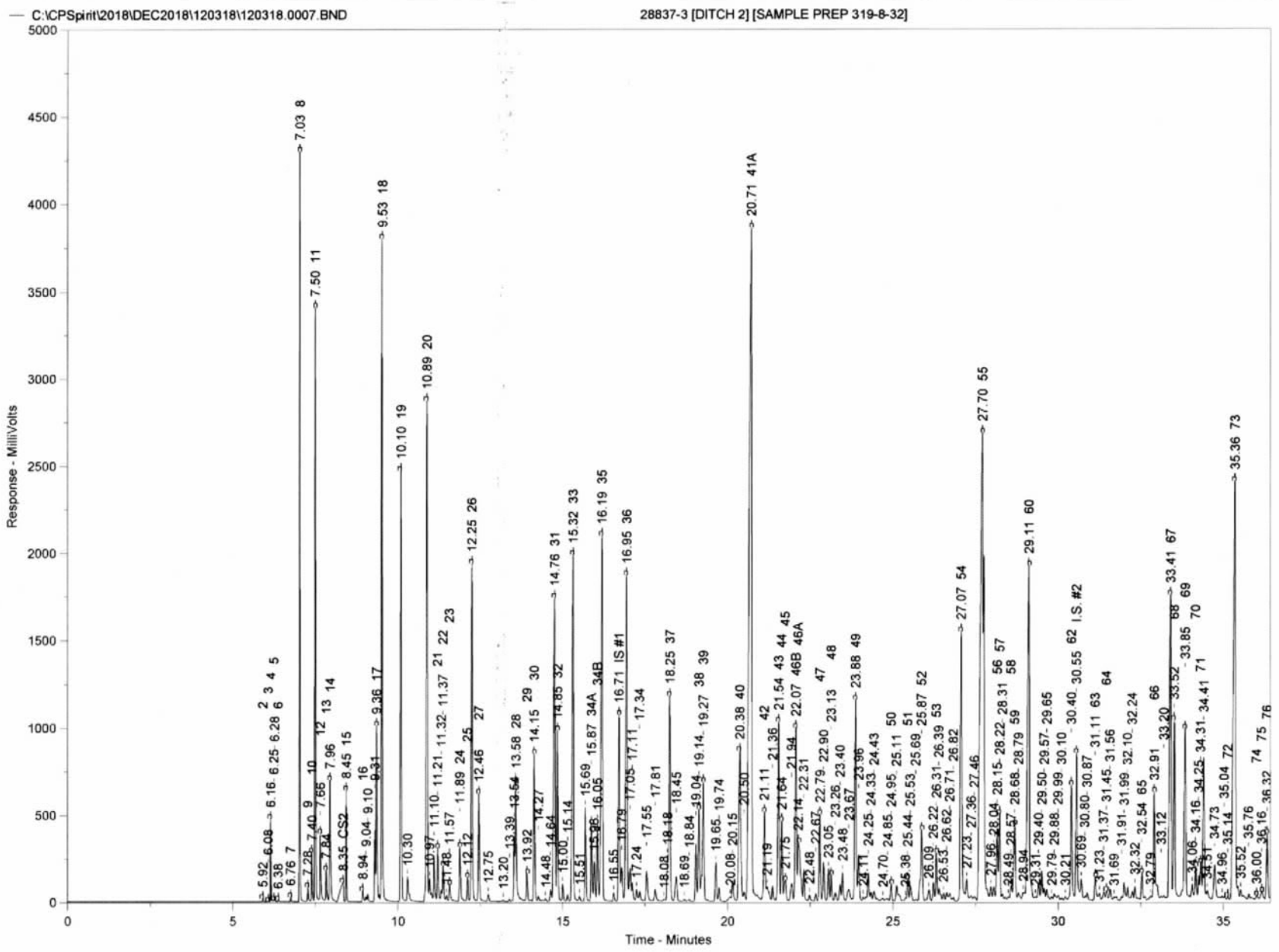
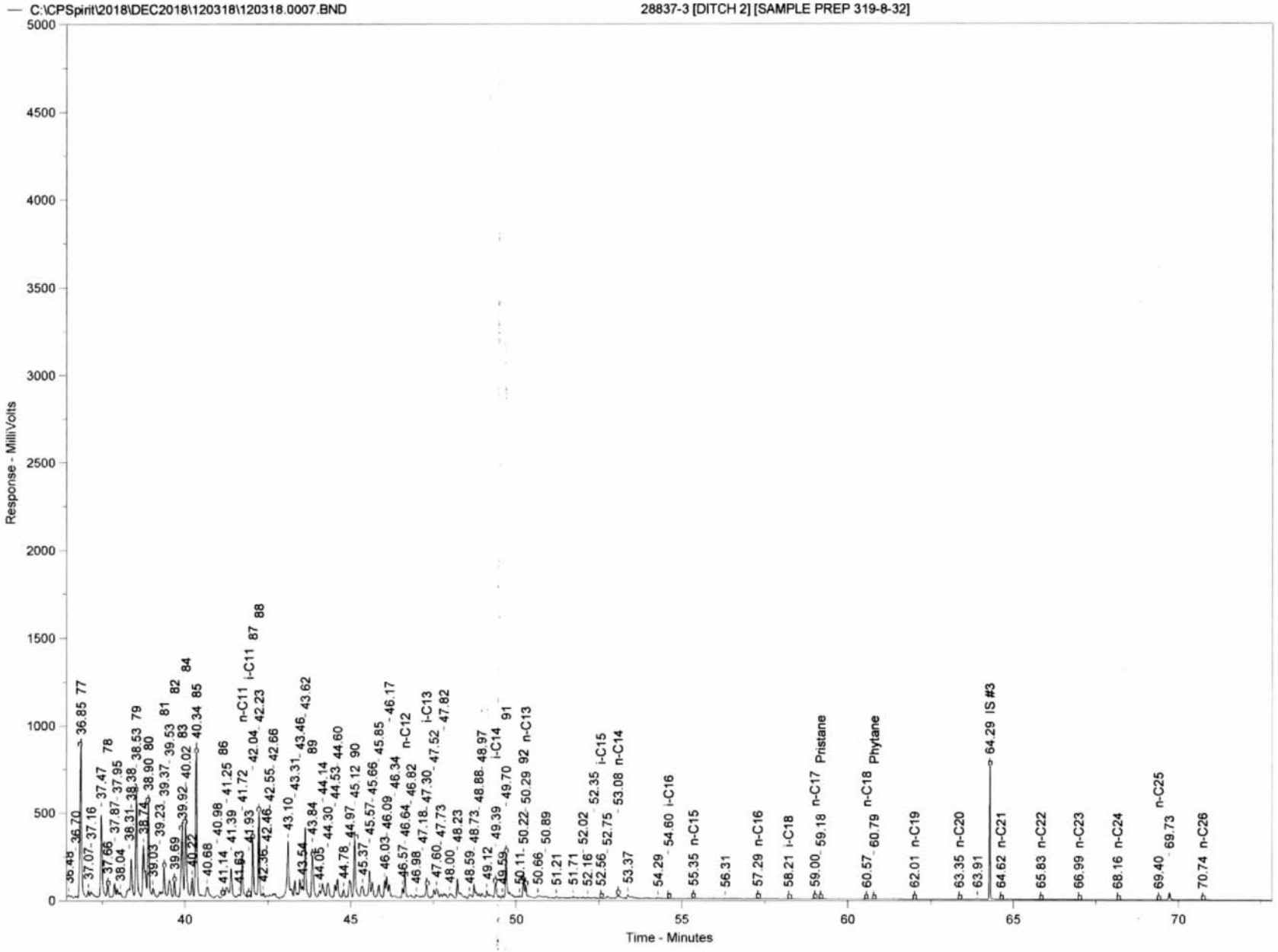
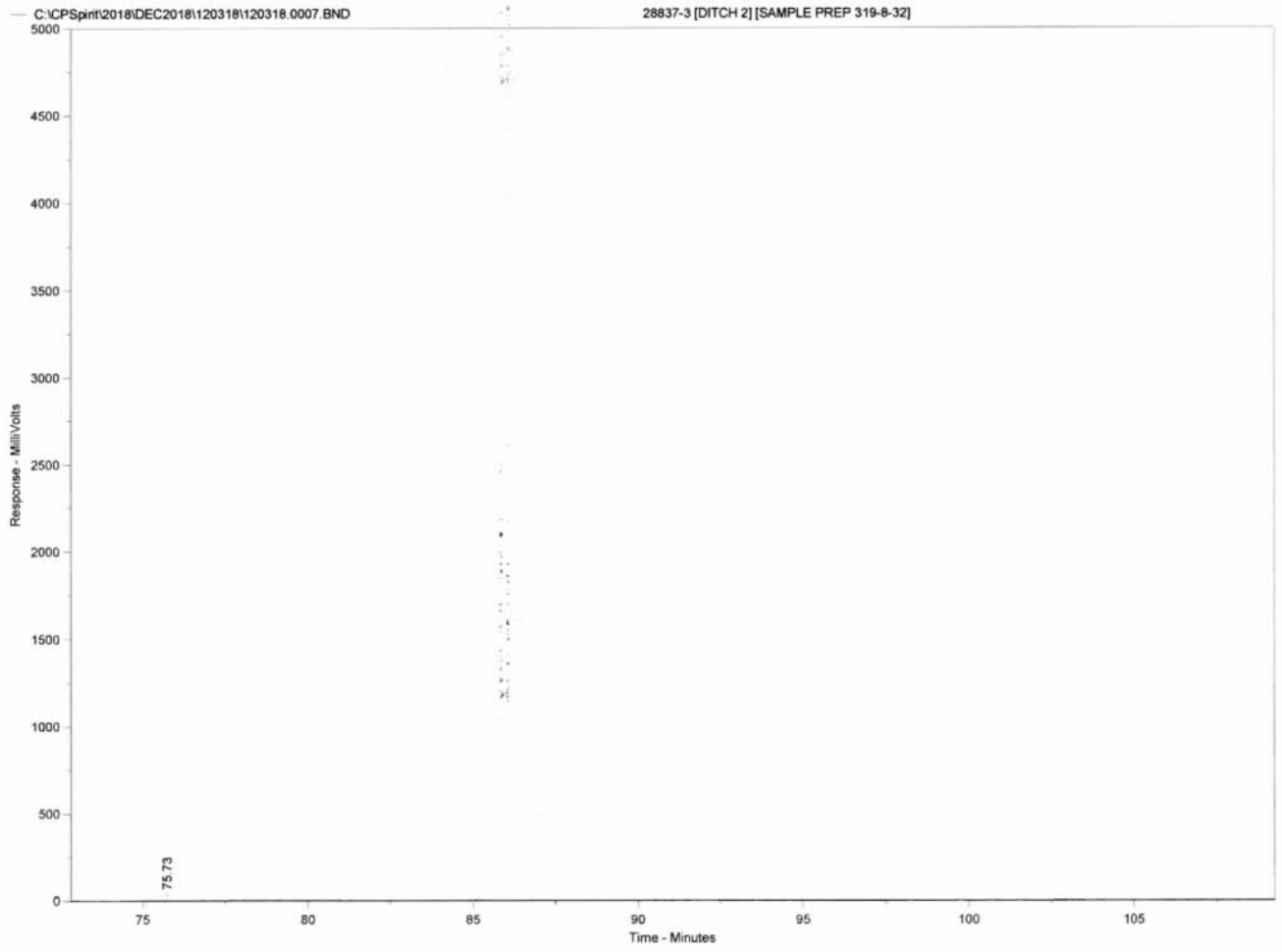
28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]
Response - MilliVolts
Time - Minutes
CS2
I.S. #2
IS #1
IS #3
Pristane
Phytane
n-C11
n-C12
n-C13
n-C14
n-C15
n-C16
n-C17
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
n-C26
i-C13
i-C14
i-C15
i-C16
i-C18

Chrom Perfect Chromatogram Report




C:\CPSpirit\2018\DEC2018\120318\120318.0007.BND
28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]
Response - MilliVolts
Time - Minutes
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
40
45
50
55
60
65
70
36.70 77
37.16
37.47 78
37.87 37.95
38.31 38.38 38.53 79
38.74 38.90 80
39.03 39.23 39.37 39.53 81
39.69 39.92 40.02 83 82
40.22 84
40.34 85
40.68
40.98 41.25 86
41.14 41.39
41.72 n-C11 i-C11 87 88
41.93 42.04 42.23
42.36 42.46 42.55 42.66
43.10 43.31 43.46 43.62 89
43.54 43.84
44.05 44.14 44.30 44.53 44.60
44.78 44.97 45.12 90
45.37 45.57 45.66 45.85
46.03 46.09 46.17 46.34 n-C12
46.57 46.64 46.82
46.98 47.18 47.30 47.52 i-C13 47.82
47.60 47.73
48.00 48.23
48.59 48.73 48.88 48.97
49.12 49.39 i-C14 91
49.59 49.70
50.11 50.22 50.29 92 n-C13
50.66 50.89
51.21
51.71
52.16 52.02
52.56 52.75 52.35 i-C15 53.08 n-C14
53.37
54.29 54.60 i-C16
55.35 n-C15
56.31
57.29 n-C16
58.21 i-C18
59.00 59.18 n-C17 Pristane
60.57 60.79 n-C18 Phytane
62.01 n-C19
63.35 n-C20
63.91
64.29 IS #3
64.62 n-C21
65.83 n-C22
66.99 n-C23
68.16 n-C24
69.40 69.73 n-C25
70.74 n-C26

Chrom Perfect Chromatogram Report



Sample Name = **28837-3 [DITCH 2] [SAMPLE PREP 319-8-32]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

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Method File Name = C \CPSpirit\C344 met
Calibration File Name = C:\CPSpirit\CALIBRATIONS\2018\120418.cal

Date Taken (end) = 12/4/2018 6 01.01 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
2	5.92	0 0079	22752 01
3	6 08	0 0015	4203.36
4	6 16	0 2253	647879.60
5	6.25	0.0053	15240.13
	6 28	0 0078	22499 73
6	6.38	0 0112	32301 38
7	6 76	0 0152	43795 70
8	7.03	2 2722	6535398 00
9	7.28	0 0602	173243 30
10	7 40	0 1757	505338 30
11	7.50	2 0222	5816409 00
12	7.66	0 3007	864887 80
13	7 84	0 1531	440485 60
14	7.96	0 5675	1632212 00
CS2	8.35	0 2639	758901 70
15	8.45	0 3623	1042103 00
16	8.94	0 0523	150454 70
	9.04	0 0220	63338 32
	9.10	0 0354	101942 40
	9 31	0 2651	762616 20
17	9 36	0 7780	2237705 00
18	9.53	2 9257	8415074 00
19	10 10	1 8790	5404420.00
	10 30	0 1675	481796 80
20	10.89	2 4148	6945419.00
	10 97	0 1550	445812 90
	11 10	0.2124	610844 50
21	11.21	0 2671	768374.60
	11 32	0 0526	151420 20
22	11 37	0 1843	530125 20
	11 48	0 0333	95725 50
23	11 57	0 1152	331232.50
24	11.89	0 2919	839625.00
25	12.12	0 1276	366894.00
26	12.25	1.6477	4739084.00
27	12.46	0 5667	1630018 00
	12.75	0.0438	125875 80
	13.20	0.0071	20457.81
	13.39	0 0119	34174.19
	13 54	0.2699	776217 30
28	13.58	0.6894	1982882 00
29	13.92	0.1638	471075.30
30	14.15	0 7453	2143700 00
	14.27	0 0335	96492.34
	14.48	0 0179	51551 94
	14.64	0 0667	191953.90
31	14.76	1 8917	5440856 00
32	14.85	0 8431	2424999 00
	15.00	0 0948	272560.50
	15 14	0 0384	110409.30
33	15 32	2 1095	6067282 00
	15 51	0 0367	105525.30
	15 69	0 4863	1398727 00
34A	15 87	0 4077	1172613 00
	15 96	0 2162	621961.00
34B	16.05	0 4044	1163238 00
35	16 19	2 3970	6894220 00
	16 55	0.0514	147814.50

Peak Name	Ret. Time	Area %	Area
IS #1	16 71	1 0321	2968447.00
	16 79	0 2219	638265 10
36	16 95	2.0908	6013521.00
	17.05	0 2316	666131.50
	17 11	0 1083	311375 10
	17 24	0 0762	219256 90
	17 34	0 0731	210235 20
	17 55	0 2140	615589 30
	17 81	0 1019	293126.90
	18 08	0 0174	50060.11
	18 18	0 2408	692616 30
37	18 25	1 1696	3364042.00
	18 45	0 1904	547512.10
	18 69	0.0121	34917 17
	18 84	0 0137	39448 40
	19 04	0.3034	872766 90
38	19 14	0 5279	1518217.00
39	19.27	0 7717	2219501.00
	19.65	0.2097	603169 20
	19.74	0.0758	218088 90
	20.08	0.0454	130644 10
	20.15	0.1400	402568 60
40	20.38	1.2688	3649399 00
	20 50	0 0713	204978 60
41A	20 71	7 2670	20901480 00
42	21 11	0 5673	1631602 00
	21 19	0 1463	420684 30
	21.36	0 0956	275002.80
43	21 54	1 1114	3196529 00
44	21 64	0 4325	1243969 00
45	21 75	0 1903	547241.90
	21 94	0 1452	417612 60
46B	22 07	1 0715	3081777 00
46A	22 14	0 6538	1880351 00
	22 31	0 1718	494272.60
	22 48	0 0429	123517 10
	22.67	0 0409	117616.70
47	22.79	0 5011	1441217 00
	22.90	0 2420	695951 00
	23.05	0 1743	501304.30
48	23.13	0.1529	439808 50
	23 26	0 0653	187849 90
	23.40	0.0969	278807 70
	23.48	0.1781	512208 00
	23 67	0 1512	434745 10
49	23 88	1 2623	3630761 00
	23 96	0 2966	853228 10
	24.11	0 0271	77865 62
	24 25	0 1597	459254 90
	24 33	0.0615	176942 90
	24 43	0.0975	280346 30
	24 70	0.0298	85574 62
	24.85	0.0296	85183 73
50	24 95	0 0993	285625 90
	25.11	0.1543	443674.90
	25.38	0 0175	50421 17
51	25.44	0 1256	361348 80
	25 53	0 1083	311371 60
	25 69	0 0142	40983 56
52	25.87	0 5379	1547062 00
	26 09	0 0901	259161.00
	26 22	0 1093	314497.50
53	26 31	0 2924	841084.20
	26 39	0 1084	311669.40
	26 53	0 0499	143566 80
	26 62	0 0685	197148.90
	26 71	0 0556	160018.60
	26 82	0.0256	73693.03
54	27.07	1.8375	5284970 00
	27.23	0.1455	418437.50

Peak Name	Ret. Time	Area %	Area
	27 36	0 0480	138091.00
	27.46	0 0316	90925 57
55	27.70	6 9428	19968850 00
	27.96	0 0781	224630 00
	28.04	0 0825	237315 80
56	28 15	0.3824	1099941 00
57	28 22	0.4572	1314988 00
	28 31	0 0234	67275 30
	28 49	0 0139	39937 67
58	28.57	0 0859	247157 50
59	28 68	0.5470	1573182 00
	28.79	0 0517	148581 60
	28.94	0 0706	203042 60
60	29.11	2 7659	7955416 00
	29 31	0.0237	68036.20
	29 40	0 1081	310842.90
	29 50	0 1866	536656.80
	29 57	0 0641	184454.70
	29.65	0.0753	216621.90
	29 79	0.0191	54986.38
	29 88	0 0527	151544.80
	29 99	0 0325	93545 69
	30 10	0.0104	29909 72
	30 21	0 0223	64212 21
62	30.40	0 7200	2070882.00
I S. #2	30.55	0 9431	2712517.00
	30.69	0 1450	417043 80
	30 80	0 0262	75405 84
	30 87	0 0501	144032 30
63	31 11	0 1537	442088.20
	31 23	0 0541	155654 70
	31 37	0.0538	154697 30
64	31 45	0.0626	180022.60
	31 56	0 0737	212056.70
	31.69	0.0093	26745.36
	31.91	0.0216	62201.79
	31.99	0.1217	350090.50
	32 10	0.0772	222145.50
	32.24	0.0503	144667.10
	32.32	0 0896	257784.30
65	32 54	0 1349	388060 50
	32 79	0 0323	92891 88
66	32.91	0 7818	2248544.00
	33 12	0.0285	81989 09
	33 20	0 0356	102486 90
67	33 41	2 3846	6858612.00
68	33 52	1 0743	3089915.00
69	33 85	1 2515	3599599.00
	34 06	0 1227	352944 30
70	34.16	0 2061	592720 90
	34 25	0.1363	391890 90
71	34.31	0.2107	605877 40
	34.41	0.8640	2485051.00
	34.51	0.0858	246638 30
	34 73	0.2921	840157 20
	34.96	0 0273	78414.59
	35 04	0 0221	63605.89
72	35 14	0 0189	54366.13
73	35 36	4 0458	11636720 00
	35 52	0 0910	261777.70
	35 76	0 0221	63675.44
74	36 00	0 0317	91304.35
75	36.16	0 0756	217328 90
76	36.32	0 4005	1151936 00
	36 48	0.0090	25775 18
	36.70	0.0112	32194 91
77	36.85	1.0332	2971716 00
	37.07	0.0442	127191 50
	37.16	0.0814	234045 90
	37 47	0.5439	1564267 00

Peak Name	Ret. Time	Area %	Area
78	37 66	0 0853	245309 80
	37.87	0 0877	252264 70
	37 95	0 0667	191784.40
	38 04	0 0433	124528.60
	38 31	0 1041	299523 60
	38 38	0 2504	720138 20
79	38 53	0 6937	1995164 00
	38 74	0 4711	1354981 00
80	38 90	0 5896	1695813 00
	39 03	0 0859	247131.70
	39 23	0 0485	139518 20
81	39 37	0 2022	581569 20
	39 53	0 1880	540592.90
82	39 69	0 1011	290711 50
83	39.92	0.5215	1499826 00
84	40.02	0 5618	1615961 00
	40.22	0.1300	373793 40
85	40.34	0 9481	2726981 00
	40 68	0 1353	389137 10
	40.98	0 0272	78183 46
86	41.14	0 0329	94483 79
	41.25	0 1185	340820 50
	41.39	0 2039	586467 60
	41 63	0 0297	85534 32
n-C11	41 72	0.2242	644725 70
i-C11	41 93	0 0131	37579 48
87	42 04	0.3701	1064423.00
88	42.23	0.4960	1426645 00
	42 36	0.0245	70576 43
	42 46	0.0067	19316 23
	42 55	0 0082	23646 33
	42 66	0.0081	23298 18
	43 10	0 4592	1320810.00
	43 31	0 1088	312830 20
	43 46	0 1218	350452 50
	43 54	0 0761	218881 90
	43 62	0 4543	1306802.00
89	43 84	0 3222	926810 80
	44 05	0 0502	144330 90
	44 14	0 1494	429744 10
	44 30	0 1616	464745 50
	44 53	0 0831	238923 40
	44.60	0 1430	411345 10
	44.78	0 0598	172039 30
	44.97	0 1689	485825 10
90	45 12	0 3934	1131426 00
	45.37	0 1462	420451 60
	45 57	0 1965	565099.30
	45 66	0 1064	306089 60
	45.85	0 1167	335602 20
	46.03	0 0976	280680.30
	46 09	0 1318	379042 90
	46 17	0 0883	253951 60
	46 34	0.0247	71165.97
	46 57	0.0521	149905 50
n-C12	46 64	0 1289	370851.10
	46 82	0.0343	98725.65
	46 98	0 0400	115172.80
	47 18	0.0138	39831.28
i-C13	47 30	0 0924	265848.20
	47.52	0 0481	138296.90
	47.60	0.0721	207481.90
	47.73	0 0131	37643.86
	47.82	0 0096	27520.23
	48.00	0 0530	152558.60
	48.23	0 1537	442014.70
	48.59	0 0371	106664.60
	48 73	0 1099	316222 00
	48.88	0 0235	67491.11
	48 97	0 0272	78355 65

Peak Name	Ret Time	Area %	Area
	49 12	0.0434	124735.40
i-C14	49 39	0 0966	277767 00
	49 59	0 0133	38190 18
91	49.70	0.2994	861047.50
	50 11	0 0091	26134.87
92	50 22	0 0842	242185.30
n-C13	50 29	0.0616	177104.10
	50 66	0 0338	97130 49
	50.89	0.0167	48135 59
	51.21	0.0088	25221.02
	51 71	0 0071	20450.81
	52 02	0 0041	11726.26
	52 16	0 0071	20495 40
	52 35	0 0091	26036 73
i-C15	52.56	0.0064	18441 79
	52.75	0 0177	50905 64
n-C14	53 08	0 0376	108070 60
	53 37	0 0213	61203 38
	54 29	0 0107	30684 45
i-C16	54.60	0 0055	15872 71
n-C15	55 35	0.0062	17858 54
	56 31	0 0044	12794.10
n-C16	57 29	0 0052	14845 48
i-C18	58 21	0 0026	7611 91
n-C17	59.00	0.0044	12687.43
Pristane	59.18	0 0031	9039.91
n-C18	60 57	0 0027	7703 89
Phytane	60 79	0 0018	5190 22
n-C19	62 01	0 0027	7813.23
n-C20	63 35	0 0020	5725 28
	63 91	0 0039	11221.58
IS #3	64 29	0.5322	1530662 00
n-C21	64 62	0.0012	3408 94
n-C22	65 83	0 0009	2473 55
n-C23	66 99	0 0006	1627 20
n-C24	68 16	0 0005	1339 14
n-C25	69 40	0.0002	675.91
	69.73	0 0415	119400.70
n-C26	70 74	0.0001	397 36
	75 73	0 0347	99816 68

Total Area = 2 876213E+08 Total Height = 8 957231E+07 Total Amount = 0

Pace ID	28837-4
Sample ID	MWS
Evaporation	
n-Pentane / n-Heptane	1.92
2-Methylpentane / 2-Methylheptane	3.58
Waterwashing	
Benzene / Cyclohexane	1.12
Toluene / Methylcyclohexane	5.70
Aromatics / Total Paraffins (n+iso+cyc)	0.64
Aromatics / Naphthenes	5.07
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	10 19
3-Methylhexane / n-Heptane	1.01
Methylcyclohexane / n-Heptane	0.59
Isoparaffins + Naphthenes / Paraffins	2.49
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	1.87
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	16.56
% Isoparaffinic	33.93
% Aromatic	37.15
% Naphthenic	7.32
% Olefinic	5 03

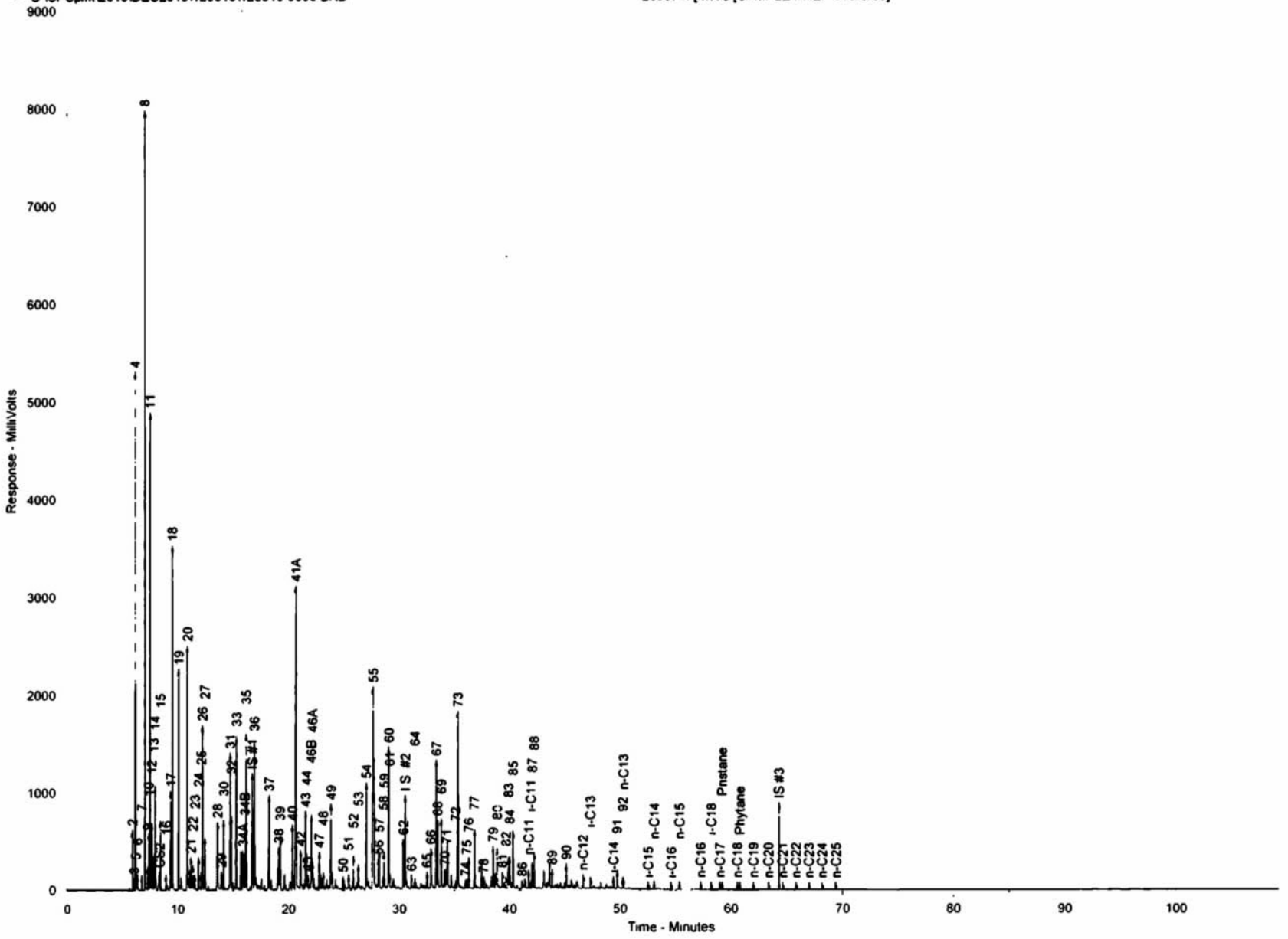
Pace ID		28837-4
Sample ID		MWS
		Relative Area %
1	Propane	0.00
2	Isobutane	0.38
3	Isobutene	0.05
4	Butane/Methanol	3.87
5	trans-2-Butene	0.07
6	cis-2-Butene	0.11
7	3-Methyl-1-butene	0.07
8	Isopentane	6.75
9	1-Pentene	0.18
10	2-Methyl-1-butene	0.50
11	Pentane	4.56
12	trans-2-Pentene	0.71
13	cis-2-Pentene/t-Butanol	0.36
14	2-Methyl-2-butene	1.26
15	2,2-Dimethylbutane	0.58
16	Cyclopentane	0.11
17	2,3-Dimethylbutane/MTBE	1.18
18	2-Methylpentane	4.28
19	3-Methylpentane	2.67
20	Hexane	3.24
21	trans-2-Hexene	0.37
22	3-Methylcyclopentene	0.26
23	3-Methyl-2-pentene	0.16
24	cis-2-Hexene	0.40
25	3-Methyl-trans-2-pentene	0.15
26	Methylcyclopentane	2.21
27	2,4-Dimethylpentane	0.70
28	Benzene	1.03
29	5-Methyl-1-hexene	0.19
30	Cyclohexane	0.92
31	2-Methylhexane/TAME	2.18
32	2,3-Dimethylpentane	0.96
33	3-Methylhexane	2.41
34A	1-trans-3-Dimethylcyclopentane	0.49
34B	1-cis-3-Dimethylcyclopentane	0.49
35	2,2,4-Trimethylpentane	2.60
I.S. #1	α,α,α-Trifluorotoluene	0.00

Pace ID		28837-4
Sample ID		MWS
		Relative Area %
36	n-Heptane	2.38
37	Methylcyclohexane	1.39
38	2,5-Dimethylhexane	0.57
39	2,4-Dimethylhexane	0.84
40	2,3,4-Trimethylpentane	1.34
41	Toluene/2,3,3-Trimethylpentane	7.94
42	2,3-Dimethylhexane	0.60
43	2-Methylheptane	1.20
44	4-Methylheptane	0.46
45	3,4-Dimethylhexane	0.20
46A	3-Ethyl-3-methylpentane	0.72
46B	1,4-Dimethylcyclohexane	1 13
47	3-Methylheptane	0.50
48	2,2,5-Trimethylhexane	0.16
49	n-Octane	1.33
50	2,2-Dimethylheptane	0.09
51	2,4-Dimethylheptane	0.15
52	Ethylcyclohexane	0.58
53	2,6-Dimethylheptane	0.31
54	Ethylbenzene	1 85
55	m+p Xylenes	7 26
56	4-Methyloctane	0 42
57	2-Methyloctane	0.52
58	3-Ethylheptane	0.11
59	3-Methyloctane	0 61
60	o-Xylene	2.74
61	1-Nonene	0.16
62	n-Nonane	0.77
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.15
64	3,3,5-Trimethylheptane	0.07
65	2,4,5-Trimethylheptane	0.14
66	n-Propylbenzene	0.69
67	1-Methyl-3-ethylbenzene	2.35
68	1-Methyl-4-ethylbenzene	1.04
69	1,3,5-Trimethylbenzene	1.23
70	3,3,4-Trimethylheptane	0.21

Pace ID		28837-4
Sample ID		MWS
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.22
72	3-Methylnonane	0.02
73	1,2,4-Trimethylbenzene	3.92
74	Isobutylbenzene	0.03
75	sec-Butylbenzene	0.07
76	n-Decane	0.41
77	1,2,3-Trimethylbenzene	1.01
78	Indan	0.09
79	1,3-Diethylbenzene	0.70
80	1,4-Diethylbenzene	0.61
81	n-Butylbenzene	0.19
82	1,3-Dimethyl-5-ethylbenzene	0 12
83	1,4-Dimethyl-2-ethylbenzene	0.53
84	1,3-Dimethyl-4-ethylbenzene	0.58
85	1,2-Dimethyl-4-ethylbenzene	0.94
86	Undecene	0.03
87	1,2,4,5-Tetramethylbenzene	0 36
88	1,2,3,5-Tetramethylbenzene	0.49
89	1,2,3,4-Tetramethylbenzene	0.32
90	Naphthalene	0.38
91	2-Methyl-naphthalene	0.23
92	1-Methyl-naphthalene	0 07
I.S.#3	5α-Androstane	0.00

C:\CPSprnt\2018\DEC2018\120318\120318 0008 BND

28837-4 [MWS [SAMPLE PREP 319-8-33]



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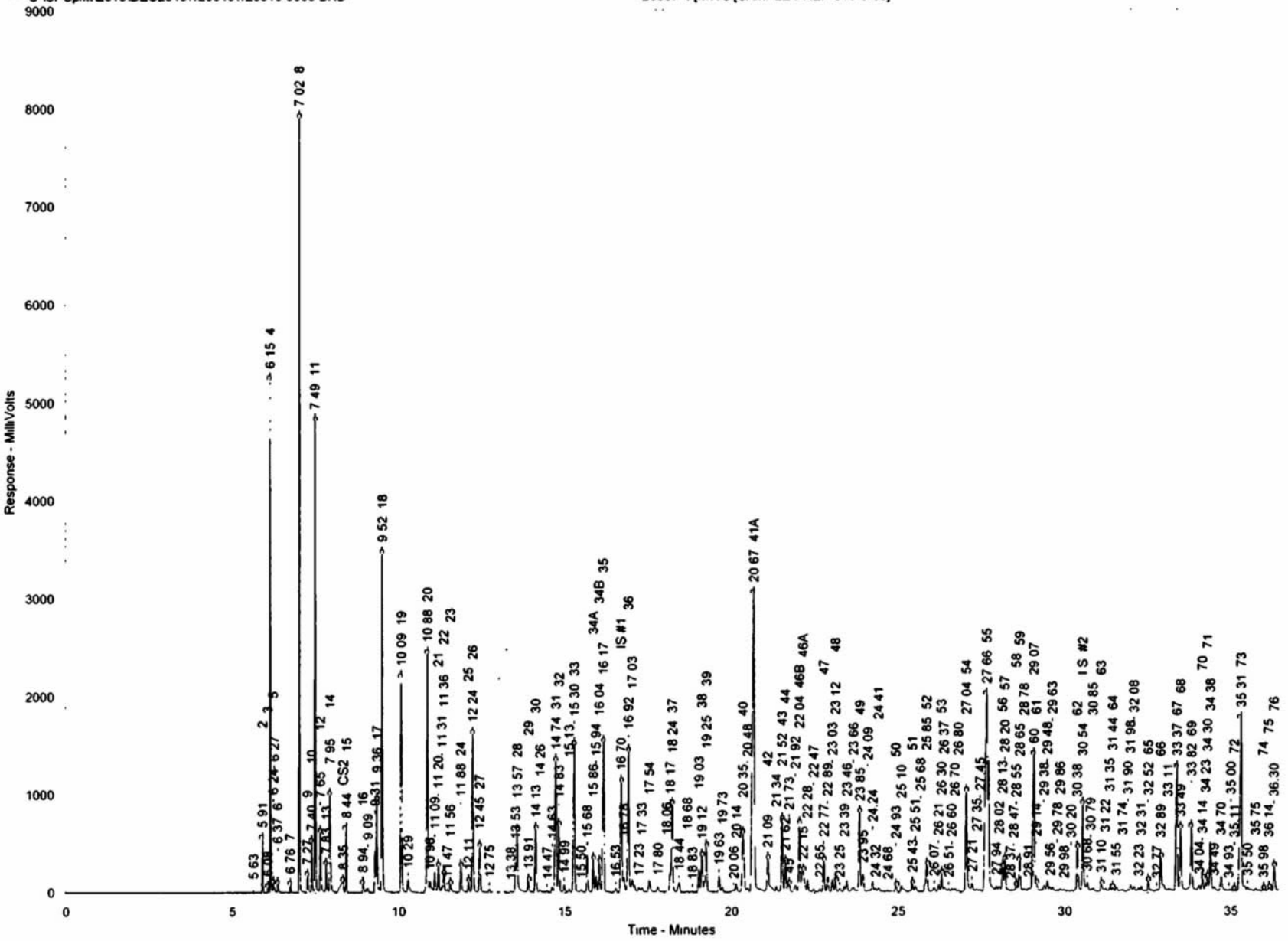
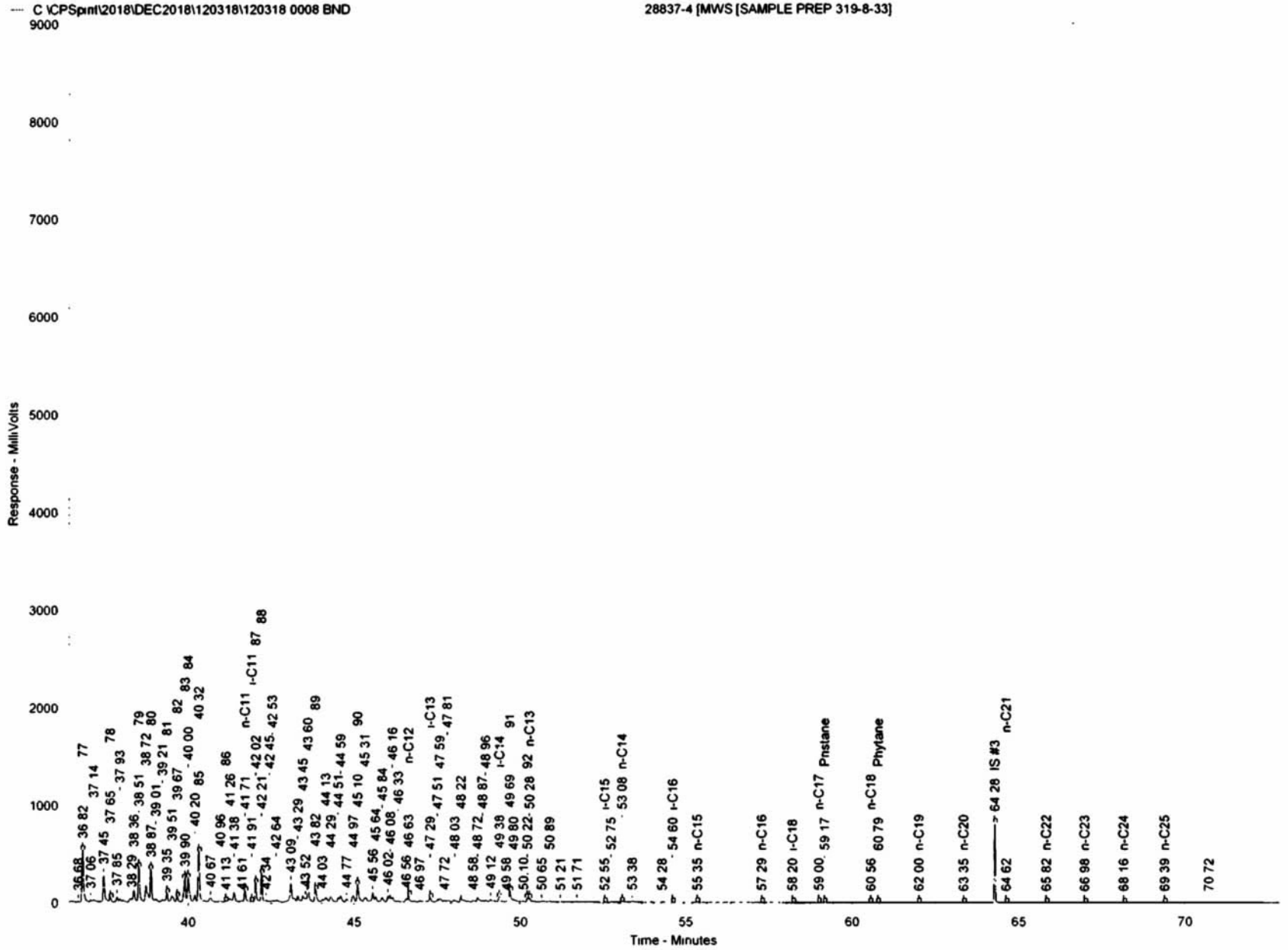
28837-4 [MWS [SAMPLE PREP 319-8-33]

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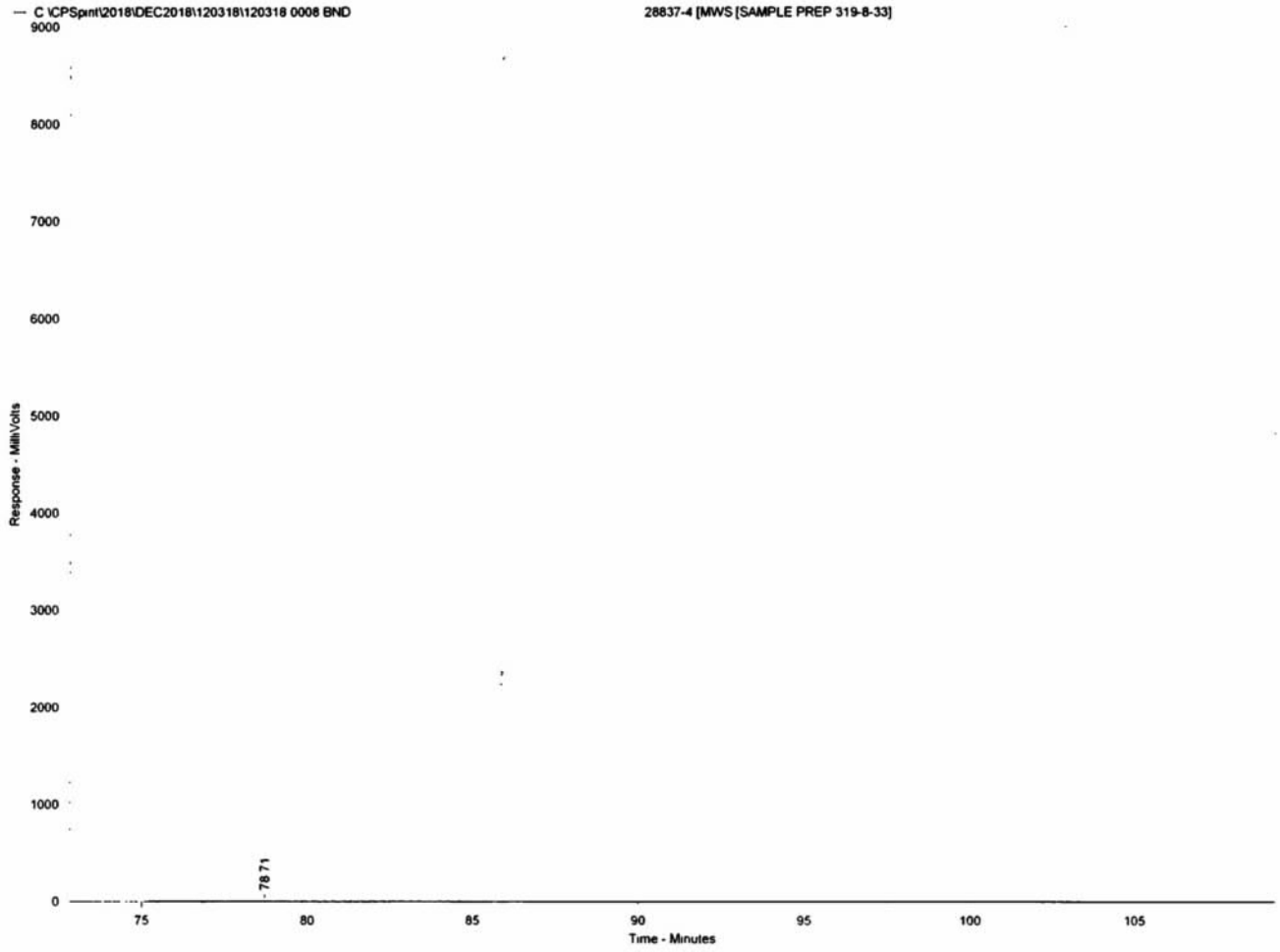
28837-4 [MWS [SAMPLE PREP 319-8-33]
Response - MilliVolts
Time - Minutes
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
40
45
50
55
60
65
70
n-C11
i-C11
n-C12
i-C13
n-C13
i-C14
n-C14
i-C15
n-C15
i-C16
n-C16
i-C18
n-C17
Pristane
n-C18
Phytane
n-C19
n-C20
IS #3
n-C21
n-C22
n-C23
n-C24
n-C25


C \CPSprnt\2018\DEC2018\120318\120318 0008 BND
28837-4 [MWS [SAMPLE PREP 319-8-33]
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Response - MilliVolts
78 71
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **28837-4 [MWS [SAMPLE PREP 319-8-33]**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2018\DEC2018\120318\120318.0008.RAW**
Method File Name = C \CPSpirit\C344 met
Calibration File Name = C.\CPSpirit\CALIBRATIONS\2018\120418.cal

Date Taken (end) = 12/4/2018 8 02 40 AM
Method Version = 44
Calibration Version = 1

Peak Name	Ret. Time	Area %	Area
	5 63	0 0127	28051.56
2	5 91	0 3069	677677 00
3	6 08	0.0380	83981 02
4	6 15	3.0981	6842147 00
5	6 24	0.0539	119077 40
	6 27	0.0193	42644 79
6	6.37	0.0865	190951 20
7	6.76	0.0566	124925.70
8	7 02	5 4071	11941500 00
9	7 27	0 1444	318897.30
10	7 40	0 3983	879599.50
11	7 49	3 6488	8058192.00
12	7 65	0 5685	1255443.00
13	7 83	0 2871	634107 40
14	7 95	1 0059	2221618.00
CS2	8 35	0 3440	759635 40
15	8 44	0 4655	1028088 00
16	8 94	0 0876	193520 60
	9.09	0.0815	180036.20
	9 31	0.3702	817488.30
17	9 36	0 9415	2079176 00
18	9 52	3 4254	7564876 00
19	10.09	2 1408	4727937 00
	10 29	0 2039	450295.80
20	10.88	2 5957	5732554 00
	10.96	0 1783	393724 70
	11.09	0 2403	530788 00
21	11 20	0 2990	660377 10
	11 31	0 0640	141239 30
22	11 36	0 2077	458613 80
	11 47	0 0406	89738 99
23	11 56	0.1301	287386 20
24	11 88	0.3193	705137 10
25	12 11	0.1237	273149 90
26	12.24	1.7733	3916333.00
27	12.45	0 5598	1236277.00
	12.75	0.0463	102344 00
	13.38	0 0120	26466.86
	13.53	0 2829	624720.60
28	13 57	0 8279	1828292 00
29	13 91	0 1550	342338.60
30	14 13	0 7368	1627170 00
	14 26	0 0329	72704.23
	14 47	0 0183	40476.34
	14 63	0 0636	140480.30
31	14 74	1 7428	3848909 00
32	14 83	0 7693	1698998 00
	14.99	0.0949	209510 60
	15.13	0.0402	88790 97
33	15 30	1 9282	4258300.00
	15 50	0 0357	78953 07
	15 68	0 4712	1040572.00
34A	15.86	0 3929	867768 00
	15.94	0 1961	433171 50
34B	16 04	0 3933	868665 10
35	16 17	2 0839	4602273 00
	16 53	0 0467	103218 80
IS #1	16 70	1 4126	3119596.00

Peak Name	Ret Time	Area %	Area
	16 78	0 2182	481967 50
36	16 92	1.9025	4201718 00
	17 03	0.3184	703171 30
	17 23	0.0688	151856 70
	17.33	0.0709	156550 30
	17 54	0.1982	437710 60
	17 80	0.0942	207936 40
	18.06	0.0170	37552 73
	18 17	0 2337	516056 70
37	18 24	1 1155	2463656 00
	18.44	0 1732	382466.60
	18 68	0 0114	25135.48
	18 83	0.0129	28469.85
	19.03	0 2776	613054.10
38	19.12	0.4565	1008230 00
39	19 25	0 6707	1481182 00
	19.63	0.1915	423025.10
	19.73	0 0641	141562.10
	20.06	0.0397	87775 28
	20.14	0 1271	280765.10
40	20.35	1 0702	2363512.00
	20.48	0 0624	137818 50
41A	20.67	6 3611	14048440.00
42	21 09	0 4831	1066832 00
	21 34	0 0829	183097.00
43	21 52	0 9569	2113370 00
44	21 62	0 3704	818103.30
45	21 73	0 1637	361451.10
	21 92	0 1241	274144.10
46B	22 04	0 9042	1996847 00
46A	22 15	0 5783	1277238 00
	22 28	0.1495	330058.50
	22 47	0 0370	81694.21
	22 65	0 0327	72121.04
47	22 77	0 4025	888919.00
	22 89	0.2022	446472 50
	23.03	0 1452	320647.30
48	23 12	0 1267	279846.20
	23.25	0.0453	100076.70
	23 39	0.0712	157333 40
	23.46	0.1453	320904.20
	23.66	0.0984	217360.70
49	23.85	1.0654	2352993 00
	23.95	0.2520	556456.10
	24.09	0.0106	23316.12
	24.24	0.1369	302404.40
	24.32	0.0361	79738.90
	24.41	0.0474	104622.00
	24.68	0.0131	28826.07
50	24 93	0.0728	160824.90
	25 10	0.1277	282065.50
51	25.43	0.1168	258031.40
	25 51	0.0905	199918.40
	25 68	0.0099	21800.88
52	25 85	0 4608	1017574.00
	26 07	0 0739	163299.80
	26 21	0 0954	210578 80
53	26 30	0 2444	539836.10
	26 37	0 0915	202122.70
	26 51	0 0426	94132 50
	26 60	0 0569	125680 10
	26 70	0 0476	105209.10
	26 80	0 0214	47260.51
54	27 04	1 4814	3271751 00
	27.21	0 1436	317236.10
	27.35	0 0573	126440.20
	27 45	0.0326	72024.57
55	27 66	5 8107	12832860 00
	27 94	0 0827	182659.30
	28.02	0 0903	199462.40

Peak Name	Ret. Time	Area %	Area
56	28 13	0 3342	738154 80
57	28 20	0 4161	918930 30
	28 37	0 0264	58219 73
	28 47	0 0284	62646 98
58	28 55	0 0889	196293 20
59	28 65	0 4885	1078746 00
	28 78	0 0662	146210 90
	28 91	0 0502	110845.00
60	29.07	2 1930	4843296 00
61	29.14	0 1319	291384 50
	29.38	0.1072	236783 60
	29 48	0.1683	371779.70
	29 56	0.0591	130528 60
	29 63	0 0779	171992.20
	29.78	0.0234	51715.30
	29 86	0 0525	116052 50
	29 98	0 0319	70523 69
	30 20	0 0219	48324 50
62	30 38	0 6177	1364186.00
I S #2	30.54	1 2902	2849411.00
	30.68	0 1411	311689 30
	30.79	0 0282	62251 26
	30.85	0 0526	116212 40
63	31.10	0 1184	261588 20
	31 22	0 0512	112991 40
	31 35	0 0513	113238 40
64	31 44	0.0579	127838 20
	31 55	0.0712	157266 70
	31 74	0.0390	86174.35
	31 90	0 0181	40036.56
	31 98	0 0992	219009.10
	32.08	0 0610	134680.00
	32.23	0 0370	81630 18
	32 31	0 0590	130256 70
65	32.52	0 1158	255705.00
	32 77	0 0148	32771 47
66	32 89	0 5533	1221971 00
	33 11	0 0078	17220 48
67	33 37	1 8801	4152239 00
68	33 49	0.8352	1844413 00
69	33 82	0 9868	2179280 00
	34 04	0.0976	215614 40
70	34 14	0.1671	368928 20
	34 23	0 1040	229758 80
71	34 30	0 1785	394176 70
	34.38	0 6680	1475275 00
	34 49	0 0717	158345 40
	34 70	0 2437	538172 00
	34 93	0 0211	46668 69
	35 00	0 0176	38971 55
72	35 11	0 0161	35514.14
73	35 31	3 1359	6925513 00
	35 50	0.0344	75908.12
	35 75	0.0180	39717.84
74	35 98	0.0246	54379 01
75	36.14	0 0566	125085 00
76	36.30	0 3320	733178 20
	36.68	0 0096	21123 71
77	36 82	0 8107	1790473.00
	37 06	0 0330	72971 46
	37 14	0 0606	133933 60
	37 45	0 4299	949407 80
78	37 65	0 0701	154828 40
	37 85	0 0563	124437 90
	37 93	0.0313	69048 41
	38.29	0.0871	192300.00
	38.36	0.1866	412098.60
79	38.51	0 5604	1237738 00
	38 72	0 3612	797793.30
80	38 87	0 4850	1071159.00

Peak Name	Ret Time	Area %	Area
	39 01	0.0736	162653 30
	39 21	0 0398	87801 55
81	39 35	0.1555	343357 70
	39 51	0 1563	345205 70
82	39.67	0.0956	211158.80
83	39 90	0.4209	929519.90
84	40.00	0 4621	1020638 00
	40 20	0 1093	241337.90
85	40 32	0 7538	1664768 00
	40.67	0 1125	248506.10
	40 96	0 0228	50270 80
86	41.13	0.0226	49855 45
	41.26	0.0907	200293 30
	41.38	0.1628	359464.50
	41.61	0 0238	52618 83
n-C11	41 71	0 1856	409880 00
i-C11	41 91	0 0100	22187.98
87	42 02	0 2902	640858.50
88	42 21	0 3958	874174.50
	42.34	0 0198	43765.24
	42 45	0 0052	11511 37
	42 53	0 0067	14795.17
	42 64	0.0066	14672.99
	43 09	0.4354	961485.70
	43.29	0.1186	262019 50
	43.45	0 1017	224663 70
	43.52	0.0575	126967 60
	43 60	0 3782	835249 40
89	43 82	0 2595	573014 20
	44 03	0.0427	94284 05
	44 13	0 1177	259978 40
	44 29	0 1326	292765 50
	44 51	0 0657	145064 70
	44 59	0.1158	255800 80
	44 77	0.0473	104412.70
	44.97	0.1288	284535.60
90	45.10	0.3062	676323.20
	45.31	0 1212	267720.60
	45.56	0.1626	359062.40
	45 64	0 0864	190906 10
	45 84	0 0902	199197 20
	46 02	0 0793	175220 30
	46 08	0 1042	230226 80
	46 16	0 0688	151964 50
	46 33	0 0146	32340 29
	46.56	0 0366	80902 21
n-C12	46.63	0.0934	206181.90
	46 97	0 0300	66338 74
i-C13	47 29	0 0859	189688.90
	47 51	0.0315	69584 05
	47 59	0.0656	144950.80
	47 72	0.0173	38253.78
	47 81	0 0381	84162.05
	48 03	0 0445	98222.18
	48 22	0.0695	153564.00
	48 58	0 0289	63902.35
	48 72	0 0897	198123.90
	48 87	0 0194	42872 38
	48.96	0.0227	50037 68
	49.12	0.0326	71978 91
i-C14	49.38	0 0767	169390 30
	49.58	0.0106	23457 02
91	49 69	0.1818	401520 30
	49 80	0.0627	138471 70
	50 10	0 0077	16964 85
92	50 22	0.0527	116430 00
n-C13	50 28	0 0499	110298.60
	50 65	0 0248	54865.04
	50 89	0 0132	29160.63
	51 21	0 0065	14380.54

Peak Name	Ret Time	Area %	Area
	51 71	0 0059	13117 61
i-C15	52.55	0 0046	10067 16
	52 75	0 0103	22694.41
n-C14	53 08	0 0254	56115 18
	53 38	0.0123	27154 67
	54 28	0.0064	14232.32
i-C16	54 60	0 0036	7941 05
n-C15	55 35	0 0053	11702 52
n-C16	57 29	0.0035	7731 04
i-C18	58.20	0.0017	3645.28
n-C17	59 00	0 0027	5868.82
Pristane	59 17	0 0018	3907.78
n-C18	60 56	0 0018	4047.56
Phytane	60 79	0 0010	2228.75
n-C19	62.00	0 0016	3566.87
n-C20	63 35	0 0012	2707.74
IS #3	64 28	0 7478	1651510 00
n-C21	64 62	0 0007	1644.97
n-C22	65 82	0 0006	1294.94
n-C23	66 98	0 0004	812.03
n-C24	68 16	0 0003	676.45
n-C25	69 39	0 0001	308.70
	70.72	0 0001	162.08
	78 71	0 1935	427396.30

Total Area = 2 20848E+08 Total Height = 8.044561E+07 Total Amount = 0

Pace Analytical®
Energy Services™

Oxygenated Gasoline Blending Agents
by GC/MS - SIM mode

MtBE, DIPE, EtBE, tAME, tBA, and ethanol

Trey Carter		**Lab ID:**	**28837-1**
Pace Analytical Charlotte		**Collected:**	**11/20/2018**
9800 Kincey Ave., Suite 100		**Received:**	**11/28/2018**
Huntersville, NC 28078		**Matrix:**	**Product**
Project:	**Broad River AMOCO**	**Client ID:**	**SEWER**
Project #:	**92408471**	**Analyzed:**	**12/7/2018**
Collected by:	**0**	**Q Method:**	**EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	40.0	U
Methyl-t-Butyl Ether (MTBE)	40.0	U
Ethyl-t-Butyl Ether (ETBE)	40.0	U
t-Amyl Methyl Ether (TAME)	40.0	U
t-Butyl Alcohol (TBA)	40.0	U
Methyl Alcohol	40.0	U
Ethanol	40.0	U
MTBE-d3 (Surr)		93.66%

ssRL - Sample Specific Reporting Limit
U : Not Detected
J: value below ssRL

120718-08.D
CJS

Pace Analytical® Energy Services

Trey Carter		**Lab ID:**	**28837-2**
Pace Analytical Charlotte		**Collected:**	**11/20/2018**
9800 Kincey Ave., Suite 100		**Received:**	**11/28/2018**
Huntersville, NC 28078		**Matrix:**	**Product**
Project:	**Broad River AMOCO**	**Client ID:**	**DITCH 1**
Project #:	**92408471**	**Analyzed:**	**12/7/2018**
Collected by:	**0**	**Q Method:**	**EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		109.78%

ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-09.D
CJS

Trey Carter		**Lab ID:**	**28837-3**
Pace Analytical Charlotte		**Collected:**	**11/20/2018**
9800 Kincey Ave., Suite 100		**Received:**	**11/28/2018**
Huntersville, NC 28078		**Matrix:**	**Product**
Project:	**Broad River AMOCO**	**Client ID:**	**DITCH 2**
Project #:	**92408471**	**Analyzed:**	**12/7/2018**
Collected by:	**0**	**Q Method:**	**EPA 1624 GC/MS**

CONSTITUENT	**ssRL mg/Kg**	**RESULT mg/Kg**
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		123.87%

ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-10.D
CJS

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave., Suite 100
Huntersville, NC 28078

Lab ID:	**28837-4**		
Collected:	**11/20/2018**		
Received:	**11/28/2018**		
Matrix:	**Product**		
Project:	**Broad River AMOCO**	**Client ID:**	**MWS**
Project #:	**92408471**	**Analyzed:**	**12/7/2018**
Collected by:	**0**	**Q Method:**	**EPA 1624 GC/MS**

CONSTITUENT	ssRL mg/Kg	RESULT mg/Kg
Diisopropyl Ether (DIPE)	20.0	U
Methyl-t-Butyl Ether (MTBE)	20.0	U
Ethyl-t-Butyl Ether (ETBE)	20.0	U
t-Amyl Methyl Ether (TAME)	20.0	U
t-Butyl Alcohol (TBA)	20.0	U
Methyl Alcohol	20.0	U
Ethanol	20.0	U
MTBE-d3 (Surr)		115.37%

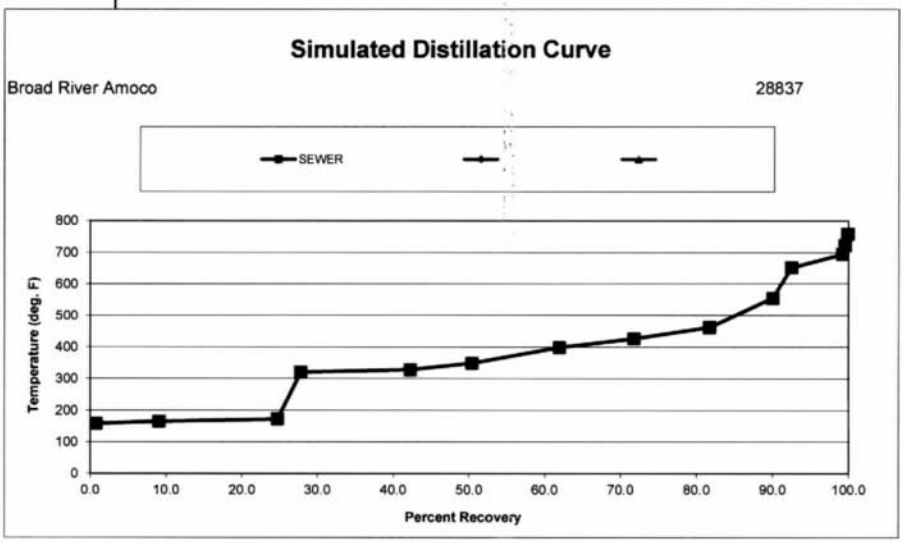
ssRL - Sample Specific Reporting Limit
U: Not Detected
J: value below ssRL

120718-11.D
CJS

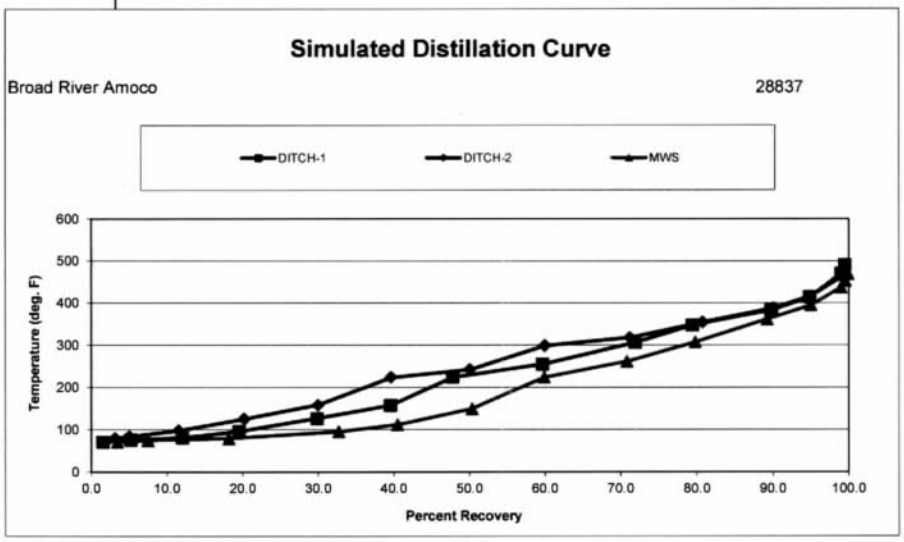
Pace Analytical®
Energy Services™

Simulated Distillation

SEWER											
% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.
0.78	158.00										
9.07	165.06										
24.72	172.12										
27.80	320.40										
42.31	327.46										
50.43	348.64										
61.98	398.07										
71.82	426.31										
81.74	461.62										
90.05	553.41										
92.52	652.26										
99.20	694.62										
99.55	722.86										
99.93	758.17										



DITCH-1		DITCH-2		MWS									
% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.	% Rec.	Temp.
1.55	70.04	3.12	78.48	3.44	70.27								
5.24	75.16	5.04	83.15	7.52	74.43								
12.07	80.28	11.57	97.17	18.17	78.58								
19.55	95.66	20.23	125.20	32.71	95.20								
29.86	126.40	29.97	157.91	40.51	111.82								
39.57	157.14	39.67	223.32	50.35	149.21								
47.82	223.75	50.09	242.01	59.91	223.99								
59.66	254.50	59.96	298.07	70.81	261.38								
71.90	305.73	71.20	316.76	79.78	307.07								
79.45	346.73	80.80	354.14	89.25	361.08								
89.80	382.59	90.11	386.85	94.99	394.32								
94.83	413.34	94.94	414.88	98.97	435.86								
99.04	469.70	99.07	461.60	99.55	452.48								
99.51	490.19	99.48	470.95	99.91	469.10								



Chain of Custody

28837

Workorder: 92408471 **Workorder Name:** BROAD RIVER AMOCO 58456 **Results Requested By:** 12/21/2018

Trey Carter
Pace Analytical Charlotte
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
Phone (704)875-9092
Email: trey.carter@pacelabs.com

Pace Energy
220 William Pitt Way
Pittsburgh, PA 15238

P.O.__TC 17853_____

State of Sample Origin: SC

					Ungreserved						Fingerprint Analysis												LAB USE ONLY
1	SEWER	11/20/2018 12:00	92408471001	Water	1						X												
2	DITCH 1	11/20/2018 12:15	92408471002	Water	1						X												
3	DITCH 2	11/20/2018 19:45	92408471003	Water	1						X												
4	MWS	11/20/2018 17:15	92408471004	Water	1						X												
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	MC 11-27-18	1800	Lon PACE	11.28.18
2				1210
3				

Requested analyses: ASTM D3328 C3-C36 (Whole Oil), including PIANO
EPA 1624 Oxy Bending Agents
ASTM 2887 Simulated Distillation

Cooler Temperature on Receipt 2 °C **Custody Seal** Y or (N) **Received on Ice** (Y) or N **Samples Intact** (Y) or N

Cooler Receipt Form

Client Name: Pace **Project:** Broad River Amoco **Lab Work Order:** 28837

A. **Shipping/Container Information** (circle appropriate response)

Courier: (FedEx) UPS USPS Client Other:_____ **Air bill Present:** (Yes) No

Tracking Number: 439422073745

Custody Seal on Cooler/Box Present: Yes (No) **Seals Intact:** Yes No

Cooler/Box Packing Material: (Bubble Wrap) Absorbent Foam Other:_____

Type of Ice: (Wet) Blue None **Ice Intact:** (Yes) Melted

Cooler Temperature: 2°C **Radiation Screened:** Yes (No) **Chain of Custody Present:** (Yes) No

Comments:_____

B. **Laboratory Assignment/Log-in** (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC			✓	
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	
Headspace present?			✓	

Comments:_____

Cooler contents examined/received by: LG **Date:** 11.28.18

Project Manager Review: ERG **Date:** 11-28-18

UST #119416 Site Visit 1/30/19

dhec
Healthy People Healthy Communities

UST
125
DOCKETING

CERTIFIED MAIL
9214 8969 0099 9790 1413 9553 80

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

FEB 0 4 2019

Re: **Request for January 2019 Activities Report**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the abatement activities on the site for the month of January, 2019. This report should include the dates and descriptions of the work performed and the quantities of free product and contaminated storm water recovered and any other notable observations. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the January 2019 abatement activities within thirty (30) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

UST DOCKET 1264

UST FEB 07 2019 PROGRAM

Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

To: Carolyn Moores (SCDHEC Project Manager)
From: Terry Teate (Contractor Project Manager)
Contractor: Enviro-Test Services, Inc. UST Contractor Certification Number: 14

Facility Name: Broad River Amoco UST Permit #: 11946
Facility Address: 4335 Broad River Rd.; Columbia, SC
Responsible Party: Frederick N. Cecchini Phone: _____
RP Address: 429 Press Lindler Rd.; Columbia, SC 29212-8322
Property Owner (if different): _____
Property Owner Address: _____
Current Use of Property: gas station

Scope of Work (Please check all that apply)

- ☐ IGWA
- ☐ Tier I
- ☐ Tier II
- ☑ Monitoring Well Installation
- ☐ Groundwater Sampling
- ☐ Other _____
- ☐ GAC

Analyses (Please check all that apply)

Groundwater/Surface Water:

- ☐ BTEXNMDCA (8260B)
- ☐ Oxygenates (8260B)
- ☐ EDB (8011)
- ☐ PAH (8270D)
- ☐ Lead
- ☐ 8 RCRA Metals
- ☐ TPH
- ☐ pH
- ☐ BOD
- ☐ Nitrate
- ☐ Sulfate
- ☐ Other _____
- ☐ Methane
- ☐ Ethanol
- ☐ Dissolved Iron

Drinking Water Supply Wells:

- ☐ BTEXNMDCA (524.2)
- ☐ Oxygenates & Ethanol (8260B)
- ☐ Mecury (200.8 245.1 or 245.2)
- ☐ RCRA Metals (200.8)
- ☐ EDB (504.1)

Soil:

- ☐ BTEXNM
- ☐ Lead
- ☐ PAH
- ☐ RCRA Metals
- ☐ Oil & Grease (9071)
- ☐ TPH-DRO (3550B/8015B)
- ☐ TPH-GRO (5030B/8015B)
- ☐ Grain Size
- ☐ TOC

Air:

- ☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

_____ Soil _____ Water Supply Wells _____ Air _____ Field Blank
_____ Monitoring Wells _____ Surface Water _____ Duplicate _____ Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.
# of shallow points proposed: _____ Estimated Footage: _____ feet per point
# of deep points proposed: _____ Estimated Footage: _____ feet per point
Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.
# of shallow wells: 2 Estimated Footage: SHALLOW + INTERMEDIATE feet per point
# of deep wells: _____ Estimated Footage: _____ feet per point
# of recovery wells: _____ Estimated Footage: _____ feet per point
Comments, if warranted:
re-install MW-16A and MW-16B

UST Permit #: 11946 Facility Name: Broad River Amoco

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 30 Field Work Completion: 33
Report Submittal: 60 # of Copies Provided to Property Owners: 1

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal
Soil: 1 Tons Purge Water: _____ Gallons
Drilling Fluids: _____ Gallons Free-Phase Product: _____ Gallons

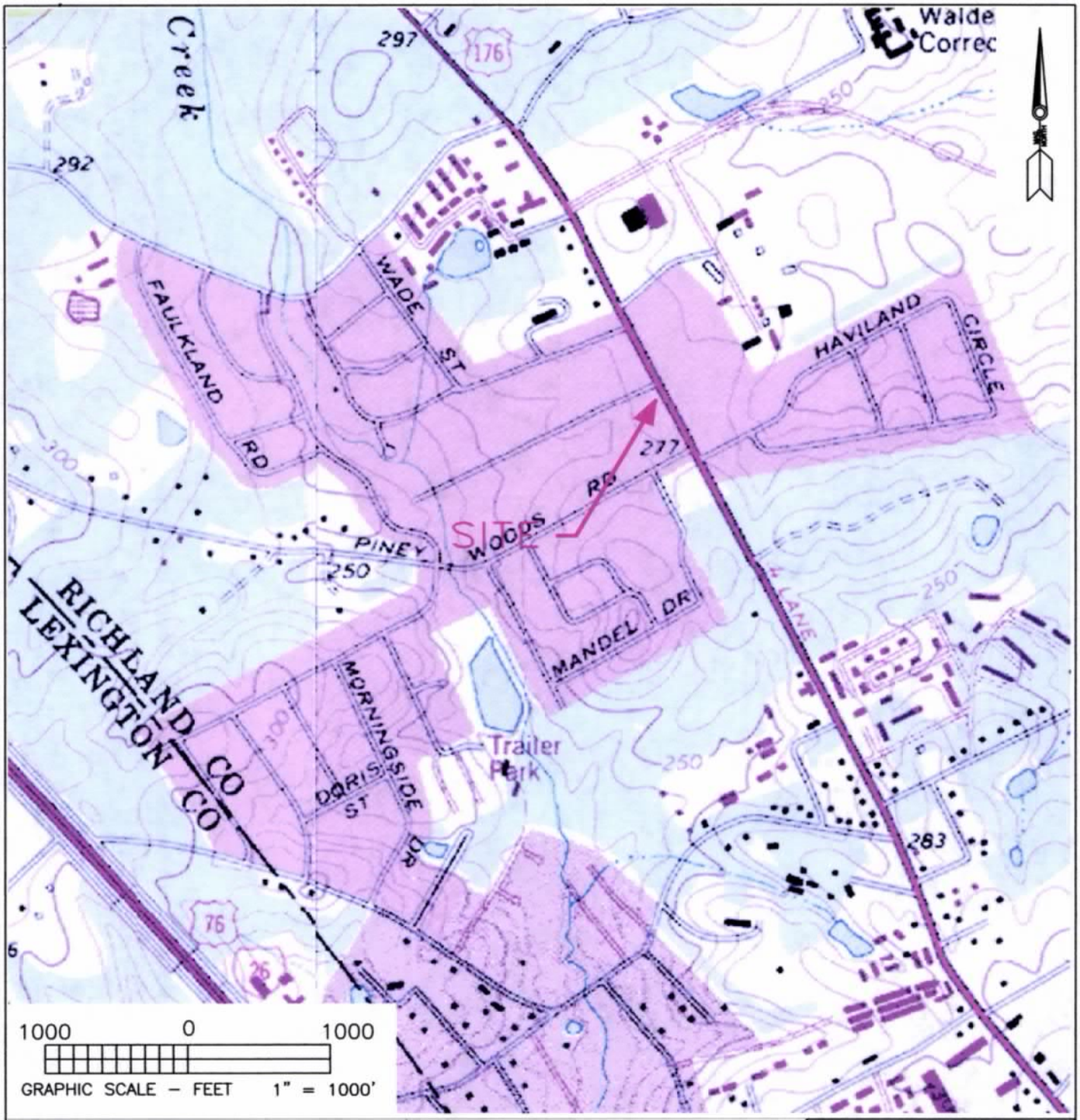
Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
Re-install MW-16A and MW-16B. Replacement wells will be called MW-16AR and MW-16BR

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

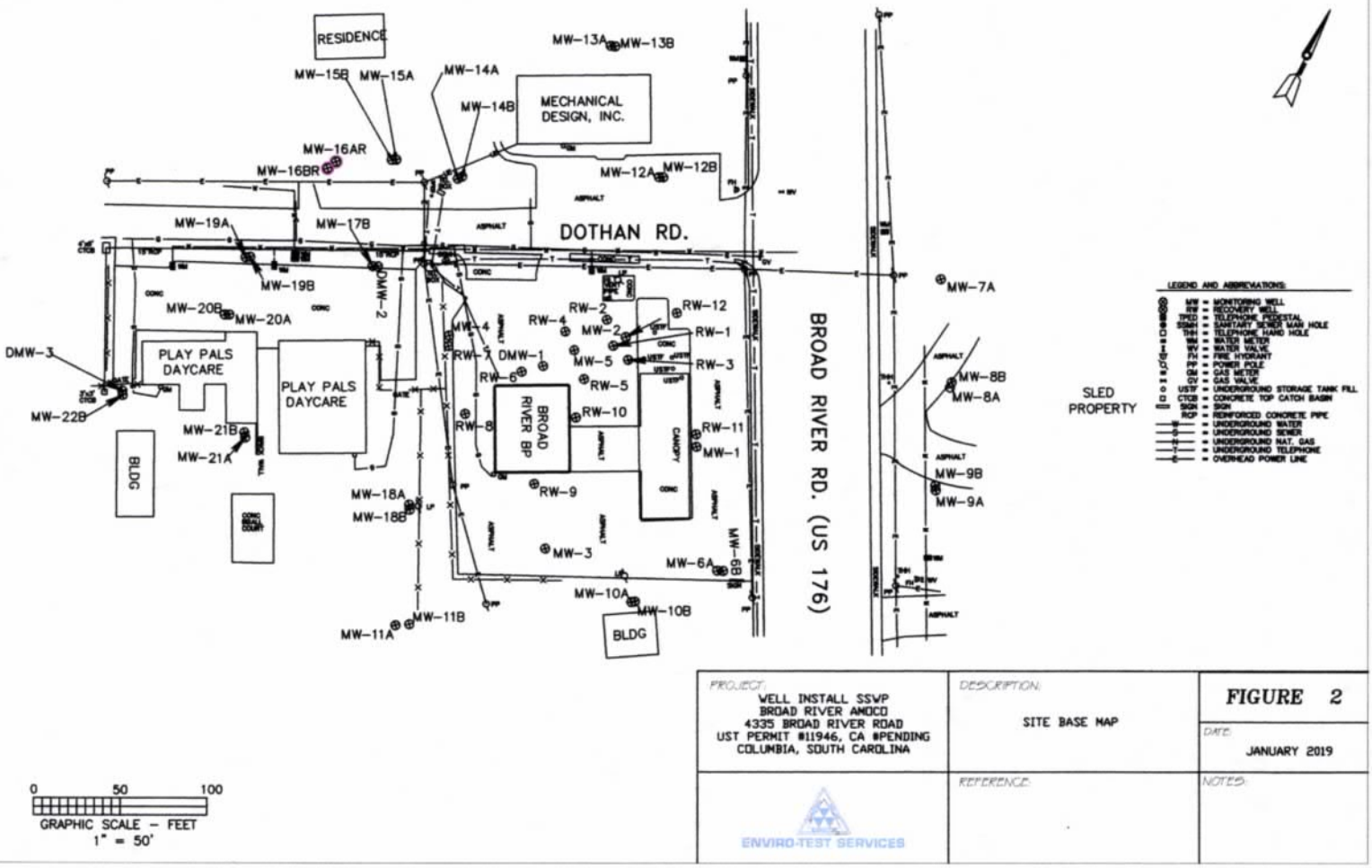
____ Well Driller as indicated in ACQAP? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664



PROJECT: WELL INSTALL SSWP BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #PENDING COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE LOCATION MAP	**FIGURE 1** DATE: JANUARY 2019
ENVIRO-TEST SERVICES	REFERENCE: U.S.G.S. TOPOGRAPHIC MAP (7.5 MINUTE SERIES) COLUMBIA NORTH - 1972, REV. 1990 SOUTH CAROLINA QUADRANGLE	LEGEND:



PROJECT: WELL INSTALL SSVP BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #PENDING COLUMBIA, SOUTH CAROLINA	DESCRIPTION: SITE BASE MAP	**FIGURE 2**
		DATE: JANUARY 2019
ENVIRO-TEST SERVICES	REFERENCE:	NOTES:

dhec
Healthy People. Healthy Communities.

ASSESSMENT COMPONENT COST AGREEMENT
SOUTH CAROLINA
Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account
June 15, 2017

Facility Name: **Broad River Amoco**

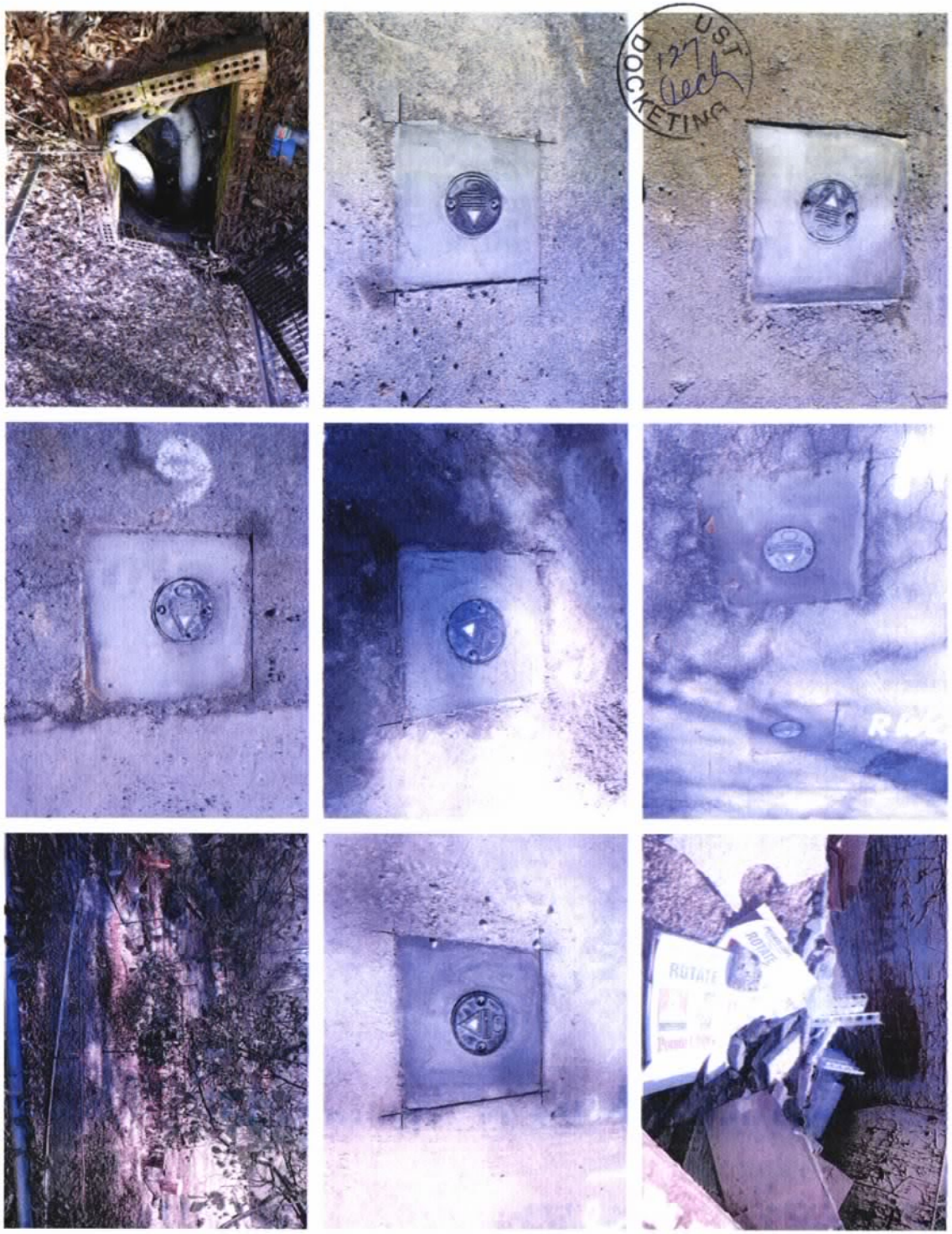
UST Permit #: 11946 **Cost Agreement #:**

ITEM	QUANTITY	UNIT	UNIT PRICE		TOTAL
1. **Plan Preparation**					
A1. Site-specific Work Plan	1	each	$150.00		$150.00
B1. Tax Map		each	$70.00		$0.00
C1. Tier II or Comp. Plan /QAPP Appendix B		each	$250.00		$0.00
2. A1. **Receptor Survey** *		each	$551.00		$0.00
3. **Survey (500 ft x 500 ft)**					
A1. Comprehensive Survey		each	$1,040.00		$0.00
B. Subsurface Geophysical Survey					
1B. < 10 meters below grade		each	$1,300.00		$0.00
2B. > 10 meters below grade		each	$2,310.00		$0.00
C1. Geophysical UST or Drum Survey		each	$910.00		$0.00
4. **Mob/Demob**					
A1. Equipment	1	each	$1,020.00		$1,020.00
B1. Personnel	1	each	$423.00		$423.00
C1. Adverse Terrain Vehicle		each	$500.00		$0.00
5. A1. **Soil Borings (hand auger)***		foot	$5.00		$0.00
6. **Soil Borings (requiring equipment, push technology, etc)* or Field Screening (including water ssample, soil sample, soil gas sample, etc.)***					
AA. Standard		per foot	$15.00		$0.00
C1. Fractured Rock		per foot	$20.20		$0.00
7. A1. **Soil Leachability Model**		each	$60.00		$0.00
8. **Abandonment (per foot)***					
A1. 2" diameter or less		per foot	$3.10		$0.00
B1. Greater than 2" to 6" diameter		per foot	$4.50		$0.00
C1. Dug/Bored well (up to 6 feet diameter)		per foot	$15.00		$0.00
9. **Well Installation (per foot)***					
A1. Water Table (hand augered)		per foot	$10.60		$0.00
B1. Water Table (drill rig)	50	per foot	$38.00		$1,900.00
CC. Telescoping		per foot	$50.00		$0.00
DD. Rock Drilling		per foot	$58.00		$0.00
E1. 2" Rock Coring		per foot	$30.90		$0.00
G1. Rock Multi-sampling ports/screens		per foot	$33.40		$0.00
HH. Recovery Well (4" diameter)		per foot	$45.00		$0.00
II. Pushed Pre-packed screen (1.25" dia)		per foot	$15.00		$0.00
J1. Rotosonic (2" diameter)		per foot	$44.00		$0.00
K. Re-develop Existing Well		per foot	$11.00		$0.00
10. **Groundwater Sample Collection / Gauge Depth to Water or Product** *					
A1. Groundwater Purge		per well/receptor	$60.00		$0.00
B1. Air or Vapors		per receptor	$12.00		$0.00

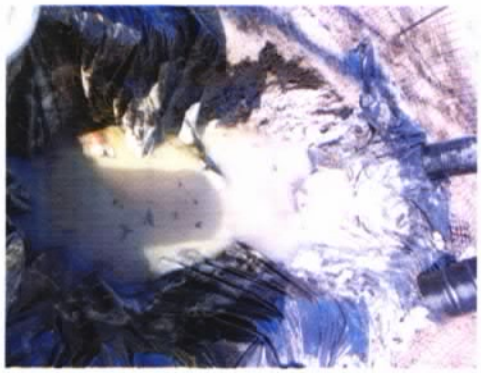
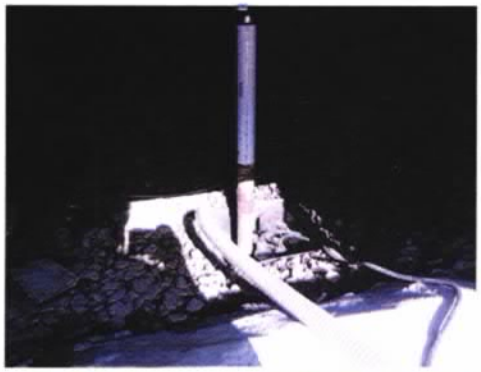
C1. Water Supply		per well/receptor	$22.00		$0.00
D1. Groundwater No Purge or Duplicate		per well/receptor	$28.00		$0.00
E1. Gauge Well only		per well	$7.00		$0.00
F1. Sample Below Product		per well	$12.00		$0.00
G1. Passive Diffusion Bag		each	$26.00		$0.00
H1. Field Blank		each	$24.60		$0.00
I. Groundwater (low flow purge)		per well/receptor	$91.00		$0.00
11. Laboratory Analyses-Groundwater					
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(8260B)		per sample	$122.00		$0.00
AA1. Lead, Filtered		per sample	$13.80		$0.00
B2. Rush EPA Method 8260B (All of item A.)		per sample	$153.60		$0.00
C2. Trimethal, Butyl, and Isopropyl Benzenes		per sample	$36.40		$0.00
D1. PAH's		per sample	$60.60		$0.00
E1. Lead		per sample	$16.00		$0.00
F1. EDB by EPA 8011		per sample	$45.20		$0.00
FF1. EDB by EPA Method 8011 Rush		per sample	$68.20		$0.00
G1. 8 RCRA Metals		per sample	$63.40		$0.00
H1. TPH (9070)		per sample	$41.00		$0.00
II. pH		per sample	$5.20		$0.00
J1. BOD		per sample	$20.00		$0.00
PP. Ethanol		per sample	$14.80		$0.00
11. Analyses-Drinking Water					
L. BTEXNM+1,2 DCA (524.2)		per sample	$124.05		$0.00
M. 7-OXYGENATES & ETHANOL (8260B)		per sample	$91.75		$0.00
N. EDB (504.1)		per sample	$79.50		$0.00
O. RCRA METALS (200.8)		per sample	$100.00		$0.00
11. Analyses-Soil					
Q1. BTEX + Naphth.		per sample	$64.00		$0.00
R1. PAH's		per sample	$64.04		$0.00
S1. 8 RCRA Metals		per sample	$56.40		$0.00
U1. TPH-DRO (3550C/8015C)		per sample	$40.00		$0.00
V1. TPH- GRO (5030B/8015C)		per sample	$35.96		$0.00
W1. Grain size/hydrometer		per sample	$104.00		$0.00
X1. Total Organic Carbon		per sample	$30.60		$0.00
11. Analyses-Air					
Y1. BTEX + Naphthalene		per sample	$216.00		$0.00
11. Analyses-Free Phase Product					
Z1. Hydrocarbon Fuel Identification		per sample	$357.00		$0.00
12. Aquifer Characterization					
A1. Pumping Test*		per hour	$23.00		$0.00
B1. Slug Test*		per test	$191.00		$0.00
C1. Fractured Rock		per test	$100.00		$0.00
13. A1. **Free Product Recovery Rate Test***		each	$38.00		$0.00
14. Fate/Transport Modeling					
A1. Mathematical Model		each	$100.00		$0.00
B1. Computer Model		each	$100.00		$0.00
15. Risk Evaluation					
A. Tier I Risk Evaluation		each	$300.00		$0.00
B1. Tier II Risk Evaluation		each	$100.00		$0.00
16. A1. **Subsequent Survey***		each	$260.00		$0.00

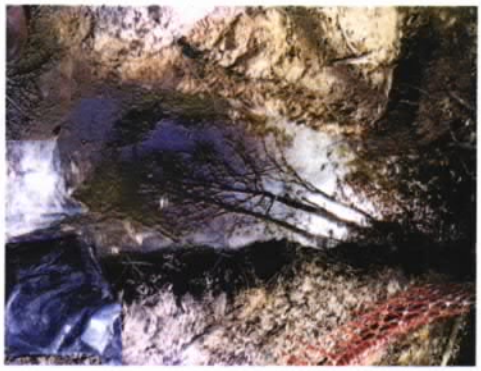
17. **Disposal (gallons or tons)***					
AA. Wastewater		gallon	$0.56		$0.00
BB. Free Product		gallon	$0.50		$0.00
C1. Soil Treatment/Disposal	1	ton	$60.00		$60.00
D1. Drilling fluids		gallon	$0.42		$0.00
18. **Miscellaneous (attach receipts)**					
		each	$0.00		$0.00
		each	$0.00		$0.00
		each	$0.00		$0.00
20. **Tier I Assessment (Use DHEC 3665 form)**		standard			$0.00
21. **IGWA (Use DHEC 3666 form)**		standard			$0.00
22. **Corrective Action (Use DHEC 3667 form)**		PFP Bid			$0.00
23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A1. 8-hour Event*		each	$1,375.00		$0.00
AA. 24-hour Event*		each	$3,825.00		$0.00
A3. 48-hour Event*		each	$6,265.00		$0.00
A4. 96-hour Event*		each	$12,567.50		$0.00
C1. Off-gas Treatment 8 hour		per event	$122.50		$0.00
C2. Off-gas Treatment 24 hour		per event	$241.50		$0.00
C3. Off-gas Treatment 48 hour		per event	$327.00		$0.00
C4. Off-gas Treatment 96 hour		per event	$780.00		$0.00
D. Site Reconnaissance		each	$203.25		$0.00
E1. Additional Hook-ups		each	$25.75		$0.00
F1. Effluent Disposal		gallon	$0.44		$0.00
G. AFVR Mobilization/Demobilization		each	$391.50		$0.00
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A1. New GAC System Installation*		each	$1,900.00		$0.00
BB. Refurbished GAC Sys. Install*		each	$900.00		$0.00
C1. Filter replacement/removal*		each	$350.00		$0.00
DD. GAC System removal, cleaning, & refurbishment*		each	$275.00		$0.00
E1. GAC System housing*		each	$250.00		$0.00
F. In-line particulate filter		each	$150.00		$0.00
G1. Additional piping & fittings		foot	$1.50		$0.00
25. **Well Repair**					
A1. Additional Copies of the Report Delivered		each	$50.00		$0.00
B1. Repair 2x2 MW pad*		each	$50.00		$0.00
C1. Repair 4x4 MW pad*		each	$88.00		$0.00
D1. Repair well vault*		each	$118.00		$0.00
F1. Replace well cover bolts		each	$2.60		$0.00
G. Replace locking well cap & lock		each	$15.00		$0.00
H1. Replace/Repair stick-up*		each	$134.00		$0.00
II. Convert Flush-mount to Stick-up*		each	$150.00		$0.00
J1. Convert Stick-up to Flush-mount*		each	$130.00		$0.00
K1. Replace missing/illegible well ID plate		each	$12.00		$0.00
Report Prep & Project Management	12%	percent	$3,553.00		$426.36
TOTAL					$3,979.36

 *The appropriate mobilization cost can be added to complete these tasks, as necessary



UST # 11946 Site Visit 02/05/2019



UST
128
Tech
DOCKETING

UST # 11946

Site Visit 02/08/2019

SCANNED

dhec
Healthy People

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

FEB 1 3 2019

Re: **Monitoring Well Replacement**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946; CA #59018; UMW-27419
Release reported January 4, 2011
Site-Specific Work Plan received February 7, 2019
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) recognizes your commitment to continue work at this site utilizing Enviro-Test Services, Inc (Enviro-Test). The next appropriate scope of work at the site is a monitoring well replacement of MW-16 A&B. The installment may commence as outlined in this correspondence and the UST Quality Assurance Program Plan (QAPP) Revision 3.1. A copy of UST QAPP Version 3.1 for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

As soon as the beginning date of the event has been scheduled, please contact Carolyn Moores at mooresct@dhec.sc.gov.

Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Cost Agreement #59018 has been approved in the amount shown on the enclosed cost agreement. Enviro-Test can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. If the invoice and completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval is obtained from the UST Management Division. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by DHEC for the cost to be paid. DHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, DHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

DHEC grants preapproval for transportation of virgin petroleum-contaminated groundwater from the referenced site to a permitted treatment facility.

On all correspondence concerning this site, please reference UST Permit #11946. If you have any questions, please contact me at (803) 898-2622 or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement
Monitoring Well Approval Form

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063 (with enclosure)
Technical File (with enclosure)

Healthy People. Healthy Communities.

Monitoring Well Approval

Approval is hereby granted to: Enviro-Test Services, Inc.
(on behalf of): Frederick N. Checchini
Facility: Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit Number: 11946
County: Richland

This approval is for the installation of one shallow and one intermediate groundwater monitoring wells. The monitoring wells are to be installed in the approved locations. Monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the Division shall be completed and submitted to the Division within 30 days after well completion or abandonment unless another schedule has been approved by the Division. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Division within 30 days of receipt of laboratory results unless another schedule has been approved by the Division as required by R.61-71.H.1.d.
5. If any of the information provided to the Division changes, notification to Carolyn Moores the project manager (tel: (803) 898-2622 or e-mail: mooresct@scdhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. Division approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated May 27, 2016. A copy of this approval should be on the site during well installation.

Date of Issuance: February 11, 2019

Approval #: UMW-27419

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Approved Cost Agreement **59018**

Facility: 11946 BROAD RIVER AMOCO
MOORESCT
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1.0000	$150.000	150.00
04 MOB/DEMOB						
		A1	EQUIPMENT	1.0000	$1,020.000	1,020.00
		B1	PERSONNEL	1.0000	$423.000	423.00
09 WELL INSTALLATION						
		B1	WATER TABLE (DRILL RIG)	50.0000	$38.000	1,900.00
16 SUBSEQUENT SURVEY						
		A1	SUBSEQUENT SURVEY	1.0000	$260.000	260.00
17 DISPOSAL						
		C1	SOIL TREATMENT DISPOSAL	1.0000	$60.000	60.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$3,813.000	457.56
				Total Amount		4,270.56

ENVIRO-TEST SERVICES

UST
JUL 25 2011
PROGRAM

July 22, 2011

Mr. Arthur Shrader, Hydrogeologist
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201

13 tech
UST
DOCKET

RE: Tier II Assessment Plan and
Assessment Component Cost Agreement,
Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210
Richland County, SCDHEC # 11946

Dear Mr. Shrader:

Pursuant to your directive dated June 13, 2011, the attached Tier II Assessment Plan and proposed Assessment Component Agreement for the Broad River Amoco (BP) are provided for your review and approval. At my specific request, the Tier II Assessment Plan was prepared by Mr. Jim Kotti, P.G.

Should you have any questions, comments or require any additional information, please call (803)-413-4936 at your convenience.

Very truly yours,

ENVIRO-TEST SERVICES, INC.

Terry L. Teate

Terry L. Teate, President

Attachments

D H E C
PROMOTE PROTECT PROSPER

Tier II Assessment Plan
Underground Storage Tank Program

UST Permit #: 11946 County: Richland Facility Name: Broad River Amoco (BP)

Facility Address: 4335 Broad River Road City: Columbia State: SC Zipcode: 29210-4009

Responsible Party: Mr. Fredrick N. Cecchini Address: 4335 Broad River Road

City: Columbia State: SC Zipcode: 29210-4009

No. USTs: Six USTs Removed? (date: MM/DD/YYYY) Replaced? (date: MM/DD/YYYY)

Current use of facility/property:

The subject property is currently occupied by the Broad River BP and is used as a petroleum retail facility, convenience store and restaurant. The property is currently improved with one single story building with an asphalt paved parking area, a canopy covering the dispenser islands and a UST basin containing six USTs that were installed in 1989. Two USTs were removed in 1989 prior to installation of the current UST system.

Current property owner name: Mr. Fredrick N. Cecchini Address: 4335 Broad River Road

City: Columbia State: SC Zipcode: 29210-4009

Field Screening Methodology

Specify the field screening methodology to be used. The use of field screening methods to optimize the number and location of permanent wells is required.

Free product was detected in monitoring well MW-5, installed to 20 ft to monitor interstitial groundwater occurring in unsaturated soils (well screen 10 - 20 feet). The interstitial groundwater accumulated in well MW-5 to ~13.5 ft after several days. During Tier I well installation, saturated soils were encountered at 35 to 40 ft. As such, groundwater field screening will be performed to delineate the horizontal extent of COC migration of Zone 1 (interstitial groundwater) and Zone 2 (the underlying saturated soils) with the installation of temporary monitoring wells constructed of 1-inch PVC well screen and riser pipe. For field screening of the interstitial groundwater (Zone 1), 30 wells installed to a depth of 20 feet each are projected (totaling 600 ft). These wells will be sampled 2 or 3 days after installation to allow sufficient time for interstitial groundwater to accumulate. For the saturated zone (Zone 2), 30 wells installed to a depth of 40 feet each are projected (totaling 1,200 ft). From each temporary monitoring well, a groundwater sample will be collected for analysis for COC by Gas Chromatograph (Method 602) for BTEX and MTBE. Groundwater field screening methodology for a vertical indication of COC distribution is discussed below under the heading of Additional Comments.

Permanent Monitoring Wells (estimate number and total completed depth)

of shallow wells: 24 Total depth: 720 feet (12 wells to 20 ft and 12 wells to 40 ft)

# of deep wells: 2 Total depth: 120 feet (2 wells to 60 feet)

Comments, if warranted:

The Zone 1 wells will be designed to bracket accumulated interstitial groundwater. The Zone 2 wells will not be designed to bracket groundwater of the underlying saturated soils. Background groundwater quality will be evaluated for Zones 1 and 2 during Groundwater Field Screening followed by the installation of permanent monitoring wells. The Tier I assessment indicated a groundwater flow direction to the northeast based on groundwater elevations from wells MW-1 through MW-4 which were installed in

Analyses

List the analytical parameters (e.g., BTEX, MTBE) and estimated number.

Groundwater samples collected from the projected 26 monitoring wells and existing monitoring wells MW-1 through MW-4 (totaling 30 wells) will each be analyzed for BTEX/MTBE/Naphthalene/1,2-DCA (Method 8260 B), PAH (Method 8270), EDB (Method 8011), total lead, the Eight (8) South Carolina Oxygenates, methane, nitrates, sulfates and ferrous iron. Well MW-5 (Zone 1) was previously found to contain free product and accordingly a groundwater sample will not be collected for analysis unless otherwise directed by the SCDHEC. Similarly, any other well exhibiting free product will not be sampled for laboratory analysis.

Additionally, if possible, a soil sample will be collected from saturated soils during installation of a monitoring well designated to provide background groundwater quality of the site surficial aquifer. This soil sample will be analyzed for Total Organic Carbon.

Implementation Schedule *(Use MM/DD/YYYY format - Example 01/23/2004)*

Start up date: 08/01/2011 *(MM/DD/YYYY)* Completion date: 10/31/2011 *(MM/DD/YYYY)*

Report submittal date: 11/21/2011 *(MM/DD/YYYY)*

UST Permit #: 11946 Facility Name: Broad River Amoco (BP)

Site Maps

1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.

2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:

North arrow	Legend with facility name and address, UST Permit number, date, and a bar scale
Location of property lines	Streets or highways (indicate names and numbers)
Location of buildings	Identification of located buildings
Paved areas on or adjacent to site	Location of all present and former ASTs and USTs
Previous soil sampling locations	Underground and above ground utilities on or adjacent to site
Previous monitoring well locations	Location of any other potential receptor

Aquifer Characterization

Pump test: ☐ Slug tests: ☑ (check one and provide explanation for choice)

Two (2) slug tests are proposed (two separate Zone 2 wells). Bail down testing by manual methods is proposed.

Small Volume Disposal Type and Method

Soil:

An estimated 12 drums of soil are to be disposed of at a facility permitted in South Carolina to receive such materials.

Purge water:

An estimated 6 drums of purged/development groundwater are to be disposed of at a facility permitted in South Carolina to receive such materials.

Additional comments:

The Zone 1 wells will be designed to bracket accumulated interstitial groundwater. The Zone 2 wells will not be designed to bracket groundwater of the underlying saturated soils. Background groundwater quality will be evaluated for Zones 1 and 2 during Groundwater Field Screening followed by the installation of permanent monitoring wells. The Tier I assessment indicated a groundwater flow direction to the northeast based on groundwater elevations from wells MW-1 through MW-4 which were installed in the saturated sediments of Zone 2. Groundwater of Zone 2 apparently occurs under semi-confined or confined conditions. The interstitial groundwater of the overlying unsaturated sediments (Zone 1) may occur under unconfined conditions; therefore, the groundwater flow direction for Zone 1 may differ from that of Zone 2. A deep well is projected for installation proximal to the Tier 1 worst case well MW-1 (Zone 2), although free product was subsequently found at well MW-5 (Zone 1). A second deep well is projected for installation at a down-gradient location based on the results of Groundwater Field Screening for vertical COC distribution (see paragraph below).

Field Screening Methodology continued: Following groundwater field screening for the delineation of horizontal COC distribution, an indication of vertical COC distribution will be performed as follows: at three locations along the estimated center line of the horizontal COC plume (COC source or sources, plume mid-point and plume leading edge) a cluster of temporary monitoring wells will be installed. At each cluster, discrete samples will be collected at projected depths of 45, 50 and 55 BLS feet (or until refusal) utilizing direct push drilling technology with a retractable stainless steel well screen, if feasible (installation of 1-inch PVC well screen and riser pipe if non-feasible). The total estimated drilling feet for evaluation of the vertical COC distribution is therefore 450 feet.

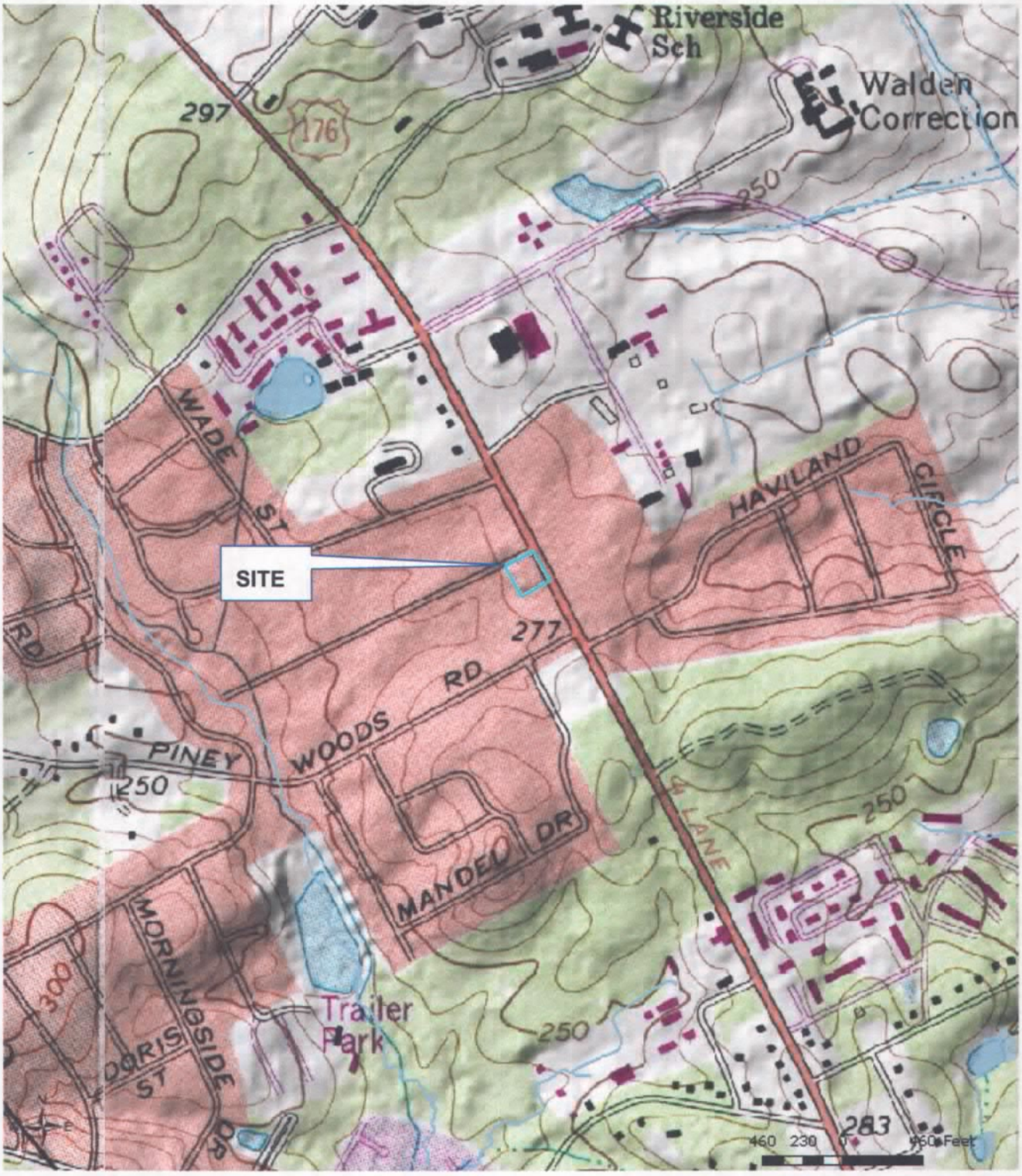


FIGURE 1: USGS Topographic Map

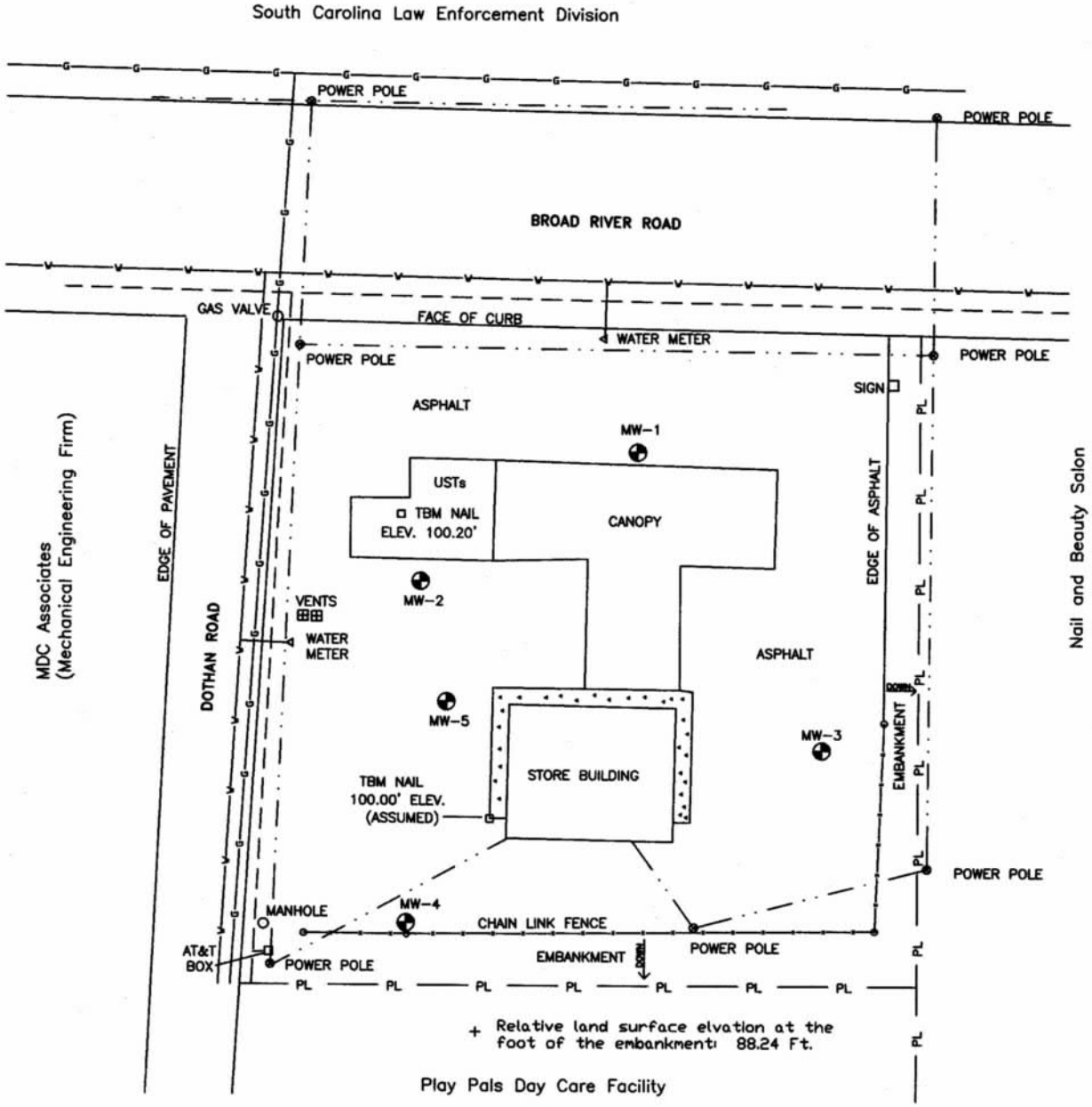
Source: Richland County GIS System

N↑

Enviro-Test Services, Inc.

Site Name: Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC 29210

Project Number: SCDHEC # 11946



	TOC ELEVATION
MW-1	100.59
MW-2	99.94
MW-3	99.91
MW-4	95.85

TOC = TOP OF CASING
TBM = TEMPORARY BENCH MARK
UST = UNDERGROUND STORAGE TANK

- Monitoring Well
- Water Line
- Gas Line
- Overhead Power Line
- Communication Line
- Property Line (Approximate)

0 50 100
1 INCH = 50 FEET

FIGURE 2: Site Base Map	
Enviro-Test Services, Inc.	Broad River Amoco (BP)
DWG BY: JDK	4335 Broad River Road
DWG DATE: 3/29/11	Columbia, SC, Richland County
	SCDHEC ID #11946

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

ASSESSMENT COMPONENT COST AGREEMENT
SOUTH CAROLINA
Department of Health and Environmental Control
Underground Storage Tank Program
State Underground Petroleum Environmental Response Bank Account

Facility Name Broad River Amoco (BP)

UST Permit # 11946 **Cost Agreement #**

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. Plan*				
A. Plan Preparation	1	x	$100.00	$100.00
B. Tax Map		x	$50.00	$0.00
2. Receptor Survey *		x	$500.00	$0.00
3. Comprehensive Survey	1	x	$1,000.00	$1,000.00
4. Mob/Demob				
A. Equipment	3	x	$575.00	$1,725.00
B. Personnel	8	each x	$290.00	$2,320.00
C. Adverse Train Vehicle		x	$575.00	$0.00
5. Soil Borings (hand auger)*		feet x	$14.00	$0.00
6. Soil Borings (drilled) & Field Screening				
A. Standard	2,250	feet x	$17.00	$38,250.00
B. Alternative, on-site		feet x	$12.50	$0.00
C. Fractured Rock		feet x	$27.50	$0.00
7. Soil Leachability Model		each x	$200.00	$0.00
8. Abandonment*	2,250	feet x	$5.00	$11,250.00
9. Well Installation*				
A. Water Table (hand auger)		feet x	$20.00	$0.00
B. Water Table (drilled)	720	feet x	$38.00	$27,360.00
C. Telescoping	120	feet x	$58.00	$6,960.00
D. Rock Drilling		feet x	$58.00	$0.00
E. 2" Rock Coring		feet x	$44.10	$0.00
F. 4" Rock Coring		feet x	$50.40	$0.00
G. multi sampling port/screen		feet x	$47.20	$0.00
10. Groundwater Sample Collection				
A.Groundwater	30	samples x	$55.00	$1,650.00
B. Air Vapor		samples x	$90.00	$0.00
C. Water Supply		samples x	$25.00	$0.00
D. Groundwater No Purge		samples x	$35.00	$0.00
E. Gauge Well only		per well x	$20.00	$0.00
F. Sample Below Product		samples x	$50.00	$0.00
G. Passive Diffusion Bag		each x	$40.00	$0.00
11. Analyses-Groundwater (see Analytical Methodology for site-specific analyses)				
A. BTEX+Naphth.+MTBE	30	samples x	$100.00	$3,000.00
B. Rush BTEX analysis		samples x	$120.00	$0.00
D. PAH's	30	samples x	$120.00	$3,600.00
E. Lead	30	samples x	$20.00	$600.00
F. EDB	30	samples x	$55.00	$1,650.00
G. 8 RCRA Metals	30	samples x	$140.00	$4,200.00
H.TPH (9070)		samples x	$55.00	$0.00
J. BOD		samples x	$40.00	$0.00
K. Nitrate	30	samples x	$20.00	$600.00
L. Sulfate	30	samples x	$20.00	$600.00
M. Ferrous Iron	30	samples x	$20.00	$600.00
N. Methane	30	samples x	$110.00	$3,300.00
O. Organic Lead		samples x	$100.00	$0.00
P. 8 Oxygenates	30	samples x	$85.00	$2,550.00
AA. Filtered Lead		samples x	$46.00	$0.00
BB. 1,2-DCA	30	samples x	$10.75	$322.50

11. Analyses-Soil				
Q. BTEX + Naphth.		samples x	$100.00	$0.00
R. PAH's		samples x	$120.00	$0.00
S. 8 RCRA Metals		samples x	$150.00	$0.00
T. TPH (9071)		samples x	$60.00	$0.00
U. TPH (3550B/8015B)		samples x	$65.00	$0.00
V. TPH (5030B/8015B)		samples x	$65.00	$0.00
W. Grain size/hydrometer		samples x	$75.00	$0.00
X. Total Organic Carbon	1	samples x	$35.00	$35.00
11. Analyses-Air				
Y. BTEX + Naphthalene		samples x	$247.50	$0.00
Z. Hydrocarbon Fuel Identification		samples x	$620.00	$0.00
12. Aquifer Characterization*				
A. Pumping Test		hours x	$120.00	$0.00
B. Slug Test*	2	tests x	$150.00	$300.00
C. Fractured Rock		tests x	$500.00	$0.00
13. Free Product Recovery Rate Test*		tests x	$120.00	$0.00
14. Fate/Transport Modeling				
A. Mathematical Model		each x	$300.00	$0.00
B. Computer Model	1	each x	$500.00	$500.00
15. Risk Evaluation				
A. Tier I Risk Evaluation		x	$301.00	$0.00
B. Tier II Risk Evaluation	1	x	$500.00	$500.00
16. Subsequent Survey*	1	x	$260.00	$260.00
17. Disposal*				
A. Wastewater				
1. Purging/Sampling	6	drums x	$90.00	$540.00
2. Pumping Test/EFR		gallons x	$0.60	$0.00
B. Free Product	1	drums x	$110.00	$110.00
C. Soil (Treatment/Disposal)	12	drum/ton x	$50.00	$600.00
18. Miscellaneous (attach receipts)				
		x		$0.00
		x		$0.00
		x		$0.00
20. Tier I Assessment (Use DHEC 3665 form)				
21. IGWA (Use DHEC 3666 form)				
22. Corrective Action (Use DHEC 3667 form)				
23. EFR				
A. 8-hour Event*		each x	$3,000.00	$0.00
B. Additional Hour		per hour x	$204.00	$0.00
C. Off-gas treatment		per hour x	$35.00	$0.00
24. Granulated Activated Carbon (GAC) filter system installation & service:				
A. New GAC System Installation*		each x	$2,500.00	$0.00
B. Refurbished GAC Sys. Install*		each x	$850.00	$0.00
C. Filter replacement/removal*		each x	$450.00	$0.00
D. System removal, cleaning, & refurbishment*		each x	$450.00	$0.00
E. GAC System housing		each x	$450.00	$0.00
F. In-line particulate filter		each x	$140.00	$0.00
G. Additional piping & fittings		feet x	$4.00	$0.00
25. Well Repair				
A. Additional Copies of Report		each x	$25.00	$0.00
B. Repair 2x2 MW pad		each x	$100.00	$0.00
C. Repair 4x4 MW pad		each x	$150.00	$0.00
D. Repair well vault		each x	$225.00	$0.00
E. Replace well cover & gasket		each x	$30.00	$0.00
F. Replace well cover bolts		each x	$10.00	$0.00
G. Replace locking well cap & lock		each x	$15.00	$0.00
19. Report/Project Management and Coordination	15%	x	$114,482.50	$17,172.38
TOTAL				$131,654.88

*The appropriate mobilization cost can be added to complete these tasks, as necessary

February 14, 2019

ENVIRO-TEST SERVICES

UST
FEB 15 2019
PROGRAM

Carolyn Moores , Hydrogeologist
Corrective Action
Underground Storage Tank Management Division
Bureau of Land And Wast Management

UST
130
Feet
DOCKETING

RE: Broad River Amoco
Permit # 11946

OVA/PID Sewer Readings

Manhole 1 BP Station	Manhole 2 1230 Dothan Rd.	Manhole 3 1158 Dothan Rd.
	January 25, 2019	
96 PPM	54 PPM	8 PPM
	January 29, 2019	
26 PPM	18 PPM	2 PPM
	February 8, 2019	
88 PPM	10 PPM	0 PPM
	February 14, 2019	
23 PPM	0 PPM	0 PPM

Thank You, for recognizing our commitment to continue working on this project.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

February 12, 2019

ENVIRO-TEST SERVICES

Carolyn Moores , Hydrogeologist
Corrective Action
Underground Storage Tank Management Division
Bureau of Land And Wast Management

RE: Broad River Amoco
Permit # 11946
Corrective Actions Suggestions

1. Remove all the concrete on top of the UST in order to inspect the piping and fittings. Then determine where to place wells that will used to remove free product and to de-water in order to keep the tank basin dry. The new concrete will also keep the tank basin dry.

2. A secondary containment wall/system needs to be constructed around the existing UST Tanks in order to protect the downgrade of the Day Care, neighborhood and storm drain from any future releases or accidents.

3. All ares be excavated where free product has been detected. 10 to 15 ft. deep.

4. A system of horizontal recovery well installed under the convenience store building in order to recover any free product that remains in the barrow pit under the building that was used for waste dumping.

5. A containment wall built between the Gas Station on three sides. Dothan Road, Play Pals Day Care (Neighborhood), and the property of Mrs. Loman. This barrier should include a Monitor System and a recovery treatment system for removing contaminated water or free product. The berrier should be at least 10-12 feet deep.

6. The French drain around Play Pals Day Care needs to be excavated and a new drainage system designed so that no contaminate water can get into the storm drain that drains into the creek, and be monitored.

7. All the concrete drive way of the day care where the gasoline has impacted the soils under the drive way so the contaminate soils can be removed.

8. All soil, shrubbery, fencing, piping and concrete in the back of the Day Care (childrens play area) be removed and excavated.

9. Soil vapor extraction system installed under Play Pals building that is built on a slab. In order to remove any vapors.

10. All sump pumps, piping, rock, soils, plastic be removed under the building with the crawl space at Play Pals.

11. A ventilation system and air quality monitor system installed under the building.

12. An air quality monitor system be installed in all rooms of the Play Pals Day Care. And water and Air samples be taken periodically.

Thank You, for recognizing our commitment to continue working on this project.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

February 12, 2019

ENVIRO-TEST SERVICES

UST
FEB 15 2019
PROGRAM

Carolyn Moores , Hydrogeologist
Corrective Action
Underground Storage Tank Management Division
Bureau of Land And Wast Management

RE: Broad River Amoco
Permit # 11946
Corrective Actions Suggestions

1. Remove all the concrete on top of the UST in order to inspect the piping and fittings. Then determine where to place wells that will used to remove free product and to de-water in order to keep the tank basin dry. The new concrete will also keep the tank basin dry.

2. A secondary containment wall/system needs to be constructed around the existing UST Tanks in order to protect the downgrade of the Day Care, neighborhood and storm drain from any future releases or accidents.

3. All ares be excavated where free product has been detected. 10 to 15 ft. deep.

4. A system of horizontal recovery well installed under the convenience store building in order to recover any free product that remains in the barrow pit under the building that was used for waste dumping.

5. A containment wall built between the Gas Station on three sides. Dothan road, Play Pals Day Care (Neighborhood), and the property of Mrs. Loman. This barrier should include a Monitor System and a recovery system for removing contaminated water or free product. The Terrier should be at least 10-12 feet deep.

6. The French drain around Play Pals Day Care needs to be excavated and a new drainage system designed so that no contaminate water can get into the storm drain that drains into the creek.

7. All the concrete drive way of the day care where the gasoline has impacted the soils under the drive way so the contaminate soils can be removed.

8. All soil, shrubbery, fencing, piping and concrete in the back of the Day Care (children s play area) be removed and excavated.

9. Soil vapor extraction system installed under Play Pals building that is built on a slab. In order to remove any vapors.

10. All sump pumps, piping, rock, soils, plastic be removed under the building with the crawl space at Play Pals.

11. A ventilation system and air quality monitor system installed under the building.

12. An air quality monitor system be installed in all rooms of the Play Pals Day Care. And water and Air samples be taken periodically.

Thank You, for the opportunity to continue to work on this project.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

Blood in Anoc te

dhec
Healthy People. Healthy Communities.

UST
13
DOCKETING
FEB 2 5 2019

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Cost Agreement for ongoing FP containment measures**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; CA# 59030
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). To address the current site conditions that began in November of 2018, and the containment of migrating free product, DHEC has written a cost proposal for removing and disposing of the accumulating free product on the adjacent Play Pals property downgradient from the site.

The cost proposal includes costs for weekly vacuuming and removal of the free product from the trenches and areas where it collects as well as removing free product and storm water from trenches after rain events and disposal. Additionally, the cost proposal includes expenses relating to the prevention of plume migration such as boom replacement in areas that are at risk of contributing to surface water contamination and to prevent migration.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

Approved Cost Agreement 59030

Facility: 11946 BROAD RIVER AMOCO
MOORESCT

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
17 DISPOSAL						
		AA	WASTEWATER	6,500.0000	$0.560	3,640.00
		BB	FREE PRODUCT	200.0000	$0.500	100.00
18 MISCELLANEOUS						
			ARM INVOICE 0219B	1.0000	$7,212.040	7,212.04
			ENVIRO-TEST INVOICE 23119A	1.0000	$19,500.000	19,500.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$30,452.040	3,654.24
				Total Amount		34,106.28

dhec
SC Department of Health and Environmental Control

UST 133 DOCKETING

FEB 2 7 2019

MR JAMES R RICE JR AND WENDY S RICE
22 CADDIS CREEK COURT
IRMO SC 29063

Re: Request for Property Right of Entry
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Access to Adjacent Property at 1257 Dothan Road, Columbia, SC
Tax ID #R06108-04-27
Richland County

Dear Mr. Rice:

The Underground Storage Tank (UST) Division directed Enviro-Test Services, Inc. as the contractor of the party responsible for the release at the Broad River Amoco, to perform work to assess a reported petroleum release. Enviro-Test Services, Inc. requires access to your property to reinstall monitoring wells to fully assess the effects of the petroleum release. Enclosed is a map of the referenced facility and your property showing the approximate locations of the monitoring well locations. These locations can be adjusted to meet your approval. Enviro-Test Services, Inc. will immediately repair any damage to your property created by the installation or abandonment of the screening points or monitoring wells with no cost to you.

The monitoring wells will be constructed in accordance with the South Carolina Well Standards R61-71. They will be completed at grade and will be completed at the surface with a small diameter manhole cover and 1 foot by 1-foot concrete pad. The wellhead completion will not interfere with normal usage of your property. The monitoring wells will be used to sample soil and groundwater. They will be properly abandoned upon completion, and no permanent effects will remain on your property.

Please sign the enclosed permission form and return it to my attention within fifteen days of the date of this letter. If you have any questions, please contact me at (803) 898-2622. Technical questions about well installation should be addressed to Mr. Terry Teate at Enviro-Test Services, Inc. at 803-413-4936. Thank you for your assistance regarding this matter.

Sincerely,

Carolyn Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Right of Entry Form
Site Map

cc: Frederick Cecchini, 429 Press Lindler Road, Columbia, SC 29212 (without enc)
Enviro-Test Services, Inc., P.O. Box 2237, Irmo, SC 29063 (with enc)
Technical File (with enc)

dhec
S.C. Department of Health and Environmental Control

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK DIVISION
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6241

RIGHT OF ENTRY
Tax Map # R06108-04-27

I, _____ certify that I am the legal owner or the authorized representative for _____ (owner) of the property described below. I have witnessed the planned locations / have been provided a sketch map indicating the location(s) of the work to be performed. Permission is hereby granted to Enviro-Test Services, Inc. and/or the Agency or their agents to enter the referenced property for the following purposes:

Name of Facility (if appropriate): _____

Street Address: _____

City, State, ZIP: _____

1) Drilling of screening points. The work will be properly abandoned upon completion, and no permanent effects shall remain on site.
2) Installing up to three monitoring wells. I understand that these wells will remain with the property until cleanup is complete.
3) Additionally, the Agency and Enviro-Test Services, Inc. or its agents will access the property at reasonable times for measurement and/or collection of groundwater samples.
4) The monitoring wells will be properly abandoned upon completion of remediation activities.

NAME (Please print): _____

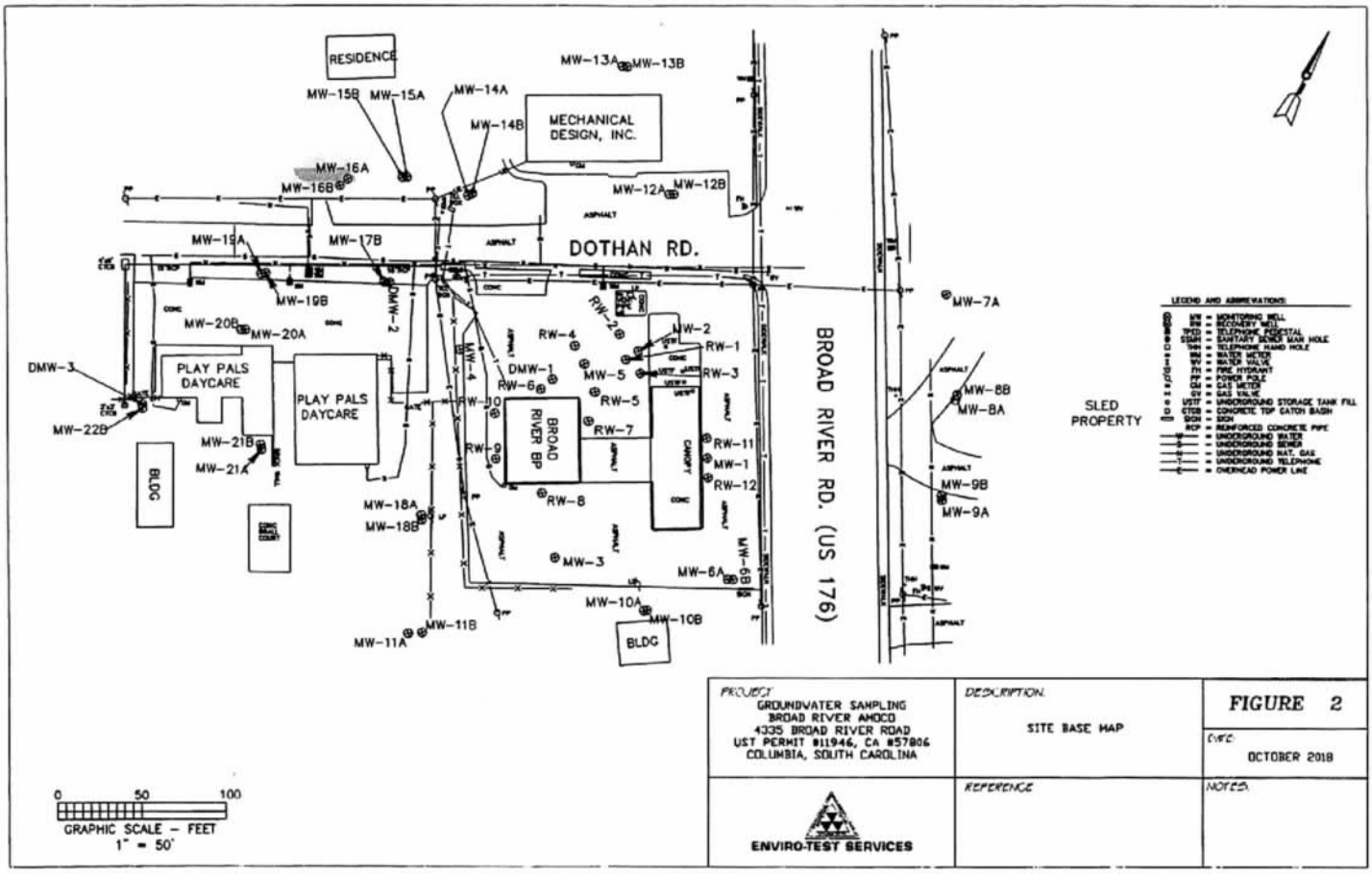
SIGNATURE: _____

WITNESS: _____

DATE SIGNED: _____

Contact Telephone Number to Coordinate Dates of Work: _____

Please Return to the Attention of Carolyn Moores, 2600 Bull St, Columbia, SC 29201
Reference UST Permit # 11946



PROJECT GROUNDWATER SAMPLING BROAD RIVER AMOCO 4335 BROAD RIVER ROAD UST PERMIT #11946, CA #57806 COLUMBIA, SOUTH CAROLINA	DESCRIPTION SITE BASE MAP	FIGURE 2 DATE OCTOBER 2018
ENVIRO-TEST SERVICES	REFERENCE	NOTES

March 1, 2019

ENVIRO-TEST SERVICES

Carolyn Moores , Hydrogeologist
Corrective Action
Underground Storage Tank Management Division
Bureau of Land And Wast Management

RE: Broad River Amoco
Permit # 11946

OVA/PID Sewer Readings

Manhole 1 BP Station	Manhole 2 1230 Dothan Rd.		Manhole 3 1158 Dothan Rd.
	January 25, 2019		
96 PPM	54 PPM		8 PPM
	January 29, 2019		
26 PPM	18 PPM		2 PPM
	February 8, 2019		
88 PPM	10 PPM		0 PPM
	February 14, 2019		
23 PPM	0 PPM		0 PPM
	February 22, 2019		
5 PPM	75 PPM		20 PPM
	February 28, 2019		
5 PPM	501 PPM	House 111 PPM	41 PPM

Thank You, for recognizing our commitment to continue working on this project.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

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

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK DIVISION
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6241

UST 135 Tech DOCKETING

RIGHT OF ENTRY
Tax Map # R06108-04-27

I, James R Rice certify that I am the legal owner or the authorized representative for Same (owner) of the property described below. I have witnessed the planned locations / have been provided a sketch map indicating the location(s) of the work to be performed. Permission is hereby granted to Enviro-Test Services, Inc. and/or the Agency or their agents to enter the referenced property for the following purposes:

Name of Facility (if appropriate): _____

Street Address: 1257 Dothan Rd

City, State, ZIP: Columbia, SC 29210

1) Drilling of screening points. The work will be properly abandoned upon completion, and no permanent effects shall remain on site.
2) Installing up to three monitoring wells. I understand that these wells will remain with the property until cleanup is complete.
3) Additionally, the Agency and Enviro-Test Services, Inc. or its agents will access the property at reasonable times for measurement and/or collection of groundwater samples.
4) The monitoring wells will be properly abandoned upon completion of remediation activities.

NAME (Please print): James R. Rice Jr

SIGNATURE: _____

WITNESS: _____

DATE SIGNED: 2/28/2019

Contact Telephone Number to Coordinate Dates of Work: 803 351 4296

Please Return to the Attention of Carolyn Moores, 2600 Bull St, Columbia, SC 29201
Reference UST Permit # 11946

UST #11946

MOORE | TAYLOR
LAW FIRM

S. Jahue Moore†
J. Mark Taylor*
C. Vance Stricklin, Jr.
James Edward Bradley†
Sheila McNair Robinson
Christian G. Spradley
C. David Sawyer, Jr.
William H. Edwards
Stanley L. Myers
Jane H. Downey*
S. Jahue Moore, Jr.
John C. Bradley, Jr.
Melissa K. Moore
William B. Fortino
Ralph Nichols Riley, Jr.
Amber Cary Fulmer

Robert D. Hazel
RETIRED
Billy C. Coleman
RETIRED

March 12, 2019

Richland County Emergency
Services Department
HazMat Enforcement & Compliance Division
1410 Laurens Street
Columbia, SC 29204

RE: Bhavik Patel

Gentlemen:

This law firm represents Mr. Patel in regard to a billing you sent him recently. I enclose herewith a copy of documents he has received.

Mr. Patel was leasing the location at the time of the release. He had nothing to do with the release. The release was caused by the transport company which was delivering fuel.

In addition to the foregoing, the underground storage tanks were insured by the South Carolina Superb Fund. The $25,000.00 limit has been paid. Under South Carolina law it is our position that Mr. Patel has paid everything he is lawfully required to pay and he is not responsible for this bill.

Based on the foregoing, your billing is respectfully denied. If you have a claim I would respectfully submit you should submit it to the South Carolina Department of Health and Environmental Control or Pop's Transport Company from Charlotte, North Carolina.

Thank you for your attention to this matter and we wish you nothing but the best.

Yours very truly,

S. Jahue Moore

SJM:dc
Enclosures
cc w/encls.: SC Department of Health and Environmental Control
Mr. Bhavik Patel

Richland County Emergency Services Department
HazMat Enforcement & Compliance Division
C.B.R.N.E. ~ Hazardous Materials ~ Mass Casualty
1410 Laurens Street, Columbia, S.C. 29204
(803) 782-6182 HazMat@rcgov.us

TO: **Bhavik Patel**
128 Majestic Ct.
Lexington, S.C. 29072
Tel: 803-41-4832

FROM: **Richland County ESD, HazMat Enforcement & Compliance Division**
Attn: George Mick, Chief Investigator ~ Coordinator
Tel: (803) 782-6182 HazMat@rcgov.us

ORIGINAL

DATE: **3 March, 2019**

Date of Initial Response: **19 November, 2018**

SUBJECT: **Cost Recovery Invoice, HazMat Response, Broad River Gasoline Spill**

Per Richland County Ordinance 13-10, the attached Inventory and Use Tracking Sheet and Cost Recovery Invoice are presented for payment.

Agency #1: **Richland County ESD, Hazardous Materials Division**
Sub-Total: **$ 24,938.39**

Agency #2: **Richland County Sheriff's Department**
Sub-Total: **$ 5,880.68**

Shall be paid by: 15 April, 2019

Check(s) shall be made payable to #1 Richland County HazMat and #2 Richland County Sheriff' Dept. . Both checks shall be mailed to Richland ESD (See address above), Attention: HazMat Division, for disbursement.

gfm/gfm/

RICHLAND COUNTY HazMat Enforcement DIV. / E.S.D.

Inventory & Use Tracking Sheet:

Agency: Richland County Sheriff's Department
Response Name: Broad River Gasoline Spill
Responsible Party: Patel, Bhavik
Response Date(s): 11/19-21/18

DATE: 03/01/19

COPY

Line	Description	Unit	Unit Cost	# Expended	Total Costs
1	Absorbent Boom, HC, 5" X 10'	EACH	$28.25	0	$0.00
2	Absorbent Boom, NC, 8" X 10'	EACH	$36.73	0	$0.00
3	Absorbent Pads, HC	EACH	$1.14	0	$0.00
4	Absorbent, Oil Dry	BAG	$7.75	0	$0.00
5	Alconox, 4 lb.	EACH	$23.17	0	$0.00
6	Analysis, Hazard Categorizing Kit, Use, Simple, Per Sample	EACH	$15.00	0	$0.00
7	Analysis, Hazard Categorizing Kit, Use, Complex, Per Sample	EACH	$32.00	0	$0.00
8	Analysis, Laboratory, Meth Chek Kit	EACH	$70.00	0	$0.00
9	Analysis, Laboratory, TBD	EACH	TBD	0	$0.00
10	Anti-fog, 8 oz.	BOTTLE	$6.39	0	$0.00
11	APR Cartridge	PAIR	$23.00	0	$0.00
12	APR Cartridge, FM-64	EACH	$55.00	0	$0.00
13	APR/SCBA Cleaner/Sanitizer	EACH	$1.11	0	$0.00
14	Boot Covers, Latex (Nuke Boots)	PAIR	$4.13	0	$0.00
15	Disposable Culture Tubes	EACH	$0.81	0	$0.00
16	Drum Liners	EACH	$7.06	0	$0.00
17	Drum, 17E (1A1) - CT	EACH	$101.72	0	$0.00
18	Drum, 17H (1A2) - OT	EACH	$93.24	0	$0.00
19	Drum, 85 gal overpack	EACH	$178.35	0	$0.00
20	Drum, 95-gal poly overpack	EACH	$219.22	0	$0.00
21	Drum 55 gal poly	EACH	$77.23	0	$0.00
22	Drum Thieves 12mm	EACH	$3.92	0	$0.00
23	Drum Thieves 18mm	PAIR	$4.87	0	$0.00
24	Ear Plugs	PAIR	$0.83	0	$0.00
25	Eyewash Solution 16fl.oz.	EACH	$14.46	0	$0.00
26	Gloves, Leather Work	PAIR	$7.72	0	$0.00
27	Gloves, Cotton	PAIR	$1.37	0	$0.00
28	Gloves, Nitrile	PAIR	$2.57	0	$0.00
29	Gloves, Latex Sample	PAIR	$0.47	0	$0.00

68	Sample Scoops	EACH	$3.86	0	$0.00
69	Tape, Chemical	ROLL	$30.18	0	$0.00
70	Tape, Duct	ROLL	$6.11	0	$0.00
71	Tape, Caution	ROLL	$26.22	1	$26.22
72	Vehicle, Response, Truck, 4 X 4, Command	HOUR	$25.50	34	$867.00
73	Vehicle, Response, Truck, 2 X 4	HOUR	$19.45	100.5	$1,954.73
74	Vehicle, Patrol	HOUR		0	$0.00
75	Vehicle, Response, Mule 4 X 4, with trailer & w/o crew	HOUR	$21.50	0	$0.00
76	Vehicle, Response, ATV 4 X 4, with trailer & w/o crew	HOUR	$21.50	0	$0.00
77	Vehicle, Comand Post, RV	HOUR		0	$0.00
78		HOUR		0	$0.00
79		HOUR		0	$0.00
80	Wipes, Respirator	BOX	$16.04	0	$0.00
81	Popup containment pool	Each		0	$0.00
82					
83	Instrument, Dosimeter, Radiological	HOUR	$3.00	0	$0.00
84				0	$0.00
85				0	$0.00
86				0	$0.00
			(Amount to be reimbursed to Agency)	Grand Total	$5,880.68

COMMENTS:

06/07/18

RICHLAND COUNTY HazMat Enforcement DIV. / E.S.D.

Inventory & Use Tracking Sheet: COMBO

Agency: Richland County E.S.D. - HazMat Div.

Response Name: Broad River Gasoline Spill -

Responsible Party: Patel, Bhavik

Response Date(s): 11/19-21/18

DATE: 03/01/19

COPY

Line	Description	Unit	Unit Cost	# Expended	Total Costs
1	Absorbent Boom, HC, 5" X 10'	EACH	$28.25	0	$0.00
2	Absorbent Boom, NC, 8" X 10'	EACH	$36.73	0	$0.00
3	Absorbent Pads, HC	EACH	$1.14	0	$0.00
4	Absorbent, Oil Dry	BAG	$7.75	0	$0.00
5	Alconox, 4 lb.	EACH	$23.17	0	$0.00
6	Analysis, Hazard Categorizing Kit, Use, Simple, Per Sample	EACH	$15.00	0	$0.00
7	Analysis, Hazard Categorizing Kit, Use, Complex, Per Sample	EACH	$32.00	0	$0.00
8	Analysis, Laboratory, Meth Chek Kit	EACH	$70.00	0	$0.00
9	Analysis, Laboratory, TBD	EACH	TBD	0	$0.00
10	Anti-fog, 8 oz.	BOTTLE	$6.39	0	$0.00
11	APR Cartridge	PAIR	$23.00	0	$0.00
12	APR Cartridge, FM-64	EACH	$55.00	0	$0.00
13	APR/SCBA Cleaner/Sanitizer	EACH	$1.11	0	$0.00
14	Boot Covers, Latex (Nuke Boots)	PAIR	$4.13	0	$0.00
15	Disposable Culture Tubes	EACH	$0.81	0	$0.00
16	Drum Liners	EACH	$7.06	0	$0.00
17	Drum, 17E (1A1) - CT	EACH	$101.72	0	$0.00
18	Drum, 17H (1A2) - OT	EACH	$93.24	0	$0.00
19	Drum, 85 gal overpack	EACH	$178.35	0	$0.00
20	Drum, 95-gal poly overpack	EACH	$219.22	0	$0.00
21	Drum 55 gal poly	EACH	$77.23	0	$0.00
22	Drum Thieves 12mm	EACH	$3.92	0	$0.00
23	Drum Thieves 18mm	PAIR	$4.87	0	$0.00
24	Ear Plugs	PAIR	$0.83	0	$0.00
25	Eyewash Solution 16fl.oz.	EACH	$14.46	0	$0.00
26	Gloves, Leather Work	PAIR	$7.72	0	$0.00
27	Gloves, Cotton	PAIR	$1.37	0	$0.00
28	Gloves, Nitrile	PAIR	$2.57	0	$0.00
29	Gloves, Latex Sample	PAIR	$0.47	0	$0.00

67	Protective Suits, Chemical, Thermo Pro, Disposable Coverall	EACH	TBD	0	$0.00
68	Protective Suits, Chemical, Level "A" Limited Use	EACH	$1,000.00	0	$0.00
69	Protective Suits, Chemical, Trelleborg, Use	HOUR	$25.00	0	$0.00
70	Repertory Protection, APR, less filter	HOUR	$3.00	0	$0.00
71	Repertory Protection, SCBA, MSA, FireHawk	HOUR	$10.00	0	$0.00
72	Safety Glasses	PAIR	$7.03	0	$0.00
73	Sample Bag, Tedlar	EACH	$23.00	0	$0.00
74	Sample Jars, VOA	EACH	$4.17	0	$0.00
75	Sample Jars, 4 oz.	EACH	$9.31	0	$0.00
76	Sample Jars, 8 oz.	EACH	$11.82	0	$0.00
77	Sample Jars, 16 oz.	EACH	$13.67	0	$0.00
78	Sample Jars, 32 oz.	EACH	$17.40	0	$0.00
79	Sample Syringe, 10 ml	EACH	$114.11	0	$0.00
80	Sample Scoops	EACH	$3.86	0	$0.00
81	Tape, Chemical	ROLL	$30.18	0	$0.00
82	Tape, Duct	ROLL	$6.11	0	$0.00
83	Tape, Caution	ROLL	$26.22	0	$0.00
84	**Vehicle, Response, Truck, 4 X 4, Command**	HOUR	**$25.50**	**35.75**	**$911.63**
85	**Vehicle, Response, Truck, 2 X 4**	HOUR	**$19.45**	**0**	**$0.00**
86	**Vehicle, Response, Trailer, Suit & Supply, 8.5' X 28'**	HOUR	**$13.39**	**0**	**$0.00**
87	**Vehicle, Response, Mule 4 X 4, with trailer & w/o crew**	HOUR	**$21.50**	**0**	**$0.00**
88	**Vehicle, Response, ATV 4 X 4, with trailer & w/o crew**	HOUR	**$21.50**	**0**	**$0.00**
89	**Vehicle, Response, Cascade Trailer, with crew**	HOUR	**$50.46**	**0**	**$0.00**
90	**Vehicle, Response, Trailer, HazMat**	HOUR	**$37.50**	**0**	**$0.00**
91	**Vehicle, Response, Ambulance, ALS, w/o/crew**	HOUR	**$76.42**	**11**	**$840.62**
92	**Vehicle, Response, Command, BN**	HOUR	**$22.85**	**26.27**	**$600.27**
93	**Vehicle, Response, Truck, 4 X 4**	HOUR	**$22.85**	**58**	**$1,325.30**
94	**Truck, Engine, Fire, AAA, or HM**	HOUR	**$72.25**	**43.29**	**$3,127.70**
95	**Truck, Ladder**	HOUR	**$117.10**	**1.04**	**$121.78**
96	**Truck, Tanker, Fire**	HOUR	**$28.70**	**0**	**$0.00**
97	**Truck, Brush, 4X4, Pump & Water**	HOUR	**$33.15**	**0**	**$0.00**
98	Wipes, Respirator	BOX	$16.04	0	$0.00
99	Popup containment pool	HOUR	$2.50	0	$0.00
100	Popup containment pool, replacement	EACH	$300.00	0	$0.00
101				0	$0.00
102				0	$0.00
103				0	$0.00
104				0	$0.00

A | FDID * 40104 | State * SC | Incident Date * MM 11 DD 19 YYYY 2018 | Station 16 | Incident Number * 18-0030051 | Exposure * 000 | ☐ Delete ☐ Change ☐ No Activity | NFIRS -1 Basic

B Location*

☐ Check this box to Indicate that the address for this incident is provided on the Wildland Fire Module in Section B "Alternative Location Specification". Use only for Wildland fires.

Census Tract ____ - ____

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

Number/Milepost: 1246 | Prefix: | Street or Highway: Dothan | Street Type: RD | Suffix:

Apt./Suite/Room: | City: COLUMBIA | State: SC | Zip Code: 29210 - ____

Cross street or directions, as applicable

COPY

C Incident Type *

411 | Gasoline or other flammable

Incident Type

D Aid Given or Received*

1 ☒ Mutual aid received
2 ☐ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☐ None

Their FDID: 32317 | Their State: SC

Their Incident Number:

E1 Date & Times — Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hr Min Sec
Alarm * (ALARM always required)	11	19	2018	08:52:59
☒ Arrival * (ARRIVAL required, unless canceled or did not arrive)	11	19	2018	08:57:30
☐ Controlled (CONTROLLED Optional, Except for wildland fires)				
☒ Last Unit Cleared (LAST UNIT CLEARED, required except for wildland fires)	11	19	2018	20:30:24

E2 Shift & Alarms

Local Option

Shift or Platoon: 3 | Alarms: 01 | District: 16

E3 Special Studies

Local Option

Special Study ID: | Special Study Value:

F Actions Taken *

42 | HazMat detection, — Primary Action Taken (1)

53 | Evacuate area — Additional Action Taken (2)

81 | Incident command — Additional Action Taken (3)

G1 Resources *

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

	Apparatus	Personnel
Suppression	0005	0018
EMS		
Other		

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

		None
Property	$, 000 , 000	☐
Contents	$, 000 , 000	☐

PRE-INCIDENT VALUE: Optional

Property	$, 000 , 000	☐
Contents	$, 000 , 000	☐

Completed Modules

☐ Fire-2
☐ Structure-3
☐ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☒ EMS-6
☐ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☐ Arson-11

H1 Casualties* ☐ None

	Deaths	Injuries
Fire Service		
Civilian		

H2 Detector

Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☐ Detector did not alert them
U ☐ Unknown

H3 Hazardous Materials Release

N ☐ None
1 ☐ Natural Gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☐ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

I Mixed Use Property

NN ☐ Not Mixed
10 ☐ Assembly use
20 ☐ Education use
33 ☐ Medical use
40 ☐ Residential use
51 ☐ Row of stores
53 ☐ Enclosed mall
58 ☐ Bus. & Residential
59 ☐ Office use
60 ☐ Industrial use
63 ☐ Military use
65 ☐ Farm use
00 ☐ Other mixed use

J Property Use* Structures

131 ☐ Church, place of worship
161 ☐ Restaurant or cafeteria
162 ☐ Bar/Tavern or nightclub
213 ☐ Elementary school or kindergarten
215 ☐ High school or junior high
241 ☐ College, adult education
311 ☐ Care facility for the aged
331 ☐ Hospital
341 ☐ Clinic,clinic type infirmary
342 ☐ Doctor/dentist office
361 ☐ Prison or jail, not juvenile
419 ☐ 1-or 2-family dwelling
429 ☐ Multi-family dwelling
439 ☐ Rooming/boarding house
449 ☐ Commercial hotel or motel
459 ☐ Residential, board and care
464 ☐ Dormitory/barracks
519 ☐ Food and beverage sales
539 ☐ Household goods,sales,repairs
579 ☐ Motor vehicle/boat sales/repair
571 ☐ Gas or service station
599 ☐ Business office
615 ☐ Electric generating plant
629 ☐ Laboratory/science lab
700 ☐ Manufacturing plant
819 ☐ Livestock/poultry storage(barn)
882 ☐ Non-residential parking garage
891 ☐ Warehouse

Outside

124 ☐ Playground or park
655 ☐ Crops or orchard
669 ☐ Forest (timberland)
807 ☐ Outdoor storage area
919 ☐ Dump or sanitary landfill
931 ☐ Open land or field
936 ☐ Vacant lot
938 ☐ Graded/care for plot of land
946 ☐ Lake, river, stream
951 ☐ Railroad right of way
960 ☐ Other street
961 ☐ Highway/divided highway
962 ☐ Residential street/driveway
981 ☐ Construction site
984 ☐ Industrial plant yard

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use: 254 — Day care, in commercial

NFIRS-1 Revision 03/11/99

FDID *	State *	MM	DD	YYYY	Station	Incident Number *	Exposure *	Complete Narrative
40104	SC	11	19	2018	16	18-0030051	000	

Incident Date *

Narrative:

E 16 responded for an odor of gas outside at 4313 Broad River Road. We were told by dispatch it was from the Play Pals day care center. Upon arrival at the address, we found that the day care center was at 1246 Dothan road which was adjacent to the dispatch address. We made our way to the day care center and upon entry, we found a smell of gasoline. Also upon arrival, we noticed a clean up crew that was working to mitigate a problem at the gas station at 4335 Broad River road which was beside the gas station. Upon entry into the day care center, we had the staff move all the children into the far most building away from the gas station. We contacted Hazmat 1 and Battalion 2 at that time to respond to the scene. We also request for Irmo 172 to respond with their meters. Irmo 172 arrived on scene and began taking meter readings with a five gas meter. At that time, there were no readings of LEL's inside the building. As the odor became stronger, we made the decision to evacuate the day care center. E 16 and Irmo 172 crew assisted the Day care center employees with evacuating the children and staff out of the building and across the street, away from the odor. 52 children and 21 adults were evacuated. At this time, one of the day care employees began complaining of breathing problems. EMS was requested at that time. See patient report. Bn 2 arrived on scene and after a face to face with E 16-1, he took command.

Hazmat 1 arrived on scene and began taking more readings using their meters. DEHC was requested by command as well as RCSD to assist with traffic control. RCEMS 214 transported one patient and EMS 210 remained on scene as stand by.

Hazmat 1 took readings inside the building and in the crawl space. As time progressed, LEL's began to rise as gasoline was found under the building, in the crawl space. DEHC arrived on scene and began taking samples and monitoring procedures.

Irmo 172 and E 16 established a water supply and deployed an 1 3/4" line as the clean up crew worked using a small excavator for spill mitigation.

After complaints from residents, the homes at 1238 and 1217 were checked with meters and found to be with in permissible limits. However, the residents at those locations choose to stay with other family members for the night.

E 11 crew responded and relieved E 16 crew on scene. All operations were ended by the clean up crew at this time and fire command was terminated.

Equipment used on scene by Columbia Fire. 2 Multirays, 2 Sensit TKX and one Tiff
Equipment used by Irmo fire, 1 MSA Altair 5X multigas meter and 1 Sensit TKX

11/19/2018 22:29:18 cfd_jwhite

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
40104	SC	11 / 19 / 2018	16	18-0030051	000	☐ / ☐	

B Apparatus or Resource * (Use codes listed below) | Date and Times (Check if same as alarm date) | Sent [X] | Number of People * | Use (Check ONE box for each apparatus to indicate its main use at the incident.) | Actions Taken (List up to 4 actions for each apparatus and each personnel.)

ID BAT2 — **Type** 92

	Month	Day	Year	Hours/mins
Dispatch [X]	11	19	2018	09:12
Arrival [X]	11	19	2018	09:20
Clear [X]	11	19	2018	20:30

Sent [X] — Number of People: 1 — Use: [X] Suppression ☐ EMS ☐ Other

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
11567	Reed, David	BC	X				

2 ID E11 — **Type** 11

	Month	Day	Year	Hours/mins
Dispatch [X]	11	19	2018	18:24
Arrival [X]	11	19	2018	18:24
Clear [X]	11	19	2018	20:29

Sent [X] — Number of People: 4 — Use: [X] Suppression ☐ EMS ☐ Other

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
13841	Lostetter, Adam	CAP	X				
21717	Richardson, Bryan	FE	X				
24808	Williamson, Corey	FF	X				
24809	Sopcheck, Gary	FF	X				

3 ID E16 — **Type** 11

	Month	Day	Year	Hours/mins
Dispatch [X]	11	19	2018	08:53
Arrival [X]	11	19	2018	08:57
Clear [X]	11	19	2018	18:54

Sent [X] — Number of People: 4 — Use: [X] Suppression ☐ EMS ☐ Other

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
20186	Barkley, Michael	FE	X				
21436	White, John	CAP	X				
24805	Minick, Conrad	FF	X				
25219	Wise, Latonya	FF	X				

40104	SC	11	19	2018	16	18-0030051	000	Responding Units/Personnel
FDID	State	Incident Date			Station	Incident Number	Exposure	

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
BAT2 Battalion 2	09:12:55	09:13:49	09:20:00	20:30:24

Staff ID\Staff Name		Activity	Rank	Position	Role
11567	Reed, David E	Responded	Battalion C		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E11 Engine 11	18:24:38	18:24:40	18:24:40	20:29:27

Staff ID\Staff Name		Activity	Rank	Position	Role
13841	Lostetter, Adam B	Responded	Captain		
21717	Richardson, Bryan C	Responded	Fire Engine		
24808	Williamson, Corey J	Responded	Firefighter		
24809	Sopcheck, Gary M	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E16 Engine 16	08:53:00	08:54:20	08:57:30	18:54:59

Staff ID\Staff Name		Activity	Rank	Position	Role
20186	Barkley, Michael D	Responded	Fire Engine		
21436	White, John P	Responded	Captain		
24805	Minick, Conrad H	Responded	Firefighter		
25219	Wise, Latonya A	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E6 Engine 6	11:00:59	11:02:17	11:05:38	12:00:11

Staff ID\Staff Name		Activity	Rank	Position	Role
23024	Paolucci, John N	Responded	Fire Engine		
24593	Baker, Adam Ryan	Responded	Senior Fire		
25048	Thomas, Sean Delion	Responded	Firefighter		
25055	Brown, Luis Anthony	Responded	Firefighter		
VF17001	Mick, George F	Responded	District Ch		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
HM1 HazMat 1	09:14:04	09:16:09	09:31:40	13:25:14

Staff ID\Staff Name		Activity	Rank	Position	Role
13077	Collins, Burley L	Responded	Captain		
21920	Clowney, Courtney M	Responded	Firefighter		
23062	Champagne, Raymond F	Responded	Fire Engine		
23844	Shealy, Sebastian	Responded	Senior Fire		

FDID	State	MM	DD	YYYY	Station	Incident Number	Exposure	NFIRS - Involvement User Fields
40104	SC	11	19	2018.0	16	18-0030051	00000	

Involvement Name:	Involvement Type:	Owner:	Occupant:
Saville, Bonnie	Property Owner	X	

A — FDID: 40104 | State: SC | Incident Date (MM DD YYYY): 11 20 2018 | Station: 06 | Incident Number: 18-0030161 | Exposure: 000 | ☐ Delete ☐ Change ☐ No Activity | NFIRS -1 Basic

B Location*

☐ Check this box to Indicate that the address for this incident is provided on the Wildland Fire Module In Section B "Alternative Location Specification". Use only for Wildland fires. Census Tract: ____ - ____

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

Number/Milepost: 4335 | Prefix: | Street or Highway: BROAD RIVER | Street Type: RD | Suffix:

Apt./Suite/Room: | City: COLUMBIA | State: SC | Zip Code: 29210 -

Cross street or directions, as applicable:

COPY

C Incident Type * — 411 | Gasoline or other flammable (Incident Type)

D Aid Given or Received*

1 ☐ Mutual aid received
2 ☒ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☐ None

Their FDID: 32317 | Their State: SC | Their Incident Number:

E1 Date & Times — Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hr Min Sec
Alarm * (ALARM always required)	11	20	2018	08:28:30
☒ Arrival * (ARRIVAL required, unless canceled or did not arrive)	11	20	2018	08:31:56
☐ Controlled (CONTROLLED Optional, Except for wildland fires)				
☒ Last Unit Cleared (LAST UNIT CLEARED, required except for wildland fires)	11	20	2018	20:40:35

E2 Shift & Alarms — Local Option: Shift or Platoon: 1 | Alarms: 01 | District: 06

E3 Special Studies — Local Option: Special Study ID# | Special Study Value

F Actions Taken *

42 | HazMat detection, (Primary Action Taken (1))
55 | Establish safe area (Additional Action Taken (2))
81 | Incident command (Additional Action Taken (3))

G1 Resources *

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

	Apparatus	Personnel
Suppression	0005	0013
EMS		
Other		

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

			None
Property $	, 000	, 000	☐
Contents $	, 000	, 000	☐

PRE-INCIDENT VALUE: Optional

Property $	, 000	, 000	☐
Contents $	, 000	, 000	☐

Completed Modules

☐ Fire-2
☐ Structure-3
☐ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☐ EMS-6
☐ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☐ Arson-11

H1 * Casualties ☐ None

	Deaths	Injuries
Fire Service		
Civilian		

H2 Detector — Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☐ Detector did not alert them
U ☐ Unknown

H3 Hazardous Materials Release

N ☐ None
1 ☐ Natural Gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☐ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

I Mixed Use Property

NN ☐ Not Mixed
10 ☐ Assembly use
20 ☐ Education use
33 ☐ Medical use
40 ☐ Residential use
51 ☐ Row of stores
53 ☐ Enclosed mall
58 ☐ Bus. & Residential
59 ☐ Office use
60 ☐ Industrial use
63 ☐ Military use
65 ☐ Farm use
00 ☐ Other mixed use

J Property Use* — Structures

131 ☐ Church, place of worship
161 ☐ Restaurant or cafeteria
162 ☐ Bar/Tavern or nightclub
213 ☐ Elementary school or kindergarten
215 ☐ High school or junior high
241 ☐ College, adult education
311 ☐ Care facility for the aged
331 ☐ Hospital
341 ☐ Clinic,clinic type infirmary
342 ☐ Doctor/dentist office
361 ☐ Prison or jail, not juvenile
419 ☐ 1-or 2-family dwelling
429 ☐ Multi-family dwelling
439 ☐ Rooming/boarding house
449 ☐ Commercial hotel or motel
459 ☐ Residential, board and care
464 ☐ Dormitory/barracks
519 ☐ Food and beverage sales
539 ☐ Household goods,sales,repairs
579 ☐ Motor vehicle/boat sales/repair
571 ☐ Gas or service station
599 ☐ Business office
615 ☐ Electric generating plant
629 ☐ Laboratory/science lab
700 ☐ Manufacturing plant
819 ☐ Livestock/poultry storage(barn)
882 ☐ Non-residential parking garage
891 ☐ Warehouse

Outside

124 ☐ Playground or park
655 ☐ Crops or orchard
669 ☐ Forest (timberland)
807 ☐ Outdoor storage area
919 ☐ Dump or sanitary landfill
931 ☐ Open land or field
936 ☐ Vacant lot
938 ☐ Graded/care for plot of land
946 ☐ Lake, river, stream
951 ☐ Railroad right of way
960 ☐ Other street
961 ☐ Highway/divided highway
962 ☐ Residential street/driveway
981 ☐ Construction site
984 ☐ Industrial plant yard

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use: 511 — Convenience store

NFIRS-1 Revision 03/11/99

FDID *	State *	MM Incident Date *	DD Incident Date *	YYYY Incident Date *	Station	Incident Number *	Exposure *	
40104	SC	11	20	2018	06	18-0030161	000	Complete Narrative

Narrative:
See Incident Action Plan for the BP Fuel Station Day 2.

11/20/2018 22:37:20 cfd_btaylor

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *		
40104	SC	11 / 20 / 2018	06	18-0030161	000	☐ Delete ☐ Change	NFIRS - 10 Personnel

B Apparatus or Resource * (Use codes listed below)	Date and Times (Check if same as alarm date)	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
☐ ID BAT2 Type 92	Dispatch	11	20	2018	08:29	Sent [X]	1	[X] Suppression ☐ EMS ☐ Other	
	Arrival	11	20	2018	08:31				
	Clear	11	20	2018	20:40				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
10749	Taylor, Brannon	BC	X				

2 ID E16 Type 11	Date and Times	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use	Actions Taken
	Dispatch	11	20	2018	13:26	Sent [X]	4	[X] Suppression ☐ EMS ☐ Other	
	Arrival	11	20	2018	13:27				
	Clear	11	20	2018	17:15				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
20843	Sanders, John	CAP	X				
23837	Cook, John	SFF	X				
23843	Shell, Richard	FF	X				
24366	Weaver, Caleb	FF	X				

3 ID E6 Type 11	Date and Times	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use	Actions Taken
	Dispatch	11	20	2018	20:18	Sent [X]	4	[X] Suppression ☐ EMS ☐ Other	
	Arrival	11	20	2018	20:31				
	Clear	11	20	2018	20:38				

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
20163	Harlin, Blake	CAP	X				
21945	Lone, Duston	FF	X				
25215	Harlin, Matthew	FF	X				
25227	Stephens, Sean	FF	X				

FDID	State	Incident Date			Station	Incident Number	Exposure	Responding Units/Personnel
40104	SC	11	20	2018	06	18-0030161	000	

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
BAT2 Battalion 2	08:29:07	08:29:28	08:31:56	20:40:35

Staff ID	Staff Name	Activity	Rank	Position	Role
10749	Taylor, Brannon K	Responded	Battalion C		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E16 Engine 16	13:26:59	13:27:03	13:27:03	17:15:59

Staff ID	Staff Name	Activity	Rank	Position	Role
20843	Sanders, John T	Responded	Captain		
23837	Cook, John	Responded	Senior Fire		
23843	Shell, Richard Griffin	Responded	Firefighter		
24366	Weaver, Caleb Aaron	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E6 Engine 6	20:18:57	20:19:09	20:31:45	20:38:46

Staff ID	Staff Name	Activity	Rank	Position	Role
20163	Harlin, Blake E	Responded	Captain		
21945	Lone, Duston K	Responded	Firefighter		
25215	Harlin, Matthew Craig	Responded	Firefighter		
25227	Stephens, Sean D	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
HM1 HazMat 1	11:21:39	11:23:03	11:36:33	20:24:38

Staff ID	Staff Name	Activity	Rank	Position	Role
13290	Sanders, Sami S	Responded	Fire Engine		
22729	Spitzer, Bryan	Responded	Senior Fire		
24573	McGee, Joshua S	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
HM2 HazMat 2	11:28:38	11:28:44	11:36:37	20:24:40

Staff ID	Staff Name	Activity	Rank	Position	Role
22337	Powell, Brett N	Responded	Senior Fire		

FDID	State	MM	DD	YYYY	Station	Incident Number	Exposure	NFIRS - Involvement User Fields
40104	SC	11	20	2018.0	06	18-0030161	00000	

Involvement Name:	Involvement Type:	Owner:	Occupant:
Known, Not	Occupant/Owner	X	

A

FDID *	State *	MM	DD	YYYY	Station	Incident Number *	Exposure *
40104	SC	11	15	2018	16	18-0029749	000

☐ Delete ☐ Change ☐ No Activity

NFIRS -1 Basic

B Location*

☐ Check this box to Indicate that the address for this incident is provided on the Wildland Fire Module In Section B "Alternative Location Specification". Use only for Wildland fires.

Census Tract ____ - ____

☒ Street address
☐ Intersection
☐ In front of
☐ Rear of
☐ Adjacent to
☐ Directions

Number/Milepost	Prefix	Street or Highway	Street Type	Suffix
1230		Dothan	RD	

Apt./Suite/Room	City	State	Zip Code
	Columbia	SC	29210 -

Cross street or directions, as applicable

COPY

C Incident Type *

531 Smoke or odor removal

Incident Type

D Aid Given or Received*

1 ☐ Mutual aid received
2 ☐ Automatic aid recv.
3 ☐ Mutual aid given
4 ☐ Automatic aid given
5 ☐ Other aid given
N ☒ None

Their FDID ____ Their State ____

Their Incident Number ____

E1 Date & Times

Midnight is 0000

Check boxes if dates are the same as Alarm Date.

	Month	Day	Year	Hr Min Sec
ALARM always required				
Alarm *	11	15	2018	20:39:41
ARRIVAL required, unless canceled or did not arrive				
☒ Arrival *	11	15	2018	20:48:53
CONTROLLED Optional, Except for wildland fires				
☐ Controlled				
LAST UNIT CLEARED, required except for wildland fires				
☒ Last Unit Cleared	11	15	2018	21:48:05

E2 Shift & Alarms

Local Option

Shift or Platoon	Alarms	District
2	01	16

E3 Special Studies

Local Option

Special Study ID# ____ Special Study Value ____

F Actions Taken *

51 Ventilate
Primary Action Taken (1)

80 Information,
Additional Action Taken (2)

81 Incident command
Additional Action Taken (3)

G1 Resources *

☒ Check this box and skip this section if an Apparatus or Personnel form is used.

	Apparatus	Personnel
Suppression	0005	0014
EMS		
Other		

☐ Check box if resource counts include aid received resources.

G2 Estimated Dollar Losses & Values

LOSSES: Required for all fires if known. Optional for non fires.

		None
Property $ ____ , 000 , 000		☐
Contents $ ____ , 000 , 000		☐

PRE-INCIDENT VALUE: Optional

Property $ ____ , 000 , 000	☐
Contents $ ____ , 000 , 000	☐

Completed Modules

☐ Fire-2
☐ Structure-3
☐ Civil Fire Cas.-4
☐ Fire Serv. Cas.-5
☐ EMS-6
☐ HazMat-7
☐ Wildland Fire-8
☒ Apparatus-9
☒ Personnel-10
☐ Arson-11

H1* Casualties ☐ None

	Deaths	Injuries
Fire Service		
Civilian		

H2 Detector

Required for Confined Fires.

1 ☐ Detector alerted occupants
2 ☐ Detector did not alert them
U ☐ Unknown

H3 Hazardous Materials Release

N ☐ None
1 ☐ Natural Gas: slow leak, no evacuation or HazMat actions
2 ☐ Propane gas: <21 lb. tank (as in home BBQ grill)
3 ☐ Gasoline: vehicle fuel tank or portable container
4 ☐ Kerosene: fuel burning equipment or portable storage
5 ☐ Diesel fuel/fuel oil: vehicle fuel tank or portable
6 ☐ Household solvents: home/office spill, cleanup only
7 ☐ Motor oil: from engine or portable container
8 ☐ Paint: from paint cans totaling < 55 gallons
0 ☐ Other: Special HazMat actions required or spill > 55gal., Please complete the HazMat form

I Mixed Use Property

NN ☐ Not Mixed
10 ☐ Assembly use
20 ☐ Education use
33 ☐ Medical use
40 ☐ Residential use
51 ☐ Row of stores
53 ☐ Enclosed mall
58 ☐ Bus. & Residential
59 ☐ Office use
60 ☐ Industrial use
63 ☐ Military use
65 ☐ Farm use
00 ☐ Other mixed use

J Property Use* Structures

131 ☐ Church, place of worship
161 ☐ Restaurant or cafeteria
162 ☐ Bar/Tavern or nightclub
213 ☐ Elementary school or kindergarten
215 ☐ High school or junior high
241 ☐ College, adult education
311 ☐ Care facility for the aged
331 ☐ Hospital
341 ☐ Clinic,clinic type infirmary
342 ☐ Doctor/dentist office
361 ☐ Prison or jail, not juvenile
419 ☒ 1-or 2-family dwelling
429 ☐ Multi-family dwelling
439 ☐ Rooming/boarding house
449 ☐ Commercial hotel or motel
459 ☐ Residential, board and care
464 ☐ Dormitory/barracks
519 ☐ Food and beverage sales
539 ☐ Household goods,sales,repairs
579 ☐ Motor vehicle/boat sales/repair
571 ☐ Gas or service station
599 ☐ Business office
615 ☐ Electric generating plant
629 ☐ Laboratory/science lab
700 ☐ Manufacturing plant
819 ☐ Livestock/poultry storage(barn)
882 ☐ Non-residential parking garage
891 ☐ Warehouse

Outside

124 ☐ Playground or park
655 ☐ Crops or orchard
669 ☐ Forest (timberland)
807 ☐ Outdoor storage area
919 ☐ Dump or sanitary landfill
931 ☐ Open land or field
936 ☐ Vacant lot
938 ☐ Graded/care for plot of land
946 ☐ Lake, river, stream
951 ☐ Railroad right of way
960 ☐ Other street
961 ☐ Highway/divided highway
962 ☐ Residential street/driveway
981 ☐ Construction site
984 ☐ Industrial plant yard

Lookup and enter a Property Use code only if you have NOT checked a Property Use box:

Property Use 419

1 or 2 family dwelling

NFIRS-1 Revision 03/11/99

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Complete Narrative
40104	SC	11 / 15 / 2018	16	18-0029749	000	

Narrative:

Engine 16 responded emergency to this location for a Odor of Natural Gas in a Residence Call. Upon arrival Battalion 2 was on scene and had command. We investigated the residence for an odor of natural gas, but could only smell an odor of gasoline. We searched for the source and determined that a possible gasoline spill from the gas station at the beginning of the road had traveled downhill and settled in the low lying areas of this property. We used our electric ram fan to ventilate the crawl space of the residence along with the interior of the residence. The residence was checked with a 4 gas meter and all levels were found to be well within acceptable ranges. The scene was left with the tenant and all Fire units returned to available status.

11/15/2018 23:49:46 cfd_jwhitford

A

FDID *	State *	Incident Date * (MM / DD / YYYY)	Station	Incident Number *	Exposure *	Delete / Change	NFIRS - 10 Personnel
40104	SC	11 / 15 / 2018	16	18-0029749	000	☐ / ☐	

B

Apparatus or Resource * (Use codes listed below)	Date and Times (Check if same as alarm date)	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use (Check ONE box for each apparatus to indicate its main use at the incident.)	Actions Taken (List up to 4 actions for each apparatus and each personnel.)
☐ ID BAT2	Dispatch [X]	11	15	2018	20:46				
Type 92	Arrival [X]	11	15	2018	20:48	X	1	[X] Suppression	
	Clear [X]	11	15	2018	21:46			☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
10749	Taylor, Brannon	BC	X				

2	Apparatus	Date and Times	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use	Actions Taken
	ID BAT5	Dispatch [X]	11	15	2018	20:43				
	Type 92	Arrival [ ]					X	1	[X] Suppression	93
		Clear [X]	11	15	2018	20:48			☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
12612	Patterson, Kelvin	CAP	X				

3	Apparatus	Date and Times	Month	Day	Year	Hours/mins	Sent [X]	Number of People *	Use	Actions Taken
	ID E16	Dispatch [X]	11	15	2018	20:43				
	Type 11	Arrival [X]	11	15	2018	20:49	X	4	[X] Suppression	
		Clear [X]	11	15	2018	21:48			☐ EMS ☐ Other	

Personnel ID	Name	Rank or Grade	Attend [X]	Action Taken	Action Taken	Action Taken	Action Taken
13104	Whitford, Jeremy	CAP	X				
21285	Lutz, Jacob	FE	X				
23849	Ballard, Joshua	SFF	X				
24797	Knight, Cody	FF	X				

40104	SC	11	15	2018	16	18-0029749	000	Responding Units/Personnel
FDID	State	Incident Date			Station	Incident Number	Exposure	

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
BAT2 Battalion 2	20:46:43	20:47:08	20:48:53	21:46:38

Staff ID	Staff Name	Activity	Rank	Position	Role
10749	Taylor, Brannon K	Responded	Battalion C		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
BAT5 Battalion 5	20:43:23	20:45:12		20:48:46

Staff ID	Staff Name	Activity	Rank	Position	Role
12612	Patterson, Kelvin T	Responded	Captain		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
E16 Engine 16	20:43:23	20:45:09	20:49:40	21:48:03

Staff ID	Staff Name	Activity	Rank	Position	Role
13104	Whitford, Jeremy P	Responded	Captain		
21285	Lutz, Jacob H	Responded	Fire Engine		
23849	Ballard, Joshua D	Responded	Senior Fire		
24797	Knight, Cody A	Responded	Firefighter		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
L14 Ladder 14	20:43:23			20:47:04

Staff ID	Staff Name	Activity	Rank	Position	Role
20775	Gladden, Michael T	Responded	Captain		
22344	Mora, Francisco	Responded	Firefighter		
22483	Alexander, Chad L	Responded	Firefighter		
23853	Adams, Taylor	Responded	Senior Fire		

Unit	Notify Time	Enroute Time	Arrival Time	Cleared Time
L7 Ladder 7	20:45:45	20:45:55	20:53:32	21:48:05

Staff ID	Staff Name	Activity	Rank	Position	Role
11553	Branham, Christopher B	Responded	Captain		
20766	Kotula, Jason S	Responded	Senior Fire		
22725	Grande, Jason	Responded	Fire Engine		
23010	Thompson, Dante J	Responded	Firefighter		

FDID	State	Incident Date (MM)	Incident Date (DD)	Incident Date (YYYY)	Station	Incident Number	Exposure	NFIRS - Involvement User Fields
40104	SC	11	15	2018.0	16	18-0029749	0	

Involvement Name:	Involvement Type:	Owner:	Occupant:
Ziegler, Tawanna	Tenant		X

dhec
Healthy People Healthy Communities

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

MAR 1 9 2019

Re: **Cost Agreement for ongoing FP containment measures**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; CA# 59261
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). To address the current site conditions that began in November of 2018, and the containment of migrating free product, DHEC has written a cost proposal for removing and disposing of the accumulating free product on the adjacent Play Pals property downgradient from the site.

The cost proposal includes costs for weekly vacuuming and removal of the free product from the trenches and areas where it collects as well as removing free product and storm water from trenches after rain events and disposal. Additionally, the cost proposal includes expenses relating to the prevention of plume migration such as boom replacement in areas that are at risk of contributing to surface water contamination and to prevent migration.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

Approved Cost Agreement 59261

Facility: 11946 BROAD RIVER AMOCO
MOORESCT
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
17 DISPOSAL						
		AA	WASTEWATER	6,500.0000	$0.560	3,640.00
		BB	FREE PRODUCT	200.0000	$0.500	100.00
18 MISCELLANEOUS						
			ARM INVOICE 0319 B	1.0000	$7,212.040	7,212.04
			ENVIRO-TEST INVOICE A	1.0000	$19,500.000	19,500.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$30,452.040	3,654.24
				Total Amount		34,106.28

Broad River Road items needed from contractor

Moores, Carolyn T.

Tue 3/19/2019 3:32 PM

To:terryteate@aol.com <terryteate@aol.com>;

Terry,

Per our conversation Friday 3/15/19 after the biweekly meeting, here are the items that are still outstanding from the site response at UST permit # 11946.

Awaiting final report on emergency response. This report will detail what happened and your actions to respond to the emergency. This will include maps, dates, totals of liquids, soil borings and associated soil screenings, temporary wells, and tests and detail all work done in November and December 2018. It should also include a final report on the vapor intrusion sampling (the emailed results were marked as preliminary). So far we have invoices, receipts, and an emailed lab report but no comprehensive report has been submitted. A certified letter was sent on 1/25/19 requesting this report within 30 days.

We also have asked for a report detailing the activities of the monthly abatement activites. This report will include dates and liquid totals for the vacuum events and the dates and details of other activities performed during the month. This report should detail work performed during the month of January 2019. A certified letter was sent 2/4/19 requesting the report for January activities due in 30 days but we have not received this report yet either.

A letter was sent today requesting a report detailing February activities, it will be due in 30 days. We will need a report every month.

Thank you for your attention to this matter,

Carolyn Moores
Hydrogeologist
Corrective Action & Quality Assurance
UST Management Division
Bureau of Land & Waste Management

2600 Bull Street
Columbia SC 29201-1708
Office: (803) 898-2622
Fax: (803) 898-0673

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Healthy People. Healthy Communities.

CERTIFIED MAIL
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MAR 2 0 2019

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Request for February 2019 Activities Report**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the abatement activities on the site for the month of February, 2019. This report should include the dates and descriptions of the work performed and the quantities of free product and contaminated storm water recovered and any other notable observations. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the February 2019 abatement activities within thirty (30) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

FREDRICK N CECCHINI
BROAD RIVER AMOCO
4335 BROAD RIVER ROAD
COLUMBIA SC 29210-4009

JAN 2 0 2012

UST 14 Tech DOCKETING

Re: QAPP Contractor Addendum Directive for Tier II
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Tier I Report received April 11, 2011
Monitoring Well Installation Report received June 21, 2011
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) reviewed the referenced report. The report indicates presence of chemicals of concern in the groundwater and soil plus free phase product exists in monitoring well MW-5.

To determine what risk the referenced release may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of Tier II Assessment as outlined in the UST Quality Assurance Program Plan (QAPP) is necessary. The Tier II must be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of SCDHEC QAPP for the Underground Storage Tank Division is available at http://www.scdhec.gov/ environment/lwm/html/ust.htm.

Your contractor must complete and submit the QAPP Contractor Addendum and Cost Agreement within thirty (30) days of the date of this letter. All water supply wells within 1,000 feet must be sampled. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from the Department must be issued before work begins**.

According to Division records, the release at the facility was reported to SCDHEC on January 4, 2011. In accordance with Section 44-2-40(D) of the State Underground Petroleum Environmental Response Bank (SUPERB) Act, you are responsible for the first $25,000 of site rehabilitation costs. To insure that expenditures made for the Tier II apply to the $25,000 deductible, costs must be preapproved and a cost agreement provided once the site specific QAPP contractor addendum is approved.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Please reference UST Permit number 11946 on all correspondence. If you have any questions, please contact me by phone at (803) 896-6669, by fax at (803) 896-6245, or by email at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, PO Box 2237, Irmo, SC 29063 (with enc.)
Technical File (with enc.)

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CERTIFIED MAIL
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MAR 2 0 2019

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212

Re: Corrective Action Options
Broad River Road, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported January 4, 2011
Monitoring Report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) reviewed the above-referenced report submitted by Enviro Test Services, Inc. on your behalf. This report, combined with site history, indicates active corrective action is necessary at the site to mitigate petroleum impact and ensure that there is no detrimental exposure to human health or the environment. While you, as the owner/operator, are ultimately responsible for cleanup actions taken in response to this release, funds from the State Underground Environmental Response Bank (SUPERB) Account and SUPERB Financial Responsibility Fund (SFRF) shall provide combined coverage for site rehabilitation and third party claims not to exceed one million dollars.

The SUPERB Site Rehabilitation and Fund Access Regulations R.61-98 require the UST owner/operator to develop and implement a reasonable, cost-effective corrective action to be performed by a DHEC certified site rehabilitation contractor. The selected technology must reduce the petroleum chemicals of concern concentrations to site-specific target levels that are determined by DHEC. As the owner/operator for the above-referenced release, you may choose one of two options discussed below to proceed toward meeting this requirement.

Option 1: Owner/Operator Lead
You may continue to use your existing DHEC Certified Site Rehabilitation Contractor of choice or select another contractor from the list found at http://www.scdhec.gov/Environment/LW/UST/VendorsRecyclersContractors/CertifiedContractors/ to perform the corrective action. To assist you in determining the clean-up technology, time frame, clean-up levels, and associated costs, DHEC will develop and provide you copies of a technical specifications package to send to DHEC certified contractors you may wish to utilize for this corrective action.

The maximum amount of allowable costs for the active correction action work that may be reimbursed by the SUPERB fund will be determined through a solicitation process. DHEC will

post the technical specifications package for the active corrective action on the DHEC website (http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentClean-up/CorrectiveActionSection/) and will solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities, a bi-weekly state government publication. This process is intended to ensure an adequate solicitation response is obtained so that a fair and competitive price for the work can be established. The lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for this active corrective action.

You may consider entering a written contract with your selected contractor following completion of the solicitation process to address any costs more than the reasonable or SUPERB-allowable costs and not approved by DHEC for reimbursement from the SUPERB Account. DHEC would not be a party to the contract; however, we will monitor and ensure you are making progress with corrective action activities. If the selected contractor is not able to complete the required activities, you will be required to find another certified contractor to complete the required activities.

To utilize the owner/operator lead option, please sign and return the enclosed Owner/Operator Lead Form for Site Rehabilitation within 15 days of the date of this letter.

Option 2: State Lead

If you choose the state lead option, DHEC will procure a DHEC Certified Site Rehabilitation Contractor to perform active corrective action. The contractor for this work will enter into a contract with DHEC and will be subject to the terms and conditions of the bid document for which he or she was awarded the work. You would not be a party to the contract.

The awarded contractor will only be authorized to perform the active corrective action as defined by the bid document. Any work to be completed prior to the scope of work as defined by the bid document will be performed by your current contractor. Any work to be performed after the completion of this active corrective action may be performed by your current contractor or by another DHEC certified contractor of your choosing.

As long as you do not interfere with or prohibit the work at your site, you will not be responsible for this active corrective action in the event the contractor does not perform appropriately or does not make satisfactory progress towards achieving the established corrective action goals.

To utilize the state lead option, please sign and return the enclosed State Lead Form for Site Rehabilitation within 15 days of the date of this letter.

We appreciate your prompt attention to this important matter. Please reference UST Permit #11946 on all correspondence or inquiries regarding this project. If you have any questions, please contact me at (803) 898-2622 or mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance
UST Management Division
Bureau of Land and Waste Management

enc: Active Corrective Action Options form
Permission/Right-of-Entry forms

cc: Enviro Test Services, Inc., P.O. Box 2237, Irmo, SC, 29063 (w/enc)
Technical File (w/enc)

State Lead Option Permission Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of the existing or former underground storage tanks located identified below and for the release reported the date listed below or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (DHEC) to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select a corrective action contractor, on my behalf, after bid solicitation results are received. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. I understand that DHEC or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report.

UST Permit #	11946	**Release Report Date:**	1/4/2011
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			
Is facility within city limits? (check yes/no)		☑ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:		Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?		☑ **Yes**	☐ **No**

*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:

Name:	**Phone Number:**

Were USTs previously removed from the ground at this facility?	☐ **Yes**	☐ **No**

*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):

Name:	**Phone Number:**

Is the facility currently leased to someone?	☐ **Yes**	☐ **No**

*If yes, notify them of the pending work scope, and please provide their name/contact number:

Name:	**Phone Number:**

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of UST owner/former owner or authorized representative (Print):		
Signature of UST owner/former owner or authorized representative:		**Date**
Affiliation (if applicable)		
Signature of Witness		**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**
Email Address:		

Owner/Operator Lead Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of record for the underground storage tanks identified below for the release date reported below or serve as the authorized representative for the owner. I wish for DHEC to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select my own corrective action contractor after bid solicitation results are received. **I understand the lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. I understand if the selected contractor is not able to complete the required activities, I will be required to find another certified contractor to complete the required activities. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for the active corrective action.**

UST Permit #	11946	**Release Report Date:**	1/4/2011
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			

Name of UST owner/former owner or authorized representative (Print):		
Signature of UST owner/former owner or authorized representative:		**Date**
Affiliation (if applicable)		
Signature of Witness		**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**
Email Address:		

dhec
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UST 141 Doc DOCKETING

CERTIFIED MAIL
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MAR 2 0 2019

MR PALLAV DESAI
BROAD RIVER C STORE LLC
41 CROMWELL COURT
IRMO SC 29063

Re: Corrective Action Options
Broad River Road, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release reported November 16, 2018
FP Recovery Report received February 6, 2019
Richland County

Dear Mr. Desai:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) reviewed the above-referenced report submitted by CTSI, Inc. on your behalf. This report, combined with site history, indicates active corrective action is necessary at the site to mitigate petroleum impact and ensure that there is no detrimental exposure to human health or the environment. While you, as the owner/operator, are ultimately responsible for cleanup actions taken in response to this release, funds from the State Underground Environmental Response Bank (SUPERB) Account and SUPERB Financial Responsibility Fund (SFRF) shall provide combined coverage for site rehabilitation and third party claims not to exceed one million dollars.

The SUPERB Site Rehabilitation and Fund Access Regulations R.61-98 require the UST owner/operator to develop and implement a reasonable, cost-effective corrective action to be performed by a DHEC certified site rehabilitation contractor. The selected technology must reduce the petroleum chemicals of concern concentrations to site-specific target levels that are determined by DHEC. As the owner/operator for the above-referenced release, you may choose one of two options discussed below to proceed toward meeting this requirement.

Option 1: Owner/Operator Lead
You may continue to use your existing DHEC Certified Site Rehabilitation Contractor of choice or select another contractor from the list found at http://www.scdhec.gov/Environment/LW/UST/VendorsRecyclersContractors/CertifiedContractors/ to perform the corrective action. To assist you in determining the clean-up technology, time frame, clean-up levels, and associated costs, DHEC will develop and provide you copies of a technical specifications package to send to DHEC certified contractors you may wish to utilize for this corrective action.

The maximum amount of allowable costs for the active correction action work that may be reimbursed by the SUPERB fund will be determined through a solicitation process. DHEC will post the technical specifications package for the active corrective action on the DHEC website (http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentClean-up/CorrectiveActionSection/) and will solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities, a bi-weekly state government publication. This process is intended to ensure an adequate solicitation response is obtained so that a fair and competitive price for the work can be established. The lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for this active corrective action.

You may consider entering a written contract with your selected contractor following completion of the solicitation process to address any costs more than the reasonable or SUPERB-allowable costs and not approved by DHEC for reimbursement from the SUPERB Account. DHEC would not be a party to the contract; however, we will monitor and ensure you are making progress with corrective action activities. If the selected contractor is not able to complete the required activities, you will be required to find another certified contractor to complete the required activities.

To utilize the owner/operator lead option, please sign and return the enclosed Owner/Operator Lead Form for Site Rehabilitation within 15 days of the date of this letter.

Option 2: State Lead

If you choose the state lead option, DHEC will procure a DHEC Certified Site Rehabilitation Contractor to perform active corrective action. The contractor for this work will enter into a contract with DHEC and will be subject to the terms and conditions of the bid document for which he or she was awarded the work. You would not be a party to the contract.

The awarded contractor will only be authorized to perform the active corrective action as defined by the bid document. Any work to be completed prior to the scope of work as defined by the bid document will be performed by your current contractor. Any work to be performed after the completion of this active corrective action may be performed by your current contractor or by another DHEC certified contractor of your choosing.

As long as you do not interfere with or prohibit the work at your site, you will not be responsible for this active corrective action in the event the contractor does not perform appropriately or does not make satisfactory progress towards achieving the established corrective action goals.

To utilize the state lead option, please sign and return the enclosed State Lead Form for Site Rehabilitation within 15 days of the date of this letter.

We appreciate your prompt attention to this important matter. Please reference UST Permit #11946 on all correspondence or inquiries regarding this project. If you have any questions, please contact me at (803) 898-2622 or mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance
UST Management Division
Bureau of Land and Waste Management

enc: Active Corrective Action Options form
Permission/Right-of-Entry forms

cc: Carolina Technical Services, Inc., 7130-A Broad River Road, Columbia, SC, 29063 (w/enc)
Technical File (w/enc)

State Lead Option Permission Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of the existing or former underground storage tanks located identified below and for the release reported the date listed below or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (DHEC) to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select a corrective action contractor, on my behalf, after bid solicitation results are received. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. I understand that DHEC or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report.

UST Permit #	11946	**Release Report Date:**	11/16/2018
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			
Is facility within city limits? (check yes/no)		☑ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:		Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?		☑ **Yes**	☐ **No**

*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:

Name:	**Phone Number:**

Were USTs previously removed from the ground at this facility?	☐ **Yes**	☐ **No**

*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):

Name:	**Phone Number:**

Is the facility currently leased to someone?	☐ **Yes**	☐ **No**

*If yes, notify them of the pending work scope, and please provide their name/contact number:

Name:	**Phone Number:**

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of UST owner/former owner or authorized representative (Print):		
Signature of UST owner/former owner or authorized representative:		**Date**
Affiliation (if applicable)		
Signature of Witness		**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**
Email Address:		

Owner/Operator Lead Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of record for the underground storage tanks identified below for the release date reported below or serve as the authorized representative for the owner. I wish for DHEC to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select my own corrective action contractor after bid solicitation results are received. **I understand the lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. I understand if the selected contractor is not able to complete the required activities, I will be required to find another certified contractor to complete the required activities. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for the active corrective action.**

UST Permit #	11946	**Release Report Date:**	11/16/2018
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			

Name of UST owner/former owner or authorized representative (Print):		
Signature of UST owner/former owner or authorized representative:		**Date**
Affiliation (if applicable)		
Signature of Witness		**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**
Email Address:		

State Lead Option
Property Access Agreement for Site Rehabilitation

Only complete this form if: You are the legal owner of the property **OR** are the designated authorized representative for the legal owner of the property.

I certify that I am the legal owner of the property identified below or serve as the authorized representative for the legal owner of the property. I authorize the South Carolina Department of Health and Environmental Control (DHEC), or a contractor selected by DHEC, to enter this property at reasonable times only to conduct assessment and corrective action activities, as required. The contractor will be designated as the contractor for the UST owner or operator for only the required environmental site rehabilitation activities. I understand that the Agency will notify me of all activities that are necessary prior to their initiation and will promptly provide to me a summary of the data upon request.

UST Permit # 11946		
Facility Name: Broad River Road		
Facility Address: 4335 Broad River Road, Columbia, SC 29210		
Facility Phone Number:		
Is facility within city limits? (check yes/no)	■ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:	Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?	■ **Yes**	☐ **No**
*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:		
Name:	**Phone Number:**	
Were USTs previously removed from the ground at this facility?	☐ **Yes**	☐ **No**
*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):		
Name:	**Phone Number:**	
Is the facility currently leased to someone?	☐ **Yes**	☐ **No**
*If yes, notify them of the pending work scope, and please provide their name/contact number:		
Name:	**Phone Number:**	

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of Property Owner (Print):	
Signature of Property Owner or authorized representative:	**Date**
Affiliation (if applicable)	
Signature of Witness	**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**
Email Address:		

ARM ENVIRONMENTAL SERVICES, INC.
ASSESSMENT & REMEDIAL SERVICES
armenv.com

February 12, 2019

Carolyn Moores, Hydrogeologist
Underground Storage Tank Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Re: Broad River Amoco (BP)
4335 Broad River Rd., Columbia
Richland County, South Carolina
UST Permit #11946
ARM Project #12-414.2-18

Dear Ms. Moores;

ARM Environmental Services, Inc. (ARM) has conducted emergency response services associated with the Broad River Amoco (BP) site on behalf of Enviro-Test Services, Inc. (Enviro-Test). Enviro-Test is the primary consultant for the responsible party for petroleum release #1 at the Underground Storage Tank (UST) site. The site is located along Broad River Rd. at the intersection of Dothan Rd. in Columbia, Richland County, South Carolina.

A summary of the services provided and data collected during this emergency response is documented in the following report and attached figures, tables, and appendices. Conclusions and recommendations for remedial action are also provided.

If you have any questions or comments regarding this report, please do not hesitate to contact us.

Sincerely,
ARM Environmental Services, Inc.

Michael L. Faris, P.G.
Senior Geologist

Andrew M. Wilson, P.G.
Sr. Project Manager / Principal

cc: Terry Teate, Enviro-Test Services, Inc.

Introduction

Enviro-Test Services, Inc. notified ARM of the emergency situation at the site on November 26, 2018. and asked for assistance in immediate emergency response and abatement measures. When ARM initially arrived at the site abundant emergency personnel and equipment from local and state authorities were present. The property located adjacent to and immediately topographically down-gradient of the releases on the subject property, the Play Pals Daycare, was being evacuated due to petroleum vapors inside the day care. A topographic site location map is included as Figure 1.

ARM personnel mobilized to the site with appropriate personal protective equipment (PPE), including air purifying respirators and a multi-gas meter which included Lower Explosive Limit and VOC monitoring capabilities. Intrinsically safe assessment and remediation equipment was utilized whenever possible to avoid the risk of fire or explosion. Emergency response activities were closely monitored to confirm correct PPE usage and reduce the risk of fire or explosion.

ARM coordinated directly with local and state authorities, including but not limited to the local utility departments, fire department, police, and haz-mat teams, state investigator, OSHA, and DHEC in order to follow correct chain of command, be as safe as possible, and avoid communication bottlenecks. ARM established an exclusion zone on a portion of the subject property, as well as the entire Play Pals Daycare property located adjacent to the southwest of the subject site. A tall chain-link fence was erected as soon as possible around the exclusion zone in order to minimize unauthorized foot traffic and increase the safety factor of the abatement activities. On several occasions ARM had to immediately halt abatement activities, turn off equipment, and leave the area of work due to elevated and potentially explosive petroleum vapors.

Abatement Activities

Recovery Trench Installation:

ARM personnel mobilized to the site and assisted Enviro-Test with the installation of several product recovery trenches and investigatory trenches. The recovery trenches were installed primarily to intercept the free-phase product flowing onto the Play Pals property from the subject property. Trenches A, B, C, and D are indicated on Figure 2, the Site Base Map.

During the installation of the trenches, 48.5-tons of contaminated soil was generated. The soil was transported to TK Tank Services, Inc. of Sumter, SC under manifest. Each dump truck was weighed at a truck scale to determine the exact amount of soil disposed of. Soil disposal manifests and the associated weigh tickets are included in Appendix E.

Removal of Free-Phase Product / Contaminated Groundwater:

ARM assisted in the removal of free-phase product and contaminated groundwater from the Play Pals property. ARM utilized intrinsically safe liquid ring vacuum pump trucks for removal of fluids from the recovery trenches, surface water collection points, and storm water system. From the initiation of the emergency response work at the end of November 2018 through January 31, 2019, ARM generated approximately 21,059-gallons of petroleum contact water and approximately 3,466 gallons of free-phase product. All of the liquids were transported to TK Tank Services, Inc. of Sumter, SC for proper disposal. Each truck load of liquids was stuck with a tank stick for total fluid measurement as well as an interface probe to determine the thickness of free-phase liquid per load. Additionally, each truck load of liquid was weighed at a truck scale to confirm the total volume of liquid disposed of. Disposal manifests and associated weigh tickets for all of the liquids disposed of during this emergency response are included in Appendix F.

Storm Drain System Mitigation / Protection:

A series of storm drains are located downgradient of the subject property. One of the storm drains located in the southwestern corner of the Play Pals property was identified as a point of exposure during the emergency response effort. The locale utility that maintains the storm water system was contacted and assisted in evaluating the flow to and from the drain. The storm drain collects surface water from the Play Pals property, as well as properties along Dothan Rd. from Broad River Rd. toward the southwest. Surface water then flows in a large diameter black corrugated pipe through the woods, and discharges into a wet-weather drainage ditch located behind the Rolling Pines community along Rolling Pines Way to the southwest of the Play Pals property. The drainage ditch eventually flows into Stoop Creek several thousand feet southwest of the subject site.

Free-phase product was found flowing into the referenced storm drain system and drainage ditch. Petroleum absorbent booms were installed in the storm drain, at the discharge end of the black corrugated pipe, and at several locations along the aforementioned drainage ditch behind the Rolling Pines community. Product was observed flowing out of a subsurface french drain system on the Play Pals property into the storm drain. The french drain was capped on the Play Pals property in order to stop the flow of product into the storm drain. Product was vacuumed as often as observed in order to keep it out of the storm water system as much as possible. Petroleum absorbent booms were removed and replaced several times during the emergency response.

Additionally, a temporary retention basin approximately 2,500-3,000 gallons in capacity was excavated, lined, and connected to the french drain system in the rear of the Play Pals property to act as a temporary storm water, product, contaminated shallow groundwater collection system during precipitation events.

Assessment Activities

In order to effectively conduct emergency site abatement, ARM completed several interim assessment activities on the subject property and off-site properties. The following is a brief summary of the assessment activities completed during emergency response.

Soil Disposal Profile Sampling:

ARM collected two (2) soil samples from soils stockpiled during the installation of recovery trenches on the Play Pals property. The samples were designated SP-1 and SP-2 and were collected in order to quantify the presence of contaminants that may be encountered during abatement activities in reference to the acceptance criteria of several landfills for disposal of the contaminated soils as non-hazardous special waste. Each of the stockpile soil samples were analyzed by a South Carolina certified laboratory for benzene, toluene, ethylbenzene, xylenes (BTEX), naphthalene via EPA approved analytical method 8260B with preservation method 5035. The samples were also analyzed for total lead. A tabulated summary of the soil samples is included in Table 1. The complete laboratory analytical report for the stockpile soil samples is included in Appendix C.

Soil Borings:

ARM personnel advanced soil borings in forty-six (46) locations in order to continue to evaluate the contaminant plume during emergency abatement. Hand augers were utilized in unpaved areas when possible in order to reduce the potential for safety concerns. A Geoprobe soil coring machine was utilized in paved areas and areas where borings were extended to a greater depth. Soil samples were collected at approximately two-foot intervals from each boring to a total depth of five feet below ground surface (bgs). Each of the samples were immediately placed in sealed freezer bags, allowed to warm to ambient temperatures for approximately fifteen minutes, and were then screened with a photo-ionization detector (PID) for the presence of petroleum hydrocarbons.

The locations of the shallow soil borings, designated SB-1 through SB-46, are detailed on Figure 2. Figure 2A depicts the locations of the soil borings as well as a tabular summary of PID results with detections over 5.0 parts per million. Geologic boring logs for each of the soil borings are included in Appendix A.

Temporary Monitoring Wells:

At the request of DHEC personnel at the time of the abatement, soil borings SB-12 through SB-14 on the subject property were converted to temporary groundwater monitoring wells TMW-1 through TMW-3. Soil borings SB-37, SB-38, SB-40, SB-45, and SB-46 were continued to a depth sufficient for the installation of TMW-4 through TMW-8, respectively, in the paved area on the Play Pals property.

At the request of the DHEC project manager, groundwater samples were collected from TMW-4, TMW-6, and TMW-7. The samples were submitted to a South Carolina certified laboratory for BTEX, naphthalene, methyl tertiary butyl ether (MTBE), 1,2-dichloroethane (1,2-DCA), and 8 oxygenates by EPA method 8260B. The groundwater data is tabulated in Table 2. The complete laboratory analytical report is included in Appendix C.

Upon completion of water sample collection, each TMW completed on the Play Pals Daycare property was abandoned in accordance with South Carolina Well Standards and Regulations R.61-71.10. Boring logs for the TMWs are included in Appendix A. 1903 Water Well Records for the TMWs are included in Appendix B.

Drinking Water Sampling:

At the request of DHEC personnel at the time of the emergency response, ARM collected drinking water samples from properties along Dothan Rd. in order to verify that no contaminants had entered the municipal drinking water system. Drinking water samples were collected from the Play Pals Daycare property, the residence located at 1238 Dothan Rd., and the residence located at 1257 Dothan Rd. Each of the drinking water samples, as well as appropriate, duplicate, field blank, and trip blank samples were analyzed by a South Carolina certified laboratory for BTEX, naphthalene, MTBE, 1,2-DCA by EPA approved analytical method 524.2, polynuclear aromatic hydrocarbons (PAHs) by EPA method 8270D, and for ethylene di-bromide by EPA analytical method 504.1.

The results of the drinking water sampling are tabulated in Table 2. The complete laboratory analytical report, including quality assurance/quality control information is included in Appendix C.

Sub-Slab Soil Vapor Sampling:

Six (6) sub-slab soil vapor pins were installed inside the Play Pals building closest to the subject site. Prior to the installation a limited asbestos survey was conducted in order to assess the building materials in the structure that would need to be penetrated during the installation. The results indicated that the floor tile and/or tile mastic was asbestos-containing. Therefore a licensed ARM asbestos abatement supervisor removed the floor tiles and mastic in the six locations proposed for soil vapor pins. An asbestos waste shipment record is included in Appendix D for the asbestos waste.

The sub-slab soil vapor samples were analyzed for BTEX, naphthalene, MTBE, and 1,2-DCA via EPA analytical method TO-15. The results are tabulated along with Vapor Intrusion Screening Levels (VISL) in Table 3. The complete laboratory analytical data is included in Appendix C.

Indoor Air, Outdoor Air, Crawlspace Vapor Sampling:

A total of six (6) indoor air, outdoor air, and crawlspace vapor samples were collected at the Play Pals Daycare property and from the residence located adjacent to and downgradient (southwest) of the Play Pals property.

The air samples were analyzed for BTEX, naphthalene, MTBE, and 1,2-DCA via EPA analytical method TO-15. The results are tabulated along with Vapor Intrusion Screening Levels (VISL) in Table 3. The complete laboratory analytical data is included in Appendix C.

Conclusions

Based on the data collected during this emergency response, it is apparent that significant impact to the subject property and offsite properties have occurred due to the petroleum releases at the site. The Play Pals Day Care property located adjacent to the southwest of the subject property has had significant impact from the releases. The ground surface, shallow subsurface, surface water (intermittent), groundwater, and indoor air quality has been negatively impacted. Additionally, it appears likely that subsurface utilities, particularly storm sewer and sanitary sewer, have been impacted by the releases.

Recommendations

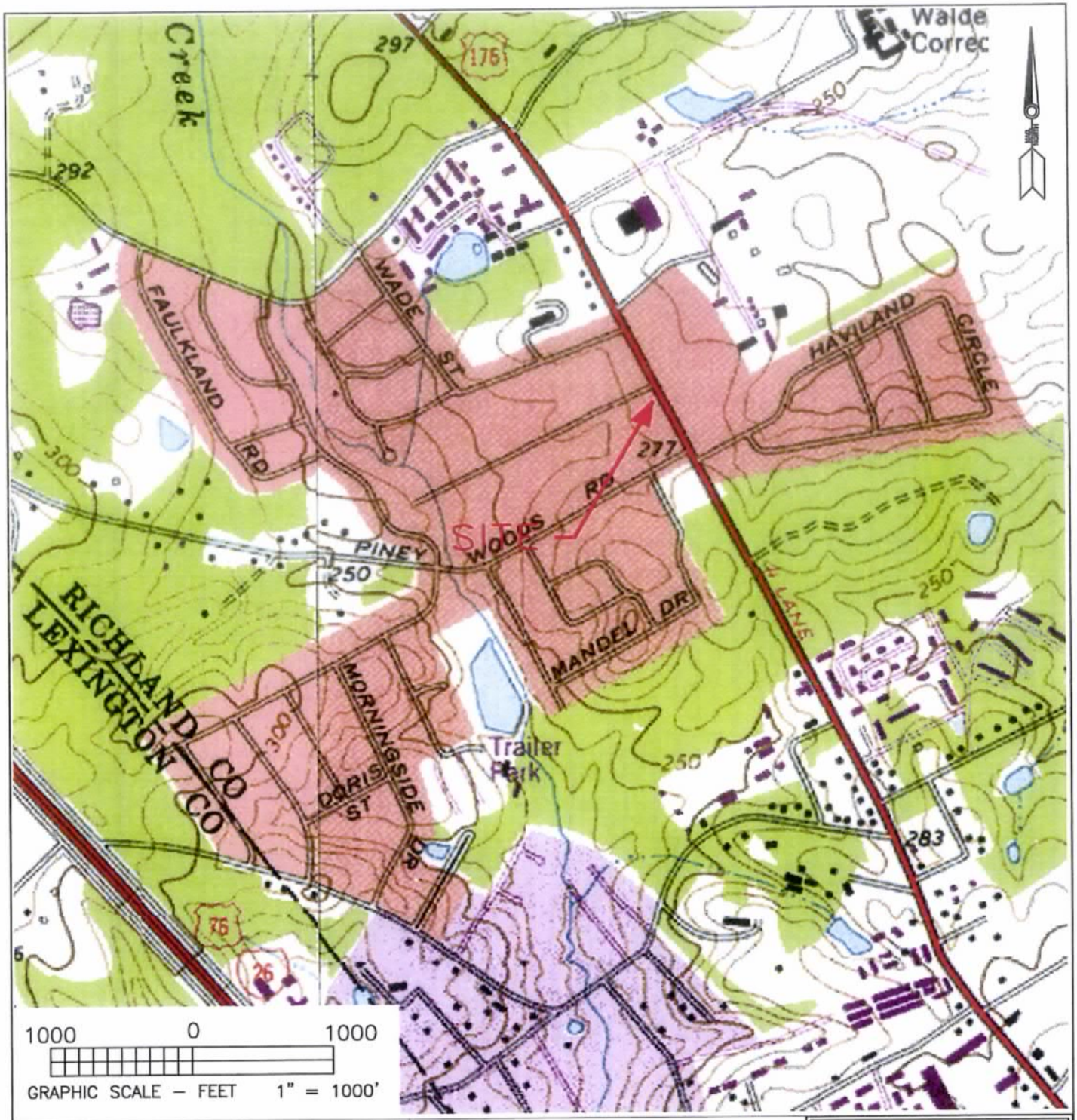
It is apparent that a large volume of free-phase product has flowed from the subject site onto the adjacent property and continued to flow at the time of this report. In order to remediate the releases excavation of the product saturated soils is recommended in order to remove the source. It should be noted that significant health and safety issues may arise during the excavation and transport of source area soils due to the highly volatile and aromatic nature of the source(s). Should excavation be considered as a remedial option, every effort should be made to ensure the safety of workers and the community in which the site is located.

Due to the topography of the area of the subject site, it is recommended that either the product be removed from the subsurface or that a formal interceptor system be installed between the subject site and the Play Pals Daycare property. Recovery methods such as a slurry or cut-off wall coupled with a series of interceptor trenches, or a continuous interceptor trench, between the source area and cut-off walls could potentially capture the migrating product for collection and off-site disposal while being protective of the off-site properties and receptors.

Surface water and shallow (perched) groundwater flow from topographically upgradient areas, such as the source area, will need to be taken into account when designing any remedial action for these releases. It has been observed that much of the free-product migration is heavily influenced by surface water and shallow (perched) groundwater flow. Any remedial design will need to account for the very shallow nature of the contaminants and the increased migration due to storm water flow across the area and in the shallow subsurface.

FIGURES

FIG. 1 - SITE LOCATION MAP (Topo.)
FIG. 2 - SITE BASE MAP
FIG. 2A - SITE BASE MAP with
SCREENING RESULTS



PROJECT:

EMERGENCY RESPONSE
BROAD RIVER AMOCO
4345 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SC
UST PERMIT #11946

DESCRIPTION:

SITE LOCATION MAP

FIGURE 1

DATE:

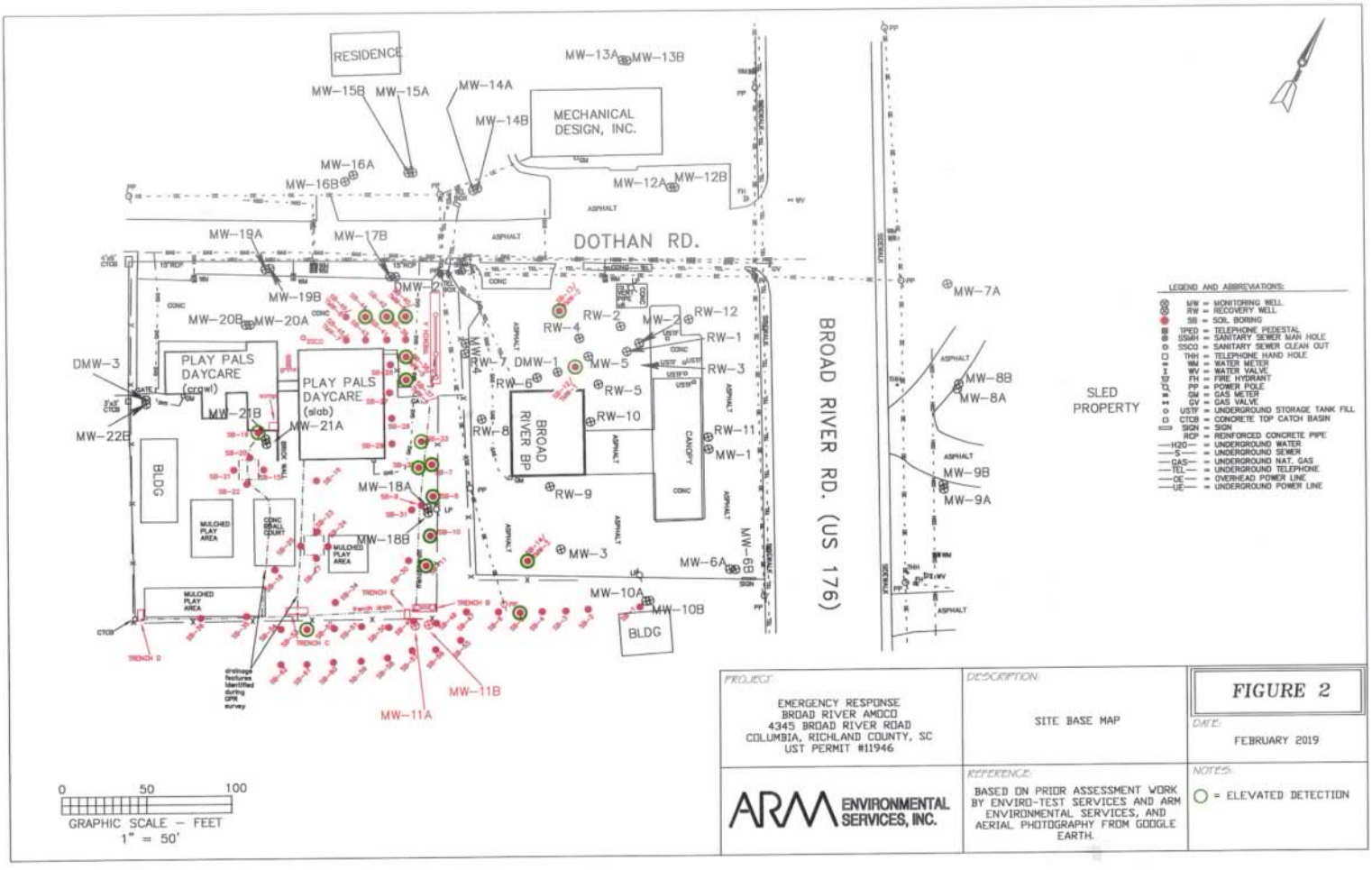
FEBRUARY 2019

ARM ENVIRONMENTAL SERVICES, INC.

REFERENCE:

U.S.G.S. TOPOGRAPHIC MAP
(7.5 MINUTE SERIES)
COLUMBIA NORTH - 1972, REV. 1990
SOUTH CAROLINA QUADRANGLE

LEGEND:



PROJECT:
EMERGENCY RESPONSE
BROAD RIVER AMOCO
4345 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SC
UST PERMIT #11946

DESCRIPTION:
SITE BASE MAP

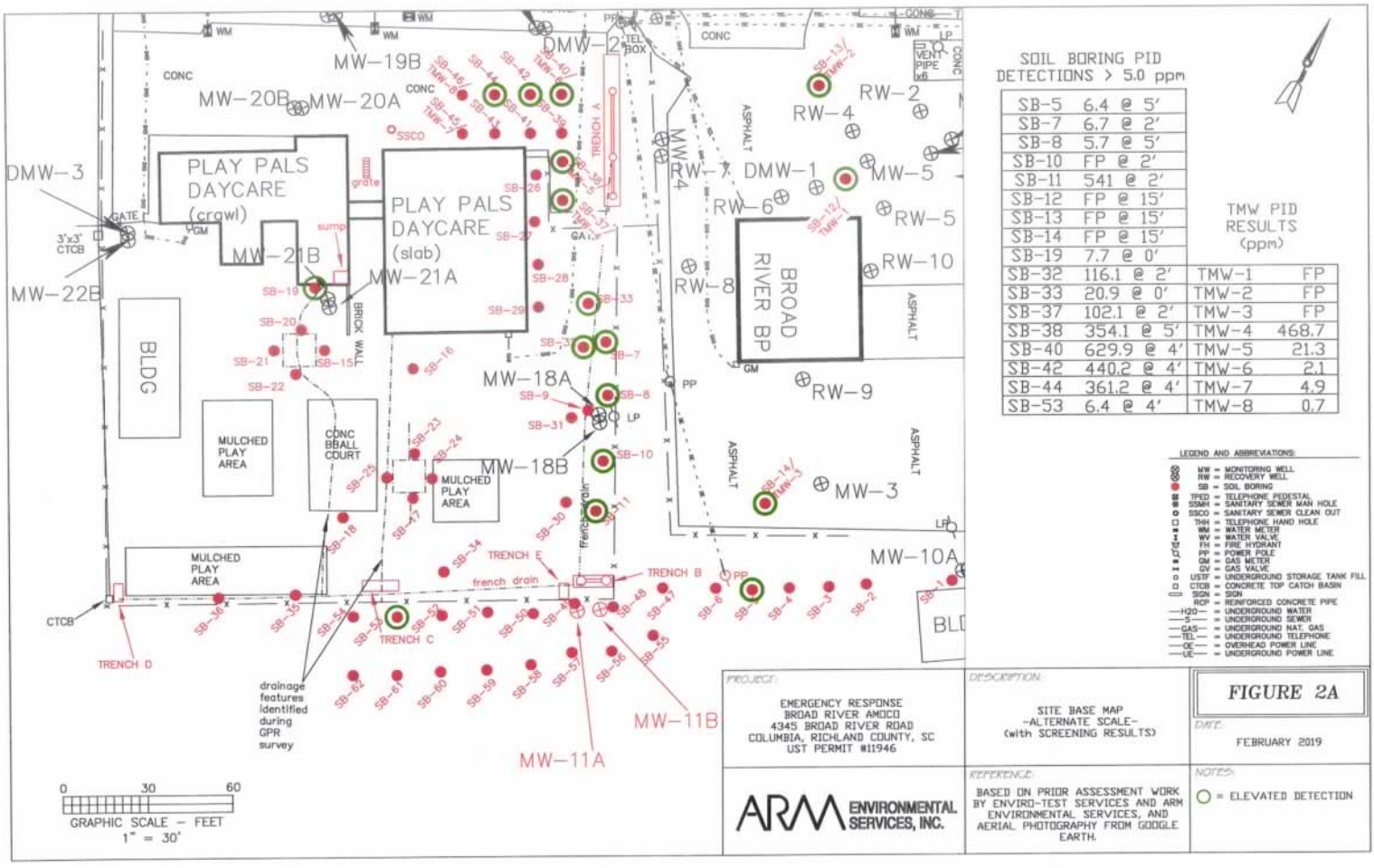
FIGURE 2

DATE:
FEBRUARY 2019

ARM ENVIRONMENTAL SERVICES, INC.

REFERENCE:
BASED ON PRIOR ASSESSMENT WORK BY ENVIRO-TEST SERVICES AND ARM ENVIRONMENTAL SERVICES, AND AERIAL PHOTOGRAPHY FROM GOOGLE EARTH.

NOTES:
○ = ELEVATED DETECTION



SOIL BORING PID DETECTIONS > 5.0 ppm

SB-5	6.4 @ 5'
SB-7	6.7 @ 2'
SB-8	5.7 @ 5'
SB-10	FP @ 2'
SB-11	541 @ 2'
SB-12	FP @ 15'
SB-13	FP @ 15'
SB-14	FP @ 15'
SB-19	7.7 @ 0'
SB-32	116.1 @ 2'
SB-33	20.9 @ 0'
SB-37	102.1 @ 2'
SB-38	354.1 @ 5'
SB-40	629.9 @ 4'
SB-42	440.2 @ 4'
SB-44	361.2 @ 4'
SB-53	6.4 @ 4'

TMW PID RESULTS (ppm)

TMW-1	FP
TMW-2	FP
TMW-3	FP
TMW-4	468.7
TMW-5	21.3
TMW-6	2.1
TMW-7	4.9
TMW-8	0.7

LEGEND AND ABBREVIATIONS:

- MW = MONITORING WELL
- RW = RECOVERY WELL
- SB = SOIL BORING
- TPED = TELEPHONE PEDESTAL
- SSMH = SANITARY SEWER MAN HOLE
- SSCO = SANITARY SEWER CLEAN OUT
- THH = TELEPHONE HAND HOLE
- WM = WATER METER
- WV = WATER VALVE
- FH = FIRE HYDRANT
- PP = POWER POLE
- GM = GAS METER
- GV = GAS VALVE
- USTF = UNDERGROUND STORAGE TANK FILL
- CTCB = CONCRETE TOP CATCH BASIN
- SIGN = SIGN
- RCP = REINFORCED CONCRETE PIPE
- —H2O— = UNDERGROUND WATER
- —S— = UNDERGROUND SEWER
- —GAS— = UNDERGROUND NAT. GAS
- —TEL— = UNDERGROUND TELEPHONE
- —OE— = OVERHEAD POWER LINE
- —UE— = UNDERGROUND POWER LINE

PROJECT:
EMERGENCY RESPONSE
BROAD RIVER AMOCO
4345 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SC
UST PERMIT #11946

DESCRIPTION:
SITE BASE MAP
-ALTERNATE SCALE-
(with SCREENING RESULTS)

FIGURE 2A

DATE:
FEBRUARY 2019

ARM ENVIRONMENTAL SERVICES, INC.

REFERENCE:
BASED ON PRIOR ASSESSMENT WORK BY ENVIRO-TEST SERVICES AND ARM ENVIRONMENTAL SERVICES, AND AERIAL PHOTOGRAPHY FROM GOOGLE EARTH.

NOTES:
○ = ELEVATED DETECTION

TABLES

Table 1 Soil Analytical Data
Table 2 Water Analytical Data
Table 3 Air and Soil Vapor Analytical Data

Broad River Amoco (BP); UST Permit # 11946
Table 1 – Soil Analytical Data
November 27, 2018

Monitor Well ID	Date Sampled	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Naph-thalene	Total Lead
RBSLs	**N/A**	**7**	**1,450**	**1150**	**14,500**	**36**	**N/A**
SP-1	11/27/2018	**33,000**	**350,000**	**110,000**	**590,000**	**30,000**	9,400
SP-2	11/27/2018	ND (**280**)	ND (280)	ND (280)	ND (560)	ND (**280**)	2,500

Note: All units expressed in ug/L (PPB)
ND - Not Detected at or above Method Detection Limit (MDL)
J - Estimated Result < Limit of Quantitation and > or = MDL

Broad River Amoco (BP); UST Permit # 11946

Table 2 – Water Analytical Data

November & December 2018

Drinking Water Sample ID	Date Sampled	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA	PAHs	EDB
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5**	**- - -**	**0.05**
Daycare	11/27/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.80)	ND (0.0098)
1257 Dothan Rd	11/27/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.80)	ND (0.0097)
Duplicate 1	11/27/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.80)	ND (0.010)
Field Blank 1	11/27/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	NA	ND (0.0097)
Trip Blank 1	11/27/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	NA	NA
1238 Dothan Rd.	12/06/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.80)	ND (0.0099)
Duplicate 2	12/06/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.80)	ND (0.0098)
Field Blank 2	12/06/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	NA	ND (0.0098)
Trip Blank 2	12/06/18	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	NA	NA

Temporary Well Sample ID	Date Sampled	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Naph-thalene	MTBE	1,2-DCA
RBSLs	**N/A**	**5**	**1,000**	**700**	**10,000**	**25**	**40**	**5**
TMW-4	12/04/18	**6,800**	**28,000**	**3,800**	**20,000**	**610**	ND (**500**)	ND (**500**)
TMW-6	12/04/18	**15**	54	8.6	46	2.6	**100**	ND (1.0)
TMW-7	12/04/18	**23**	150	25	140	4.7	ND (1.0)	ND (1.0)

Temporary Well Sample ID	Date Sampled	DIPE	Ethanol	ETBA	ETBE	TAA	TAME	TBA	TBF
RBSLs	**N/A**	**150**	**10,000**	**N/A**	**47**	**240**	**128**	**1,400**	**N/A**
TMW-4	12/04/18	ND (**500**)	ND (**50,000**)	ND (10,000)	ND (**500**)	ND (**10,000**)	ND (**5,000**)	ND (**10,000**)	ND (2,500)
TMW-6	12/04/18	4.7	ND (100)	ND (20)	1.5	**360**	ND (10)	**2,500**	ND (5.0)
TMW-7	12/04/18	ND (1.0)	ND (100)	ND (20)	ND (1.0)	20	ND (10)	79	ND (5.0)

Note: All units expressed in mg/L (PPB)
ND - Not Detected at or above Method Detection Limit (MDL)
J - Estimated Result < Limit of Quantitation and > or = MDL
NA - Not Analyzed

Table 3

Air and Soil Vapor Analytical Data

Default VISL Results
Commercial Equation Inputs

Output generated 10DEC2018:13:17:57

Variable	Value
Exposure Scenario	Commercial
Temperature for Groundwater Vapor Concentration C	25
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	0.000001
AT_w (averaging time - composite worker)	365
EF_w (exposure frequency - composite worker) day/yr	250
ED_w (exposure duration - composite worker) yr	25
ET_w (exposure time - composite worker) hr	8
LT (lifetime) yr	70
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03

Commercial Vapor Intrusion Screening Levels (VISL)
Ambient Air
Play Pals - 1246 Dothan Rd.
12/5/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m³)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m³)	A-1 (Exterior Air) (µg/m3)	A-2 (Crawspace) (µg/m3) Canister Malfunction-Not Analyzed	A-3 (Interior of Slab Building) (µg/m3)	A-4 (Interior of Crawlspace Building) (µg/m3)
Benzene	1.57	52.4	**2.6**		**183**	**19**
Dichloroethane, 1,2-	0.472	15.7	ND (0.809)		ND (0.809)	ND (0.809)
Ethylbenzene	4.91	164	2.03		**530**	**29.4**
Methyl tert-Butyl Ether (MTBE)	47.2	1570	ND (0.721)		ND (0.721)	ND (0.721)
Naphthalene	0.361	12	ND (1.05)		**12.9**	**2.43**
Toluene	2190	73000	9.91		1790	120
Xylenes	43.8	1460	10.36		**2956**	**199**

Residential Vapor Intrusion Screening Levels (VISL)
Ambient Air
Play Pals - 1246 Dothan Rd.
12/5/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m³)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m³)	A-1 (Exterior Air) (µg/m3)	A-2 (Crawspace) (µg/m3) Canister Malfunction-Not Analyzed	A-3 (Interior of Slab Building) (µg/m3)	A-4 (Interior of Crawlspace Building) (µg/m3)
Benzene	0.36	12	**2.6**		**183**	**19**
Dichloroethane, 1,2-	0.108	3.6	ND (0.809)		ND (0.809)	ND (0.809)
Ethylbenzene	1.12	37.4	**2.03**		**530**	**29.4**
Methyl tert-Butyl Ether (MTBE)	10.8	360	ND (0.721)		ND (0.721)	ND (0.721)
Naphthalene	0.0826	2.75	ND (1.05)		**12.9**	**2.43**
Toluene	521	17400	9.91		**1790**	120
Xylenes	10.4	348	10.36		**2956**	**199**

Commercial Vapor Intrusion Screening Levels (VISL)
Subslab Soil Gas
Play Pals - 1246 Dothan Rd.
12/6/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	SG-1 (Classroom 1, Slab Building) (µg/m3)	SG-2 (Classroom 2, Slab Building) (µg/m3)	SG-3 (Classroom 3, Slab Building) (µg/m3)	SG-4 (Classroom 4, Slab Building) (µg/m3)	SG-5 (Classroom 5, Slab Building) (µg/m3)	SG-6 (Classroom 6, Slab Building) (µg/m3)
Benzene	1.57	52.4	28.6	ND (6.39)	5.69	3.45	4.54	22.8
Dichloroethane, 1,2-	0.472	15.7	ND (22.0)	ND (8.09)	ND (0.809)	ND (0.809)	ND (0.809)	ND (8.09)
Ethylbenzene	4.91	164	ND (23.6)	ND (8.69)	11.2	9.16	12.2	12.6
Methyl tert-Butyl Ether (MTBE)	47.2	1570	ND (19.6)	ND (7.21)	ND (0.721)	ND (0.721)	ND (0.721)	ND (7.21)
Naphthalene	0.361	12	ND (28.5)	ND (10.5)	2.69	1.64	2.63	ND (10.5)
Toluene	2190	73000	23.5	30.4	43.3	32.8	40.3	52.4
Xylenes	43.8	1460	ND (47.3)	47.1	64.5	55.6	73.9	73.8

Residential Vapor Intrusion Screening Levels (VISL)
Subslab Soil Gas
Play Pals - 1246 Dothan Rd.
12/6/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	SG-1 (Classroom 1, Slab Building) (µg/m3)	SG-2 (Classroom 2, Slab Building) (µg/m3)	SG-3 (Classroom 3, Slab Building) (µg/m3)	SG-4 (Classroom 4, Slab Building) (µg/m3)	SG-5 (Classroom 5, Slab Building) (µg/m3)	SG-6 (Classroom 6, Slab Building) (µg/m3)
Benzene	0.36	12	**28.6**	ND (6.39)	5.69	3.45	4.54	**22.8**
Dichloroethane, 1,2-	0.108	3.6	ND (22.0)	ND (8.09)	ND (0.809)	ND (0.809)	ND (0.809)	ND (8.09)
Ethylbenzene	1.12	37.4	ND (23.6)	ND (8.69)	11.2	9.16	12.2	12.6
Methyl tert-Butyl Ether (MTBE)	10.8	360	ND (19.6)	ND (7.21)	ND (0.721)	ND (0.721)	ND (0.721)	ND (7.21)
Naphthalene	0.0826	2.75	ND (28.5)	ND (10.5)	2.69	1.64	2.63	ND (10.5)
Toluene	521	17400	23.5	30.4	43.3	32.8	40.3	52.4
Xylenes	10.4	348	ND (47.3)	47.1	64.5	55.6	73.9	73.8

Commercial Vapor Intrusion Screening Levels (VISL)
Crawlspace Air
1238 Dothan Road
12/7/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	A-7 (Crawlspace Air) (µg/m3)
Benzene	1.57	52.4	**2.34**
Dichloroethane, 1,2-	0.472	15.7	ND (0.809)
Ethylbenzene	4.91	164	ND (0.869)
Methyl tert-Butyl Ether (MTBE)	47.2	1570	ND (0.721)
Naphthalene	0.361	12	ND (1.05)
Toluene	2190	73000	5.54
Xylenes	43.8	1460	2.14

Residential Vapor Intrusion Screening Levels (VISL)
Crawlspace Air
1238 Dothan Road
12/7/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	A-7 (Crawlspace Air) (µg/m3)
Benzene	0.36	12	**2.34**
Dichloroethane, 1,2-	0.108	3.6	ND (0.809)
Ethylbenzene	1.12	37.4	ND (0.869)
Methyl tert-Butyl Ether (MTBE)	10.8	360	ND (0.721)
Naphthalene	0.0826	2.75	ND (1.05)
Toluene	521	17400	5.54
Xylenes	10.4	348	2.14

Commercial Vapor Intrusion Screening Levels (VISL)
Crawlspace Air
Play Pals - 1246 Dothan Rd.
12/7/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	A-5 (Crawlspace Air - Above Poly Liner) (µg/m3)	A-6 (Crawspace Air - Below Poly Liner) (µg/m3)
Benzene	1.57	52.4	**15.3**	**57.5**
Dichloroethane, 1,2-	0.472	15.7	ND (0.809)	ND (0.809)
Ethylbenzene	4.91	164	**15.4**	**66**
Methyl tert-Butyl Ether (MTBE)	47.2	1570	ND (0.721)	ND (0.721)
Naphthalene	0.361	12	**3.2**	**36.4**
Toluene	2190	73000	81.4	347
Xylenes	43.8	1460	**110.3**	**496**

Residential Vapor Intrusion Screening Levels (VISL)
Crawlspace Air
Play Pals - 1246 Dothan Rd.
12/7/2018

Chemical	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m^3)	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m^3)	A-5 (Crawlspace Air - Above Poly Liner) (µg/m3)	A-6 (Crawspace Air - Below Poly Liner) (µg/m3)
Benzene	0.36	12	**15.3**	**57.5**
Dichloroethane, 1,2-	0.108	3.6	ND (0.809)	ND (0.809)
Ethylbenzene	1.12	37.4	**15.4**	**66**
Methyl tert-Butyl Ether (MTBE)	10.8	360	ND (0.721)	ND (0.721)
Naphthalene	0.0826	2.75	**3.2**	**36.4**
Toluene	521	17400	81.4	347
Xylenes	10.4	348	**110.3**	**496**

APPENDICES

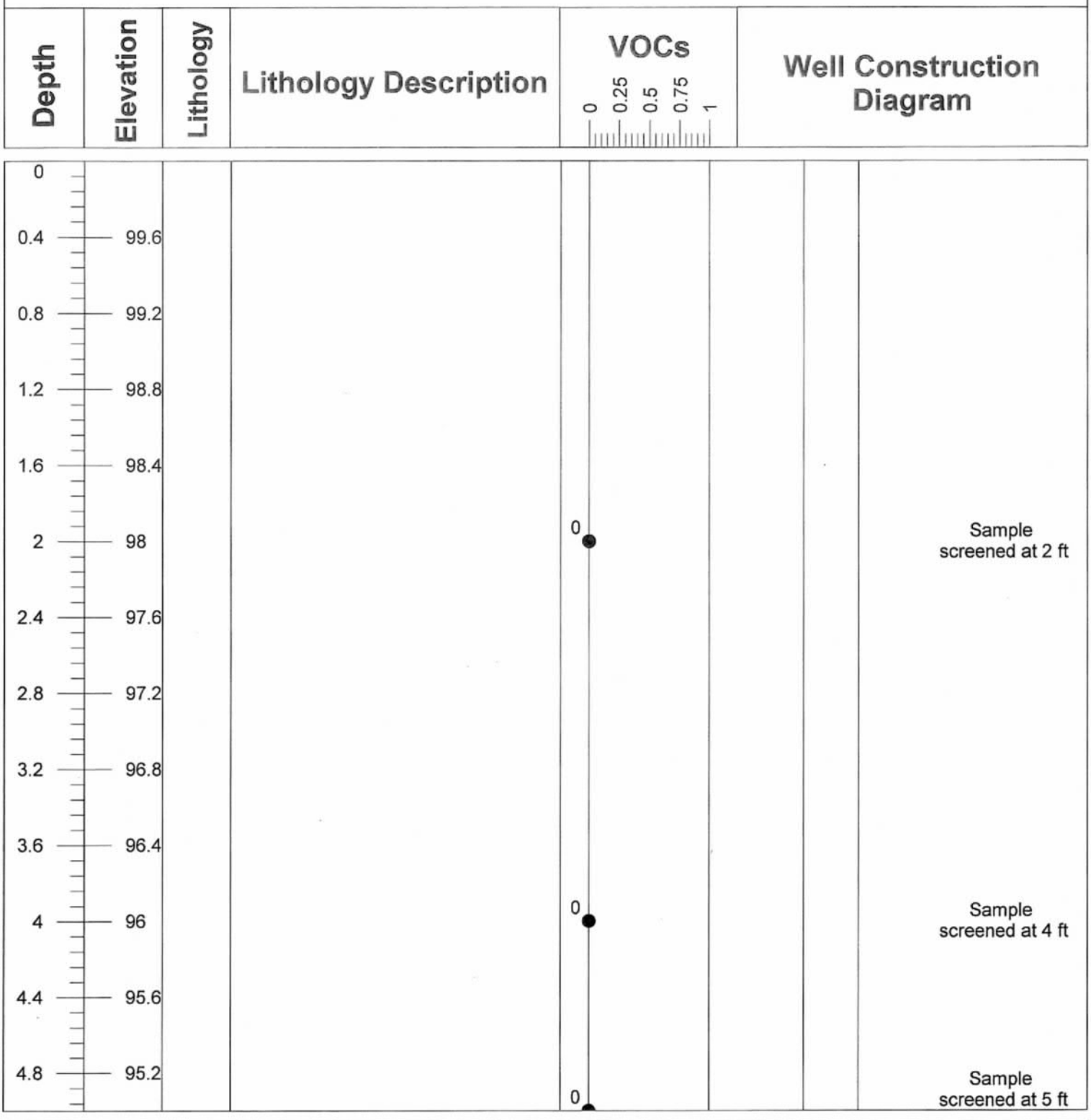
A. SOIL BORING LOGS
B. 1903 WATER WELL RECORDS
C. LABORATORY ANALYTICAL REPORTS
D. ASBESTOS WASTE SHIPMENT RECORD
E. SOIL DISPOSAL MANIFESTS
F. WATER / PRODUCT DISPOSAL MANIFESTS

APPENDIX A

SOIL BORING LOGS

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-1



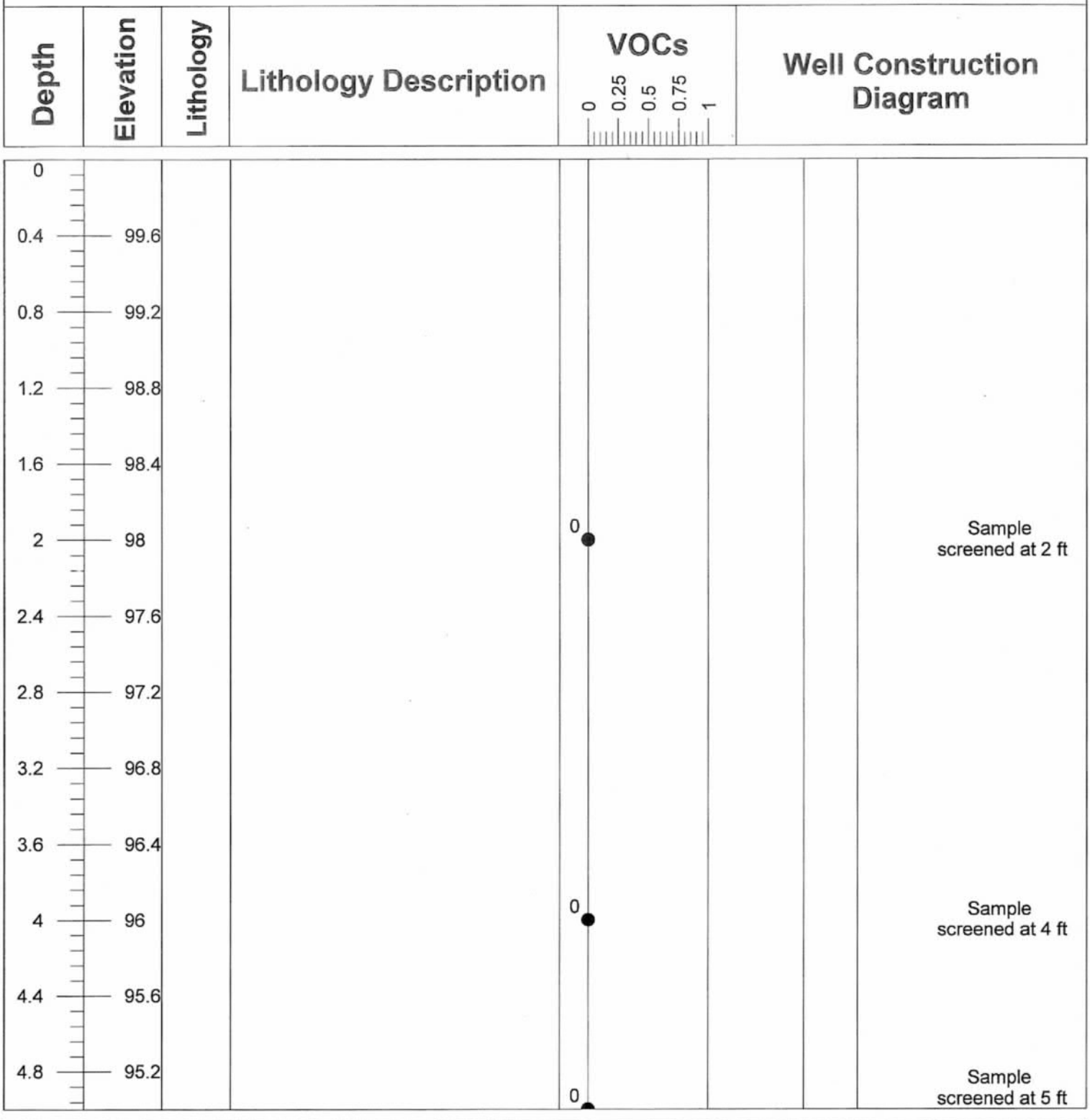
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

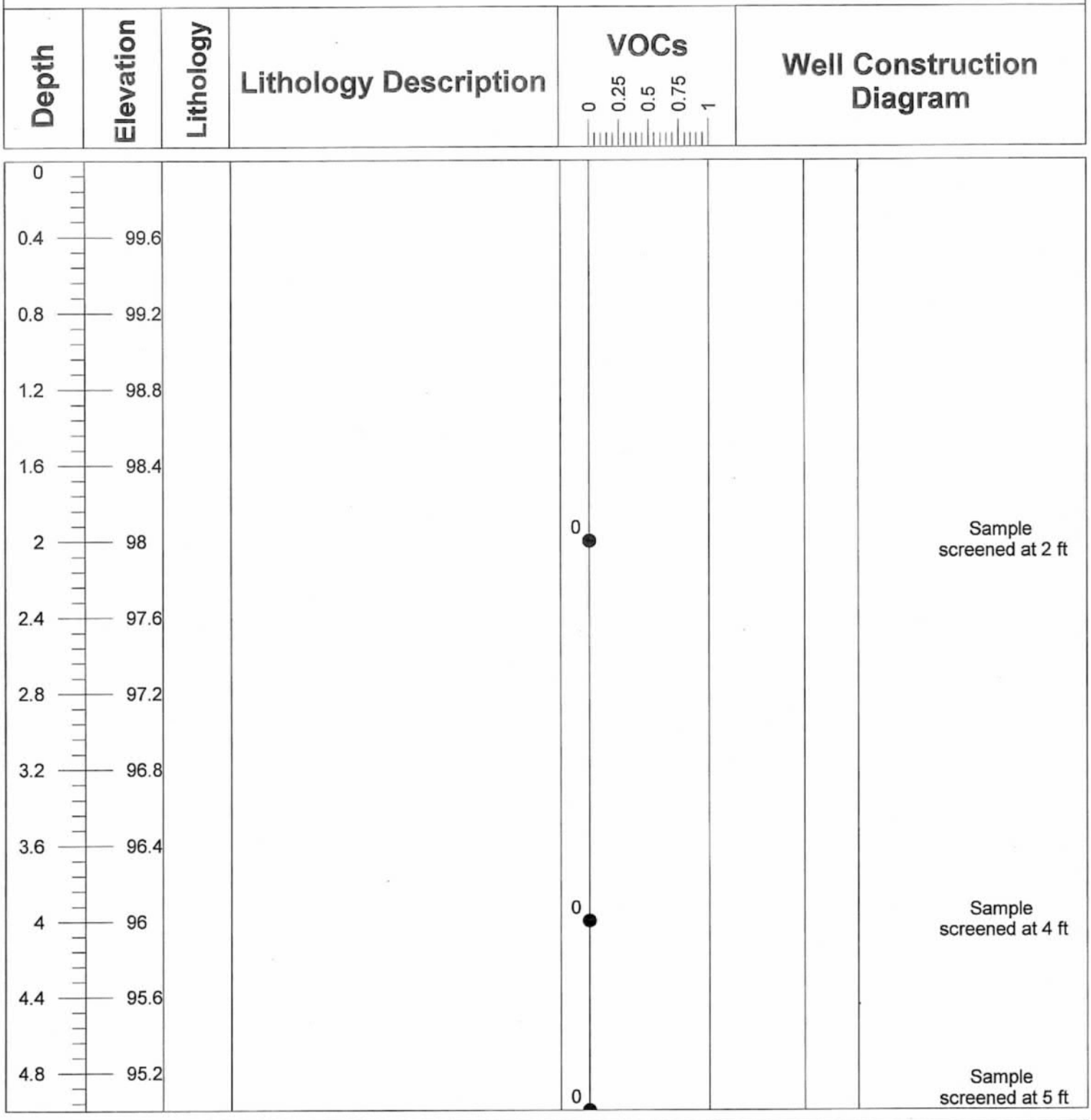
Borehole ID: SB-2



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 33.628484°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -79.973202°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-3



Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-4

Depth	Elevation	Lithology	Lithology Description	VOCs (0, 0.25, 0.5, 0.75, 1)	Well Construction Diagram
0					
0.4	99.6				
0.8	99.2				
1.2	98.8				
1.6	98.4				
2	98			0	Sample screened at 2 ft
2.4	97.6				
2.8	97.2				
3.2	96.8				
3.6	96.4				
4	96			0	Sample screened at 4 ft
4.4	95.6				
4.8	95.2			0	Sample screened at 5 ft

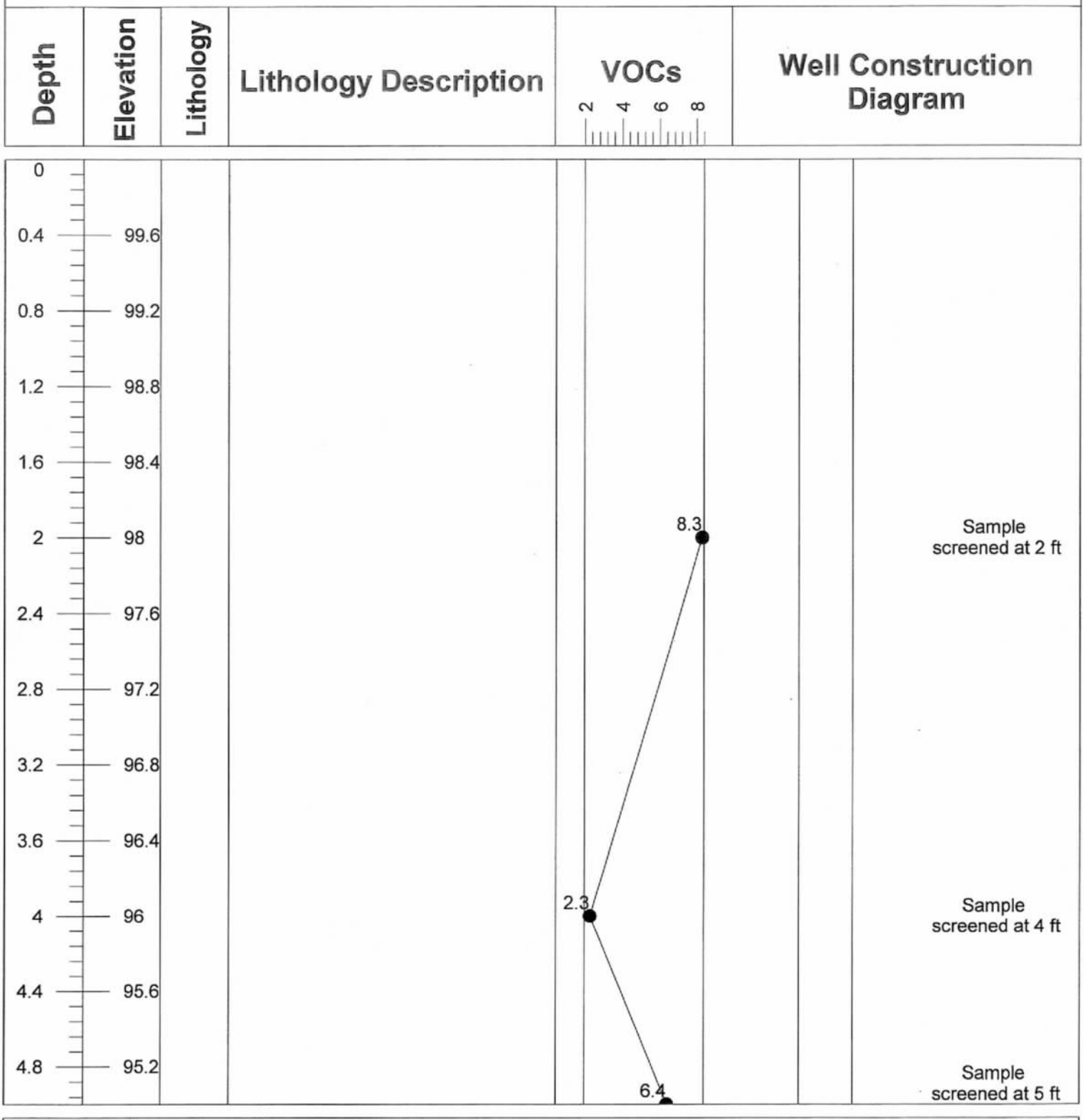
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

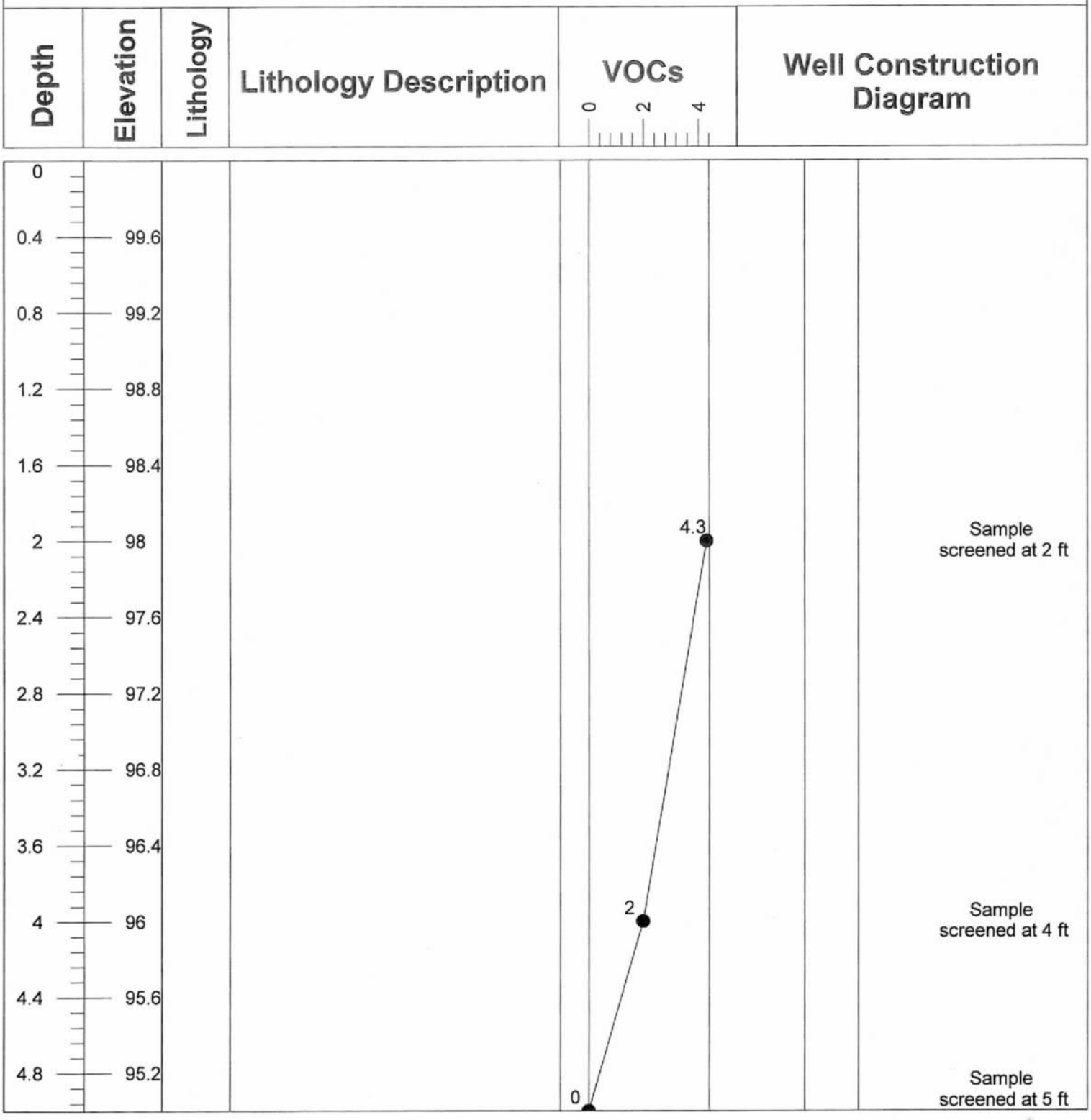
Borehole ID: SB-5



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 33.628484°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -79.973202°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

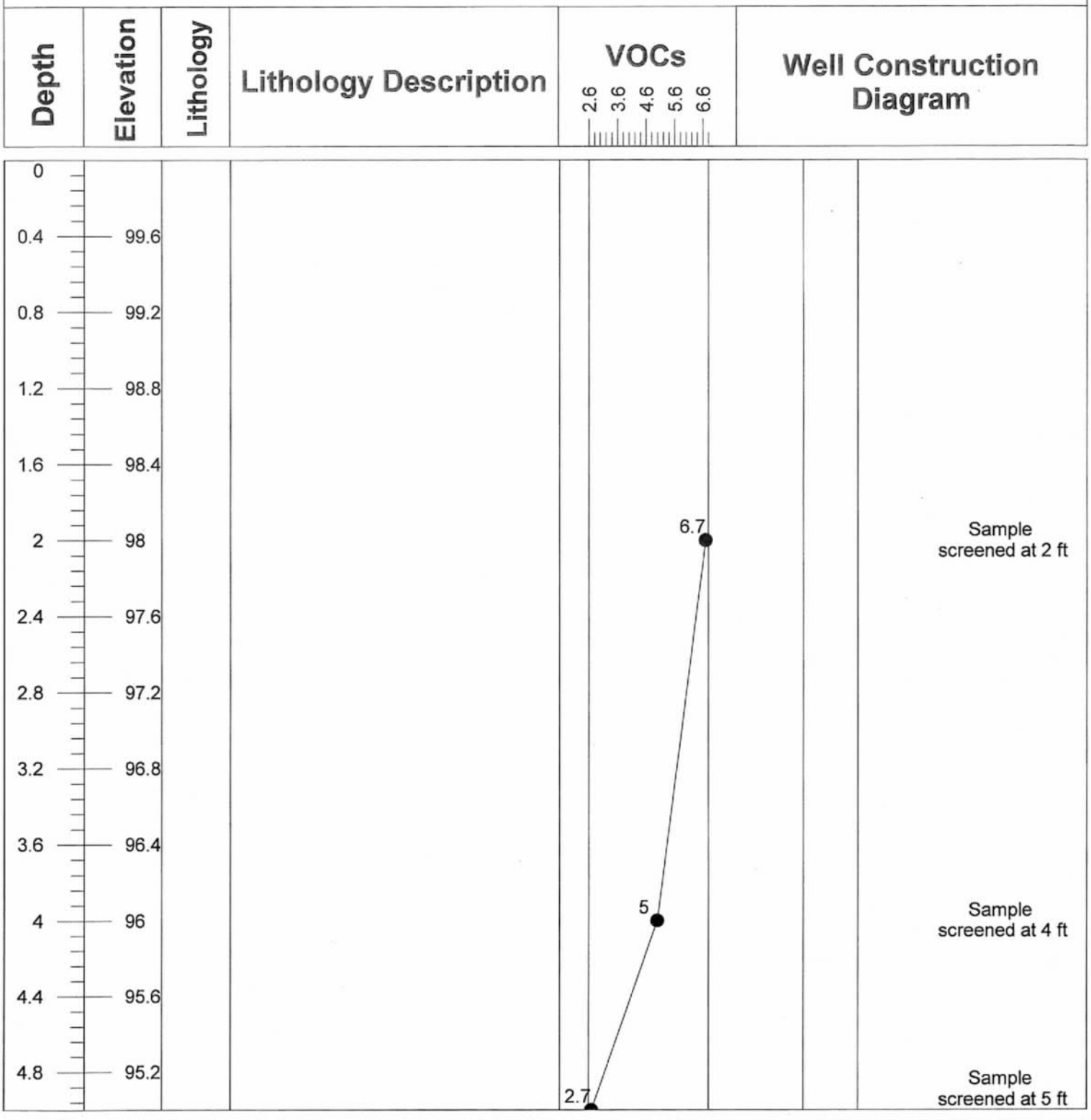
Borehole ID: SB-6



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 33.628484°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -79.973202°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-7



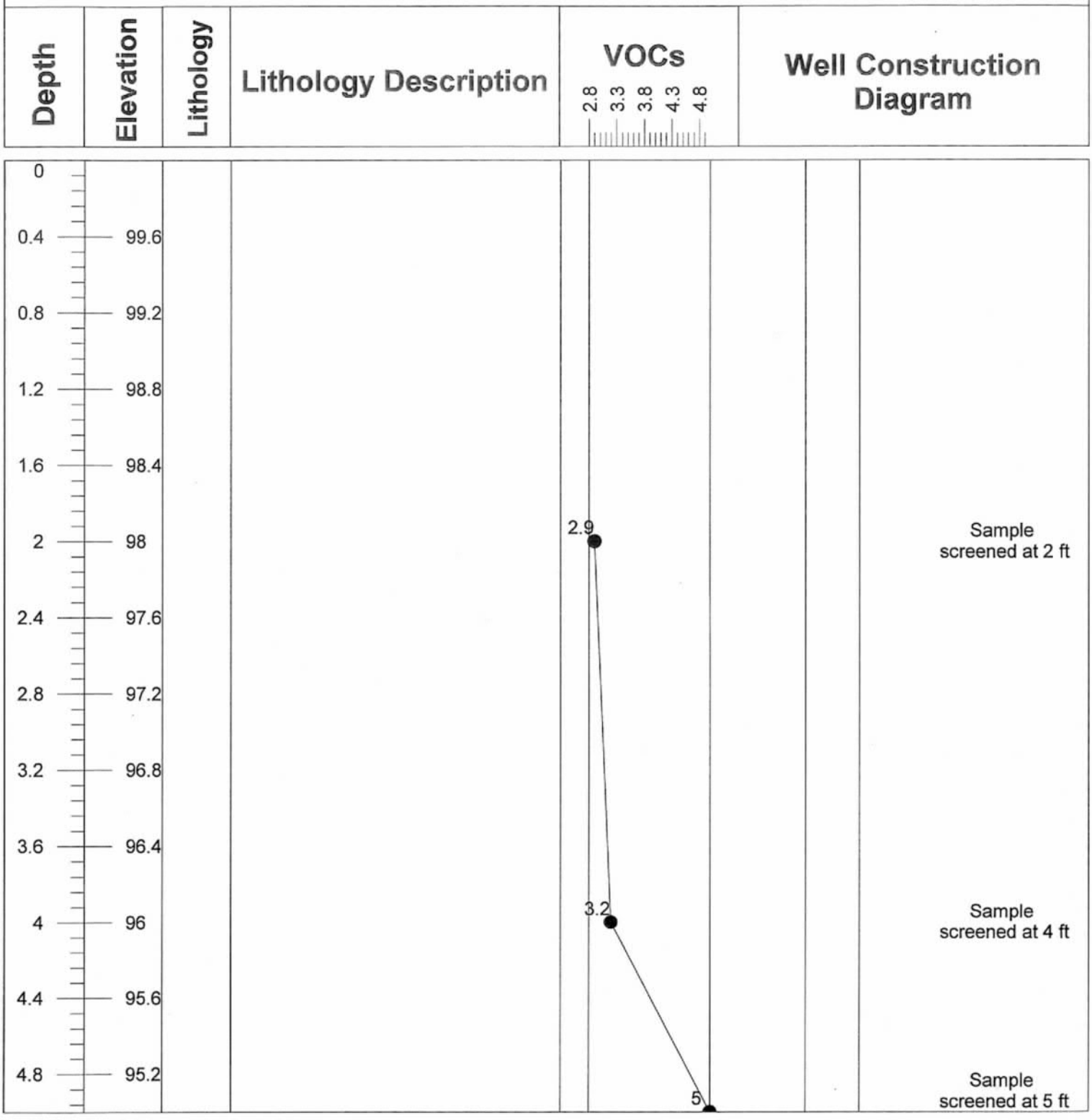
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

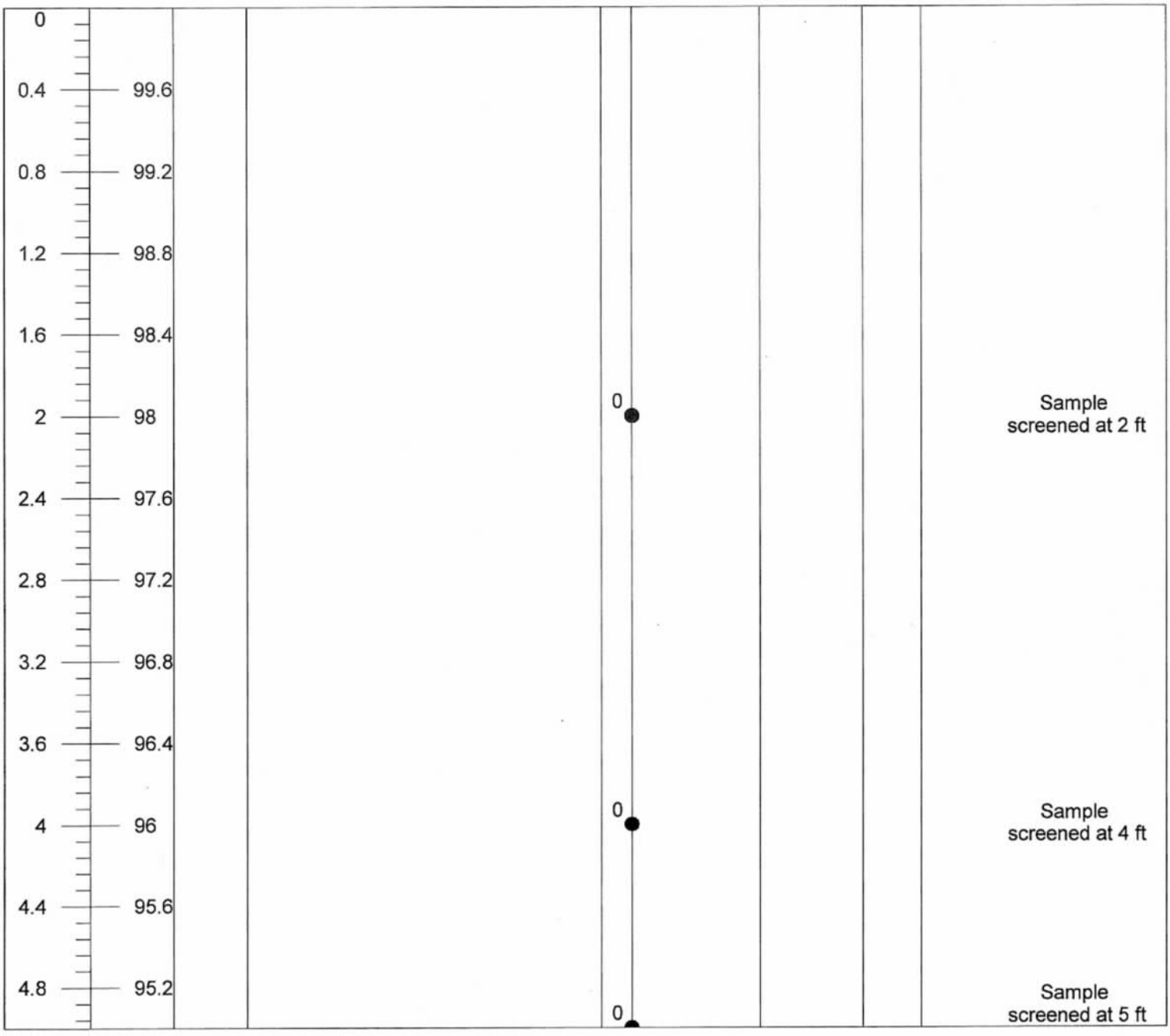
Borehole ID: SB-8



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 33.628484°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -79.973202°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-9



Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-10

Depth	Elevation	Lithology	Lithology Description	VOCs (411 / 411.25 / 411.5 / 411.75 / 412)	Well Construction Diagram
0	100				
0.1	99.9				
0.2	99.8				
0.3	99.7				
0.4	99.6				
0.5	99.5				
0.6	99.4				
0.7	99.3				
0.8	99.2				
0.9	99.1				
1	99				
1.1	98.9				
1.2	98.8				
1.3	98.7				
1.4	98.6				
1.5	98.5				
1.6	98.4				
1.7	98.3				
1.8	98.2				
1.9	98.1				
	98			411	Free product visible at 2 ft bgs

Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 2.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-11

Depth	Elevation	Lithology	Lithology Description	VOCs (541 / 541.25 / 541.5 / 541.75 / 542)	Well Construction Diagram
0					
0.2	99.8				
0.4	99.6				
0.6	99.4				
0.8	99.2				
1	99				
1.2	98.8				
1.4	98.6				
1.6	98.4				
1.8	98.2				
2	98			541	
2.2	97.8				
2.4	97.6				
2.6	97.4				
2.8	97.2				
	97				Refusal at 3 ft bgs

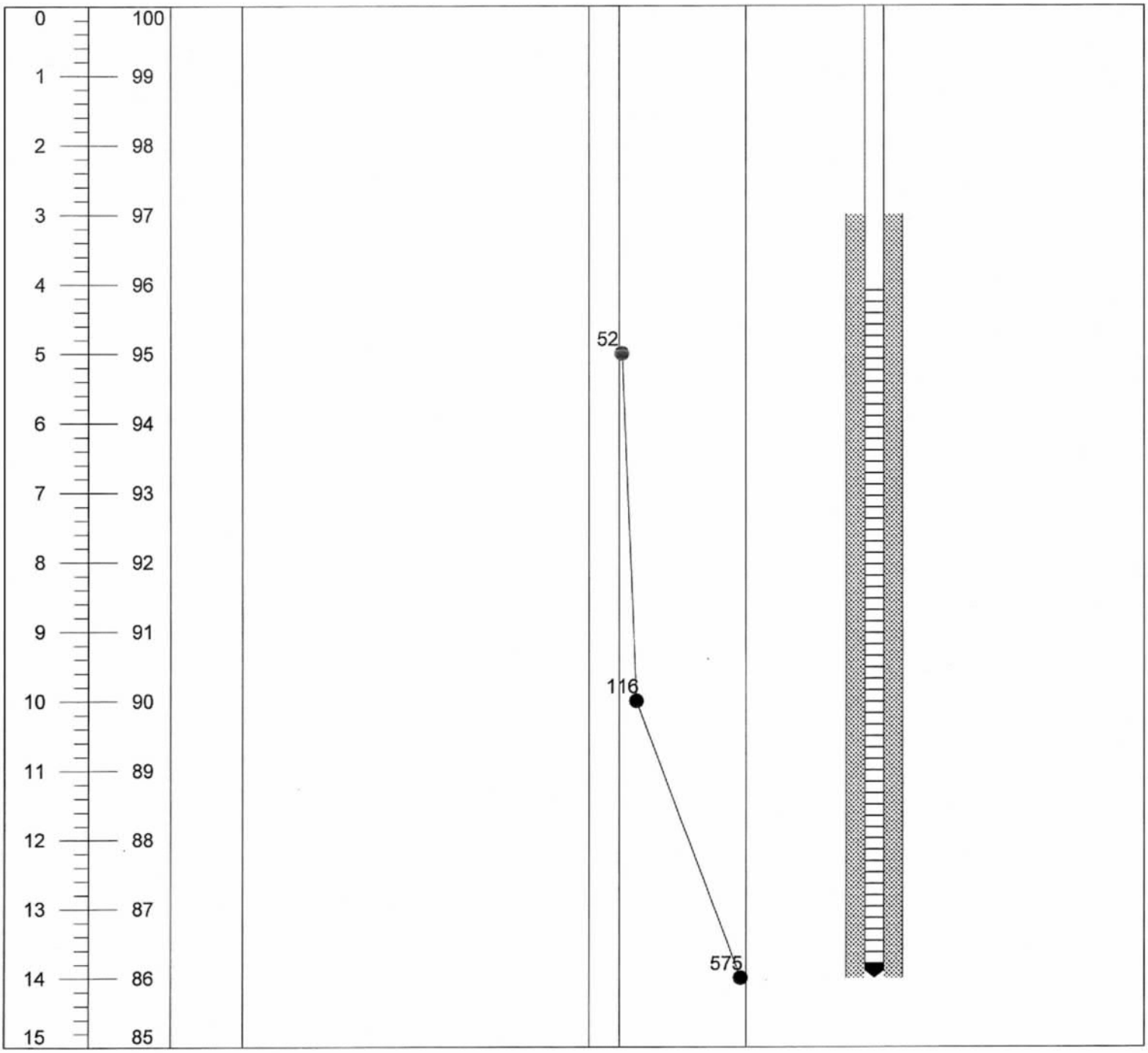
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 3.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

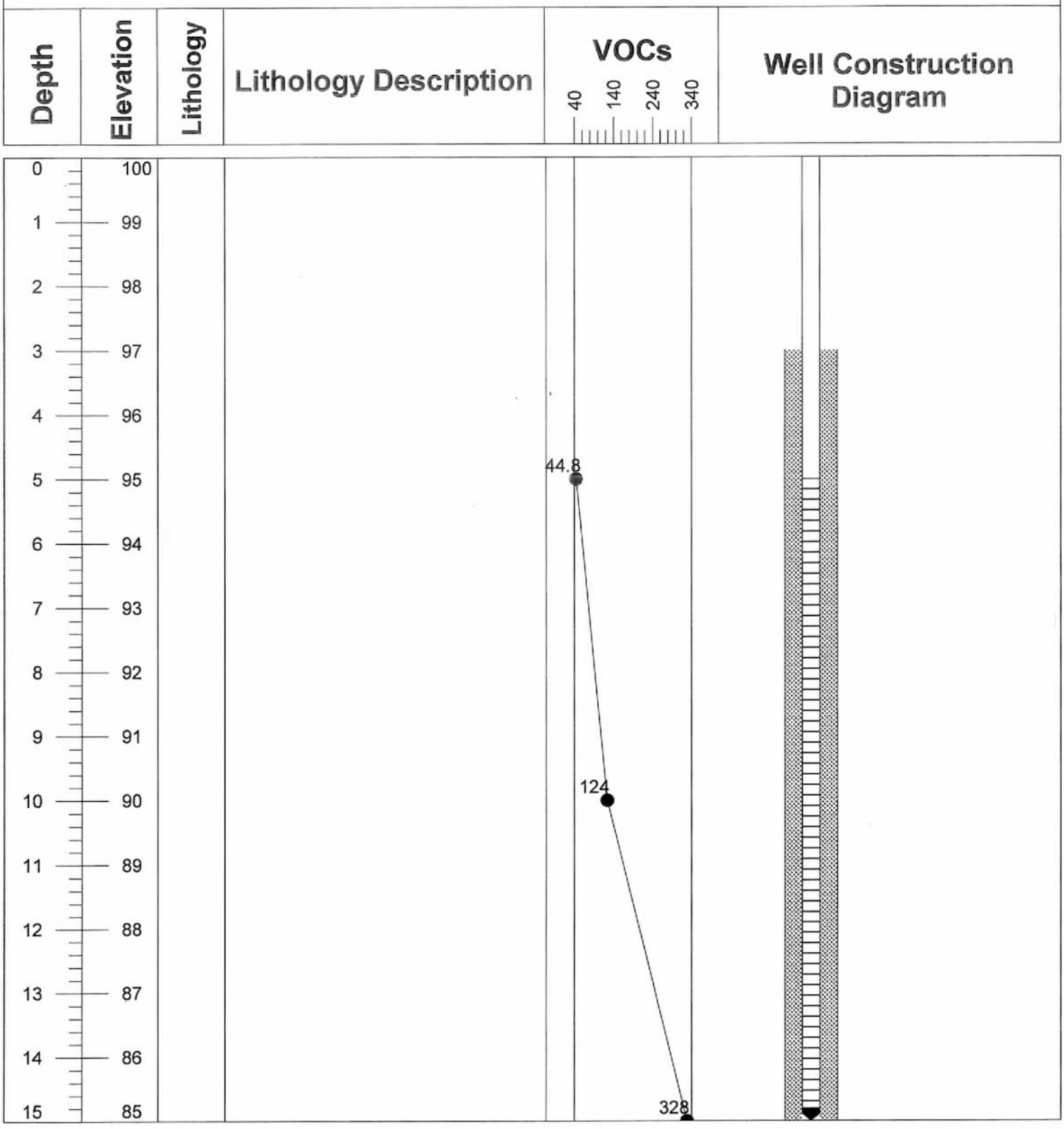
Borehole ID: SB-12/TMW-1



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 15.0'
Client Name: Enviro-Test Services	Latitude: 34.065433°	Casing Diameter: 1"
Location: Columbia, SC	Longitude: -81.116961°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-13/TMW-2

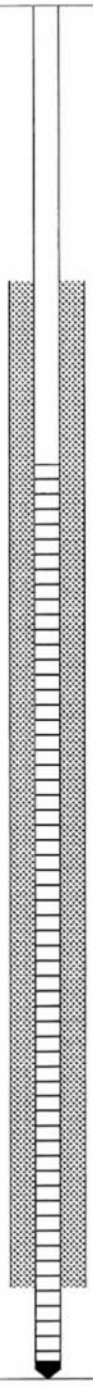


Project Name: Broad River Amoco	Drill Method: Direct push	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 15.0'
Client Name: Enviro-Test Services	Latitude: 34.065433°	Casing Diameter: 1"
Location: Columbia, SC	Longitude: -81.116961°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-14/TMW-3

Depth	Elevation	Lithology	Lithology Description	VOCs (0, 0.25, 0.5, 0.75, 1)	Well Construction Diagram
0	100				
1	99				
2	98				
3	97				
4	96				
5	95				
6	94				
7	93				
8	92				
9	91				
10	90				
11	89				
12	88				
13	87				
14	86				
15	85				



Project Name: Broad River Amoco

Project Number: 12-414.2-18

Client Name: Enviro-Test Services

Location: Columbia, SC

Drill Method: Direct push

Drill Date: 11/22/18

Latitude: 34.065433°

Longitude: -81.116961°

Driller: David Felder, cert. #2162D

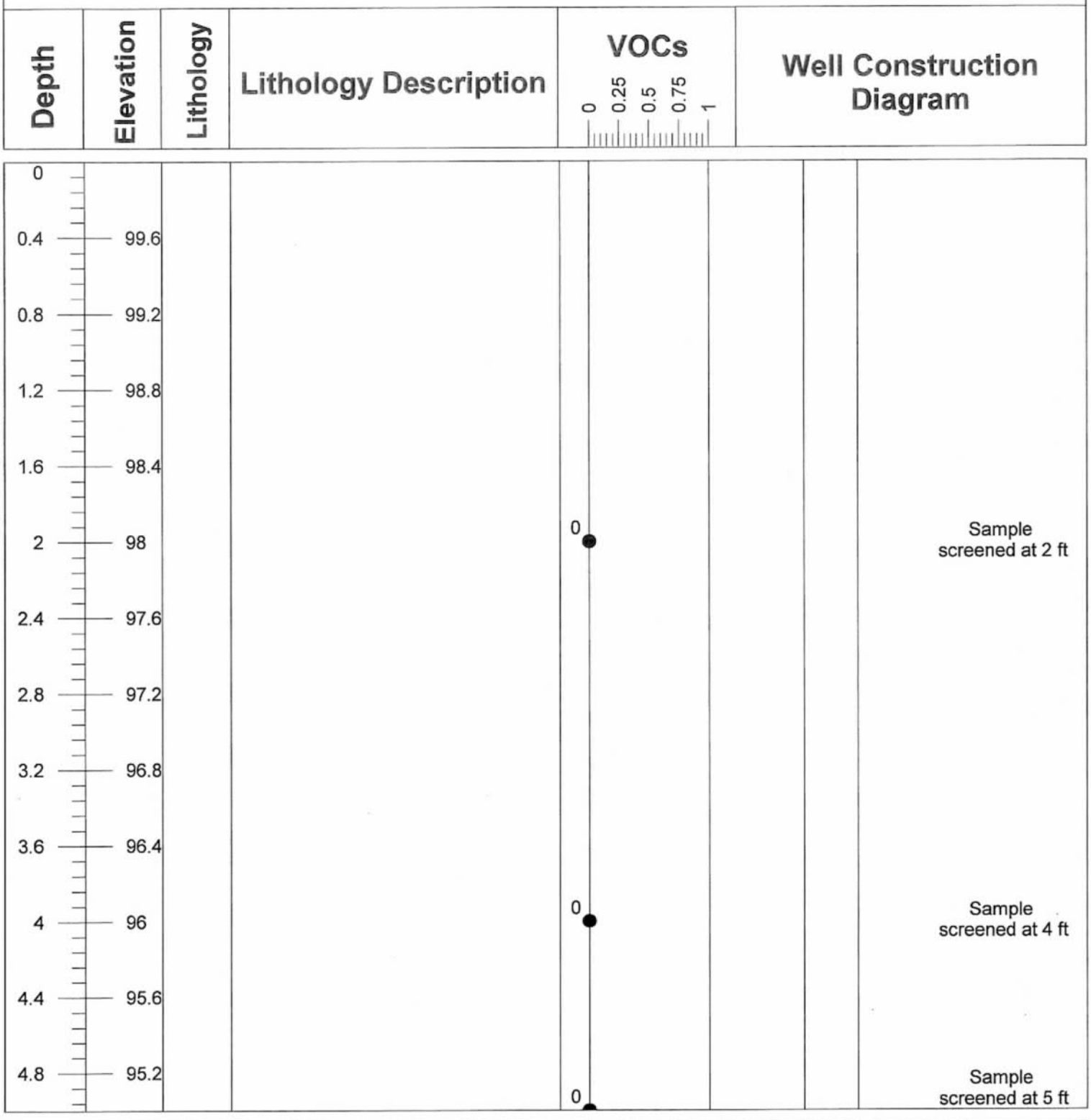
Total Depth of Well: 15.0'

Casing Diameter: 1"

Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-15



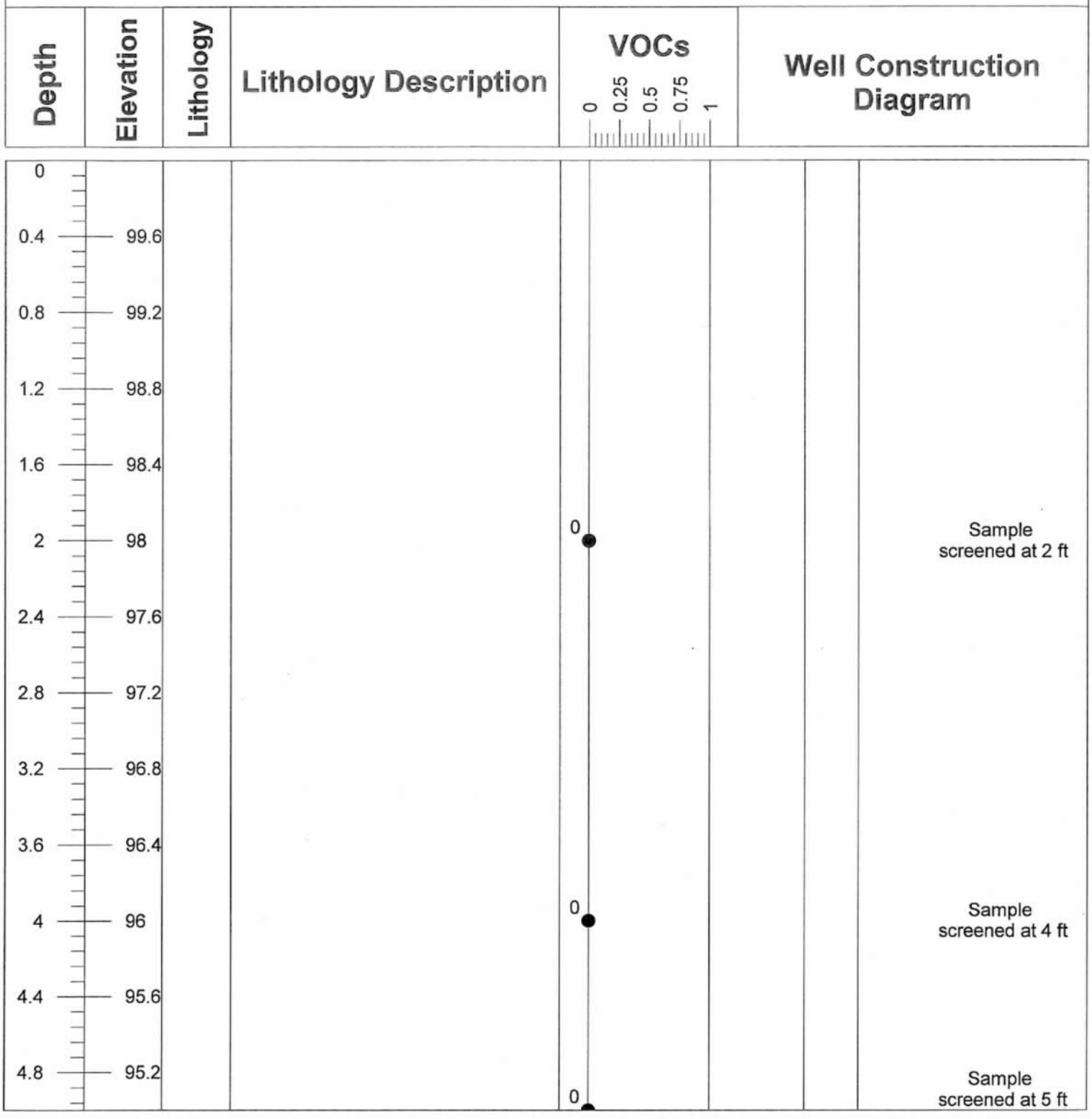
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-16



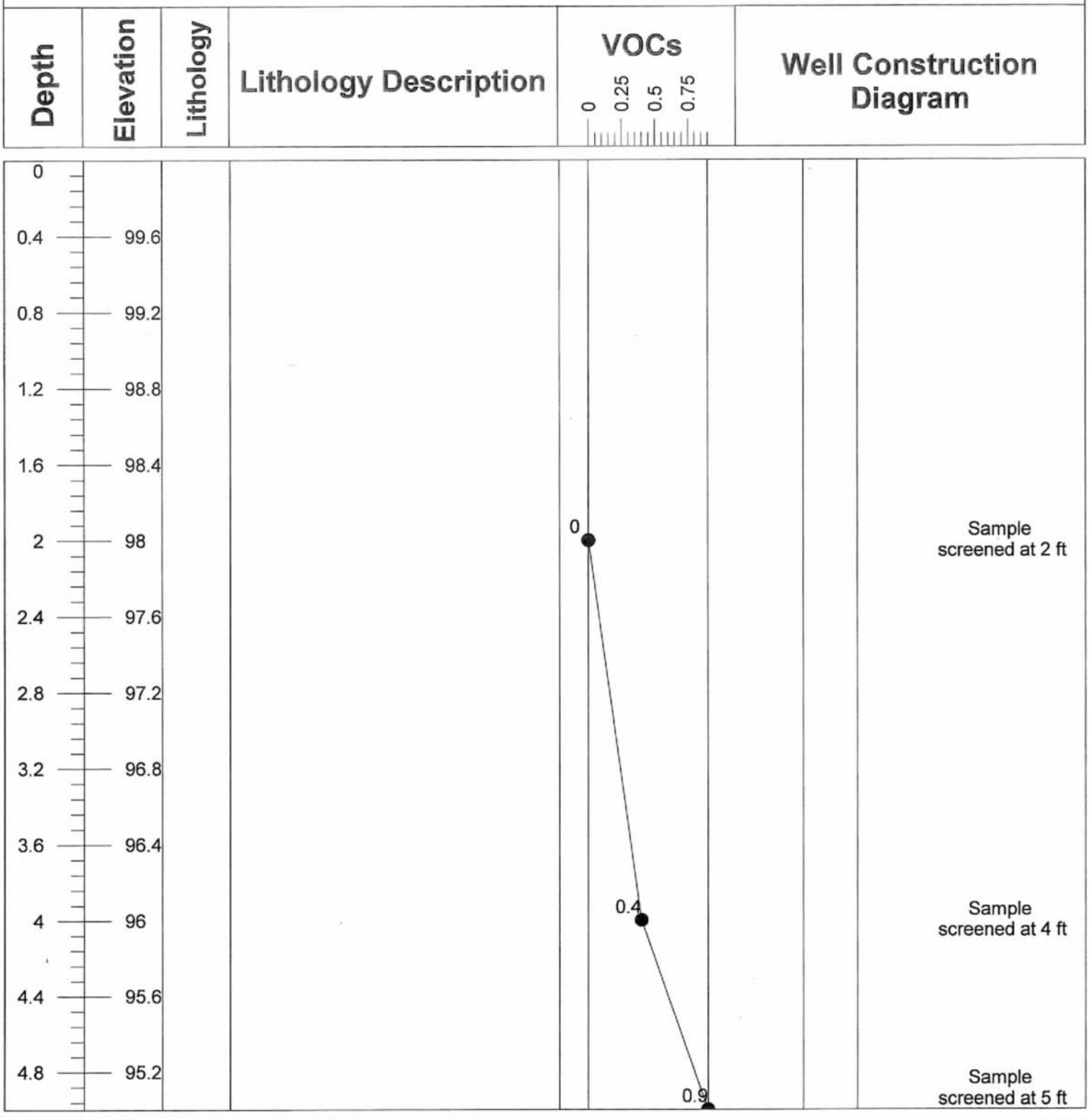
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

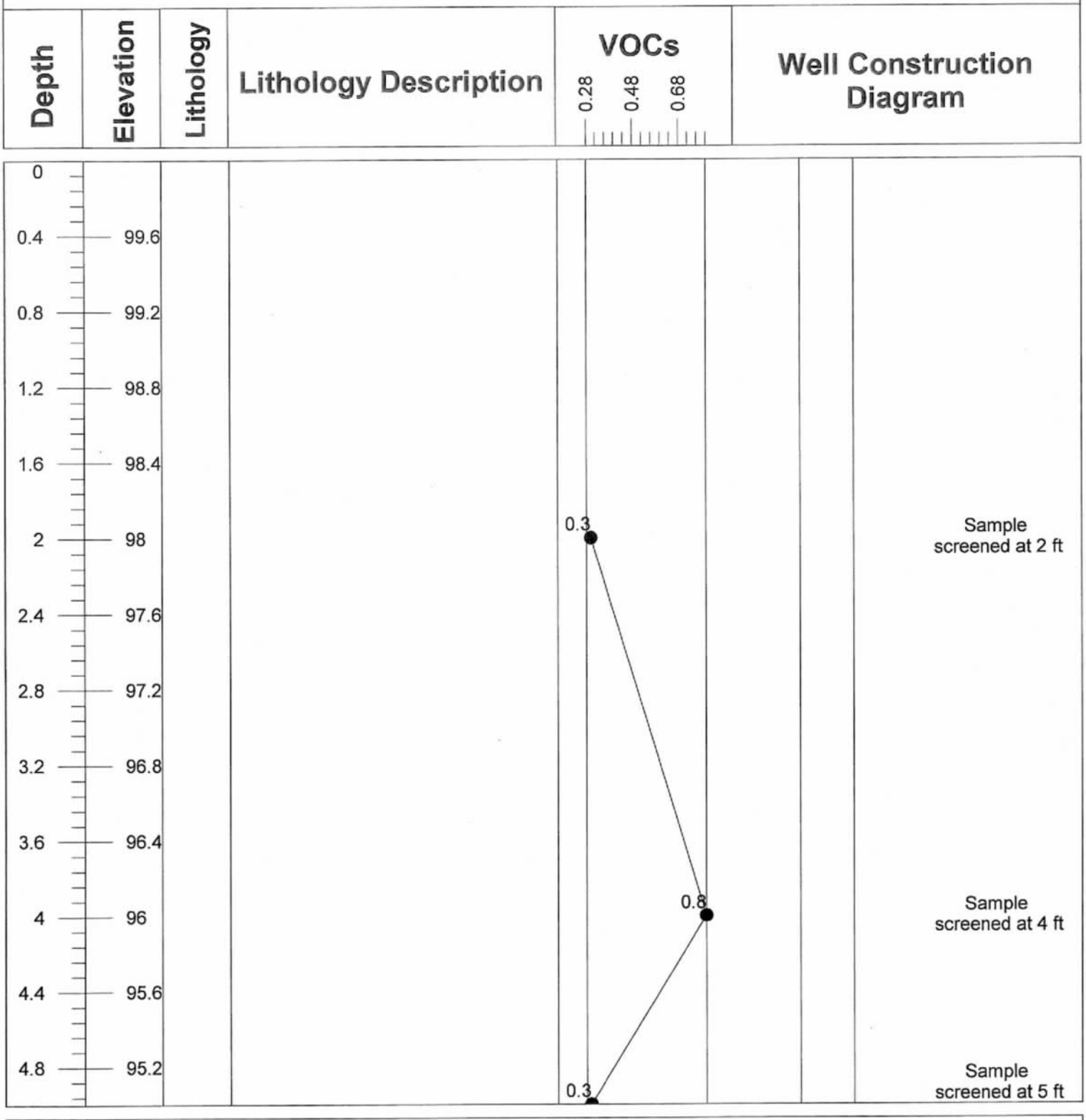
Borehole ID: SB-17



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/22/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 33.628484°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -79.973202°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-18



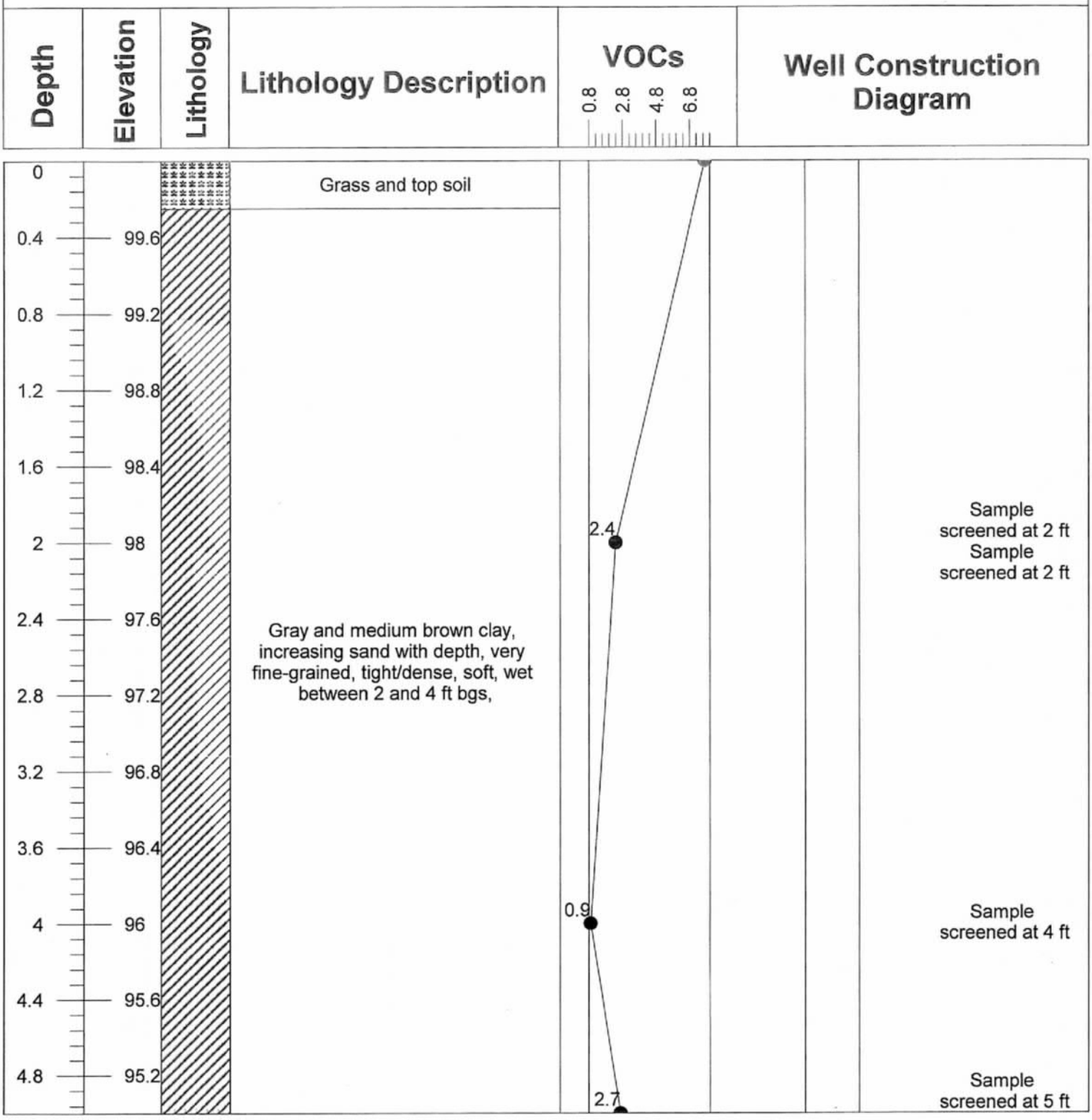
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/22/18
Latitude: 33.628484°
Longitude: -79.973202°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

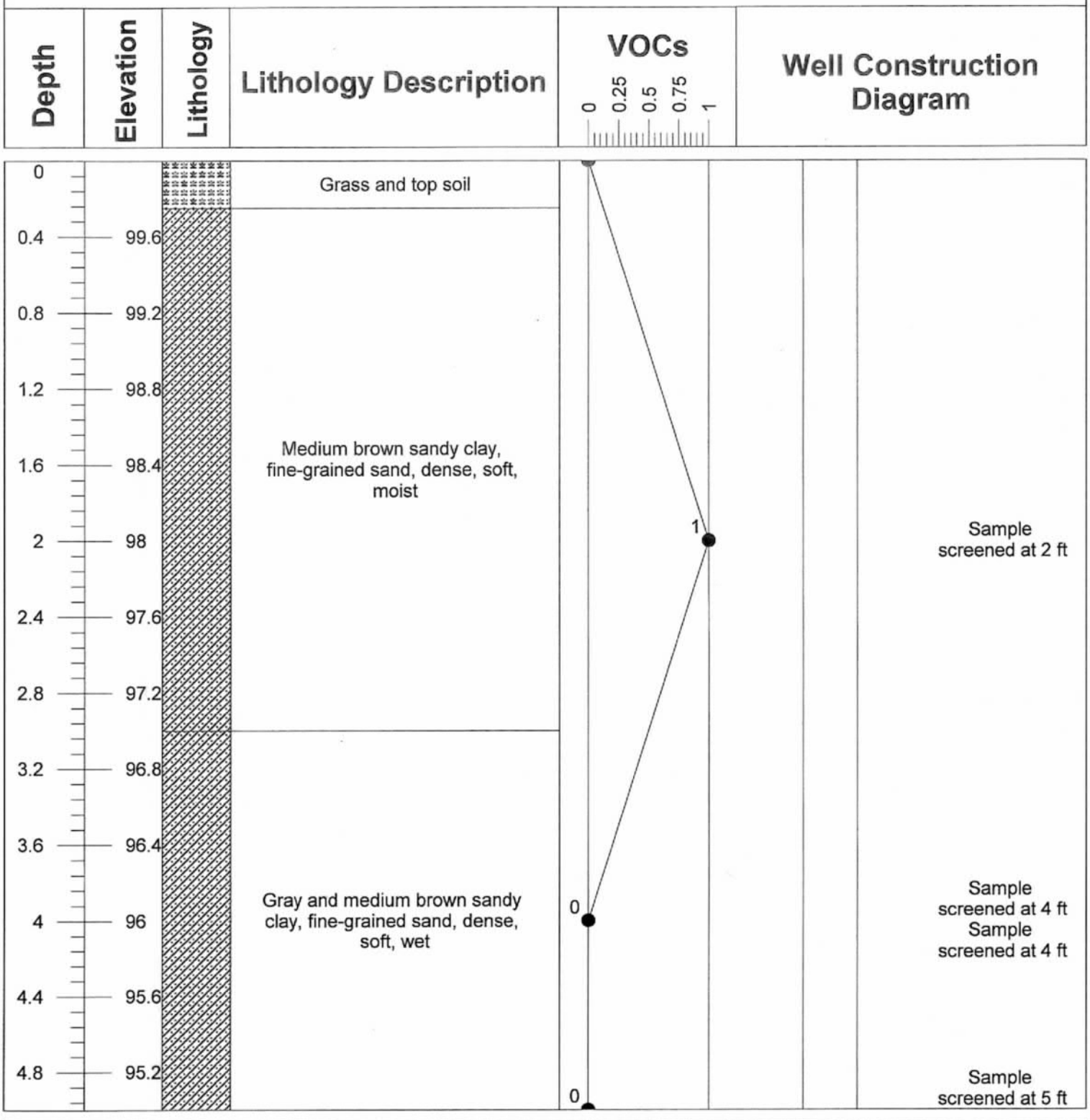
Borehole ID: SB-19



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

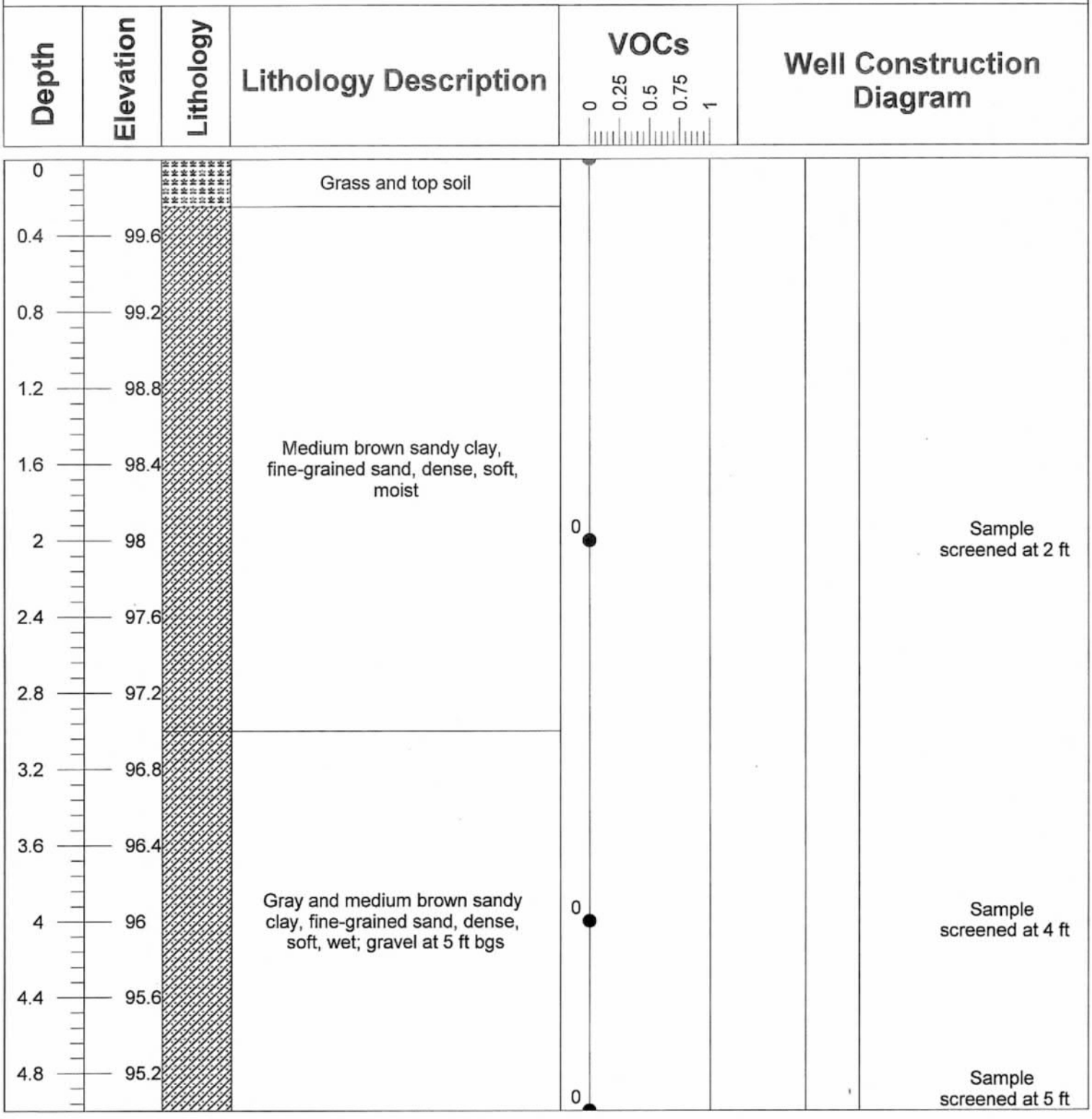
Borehole ID: SB-20



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

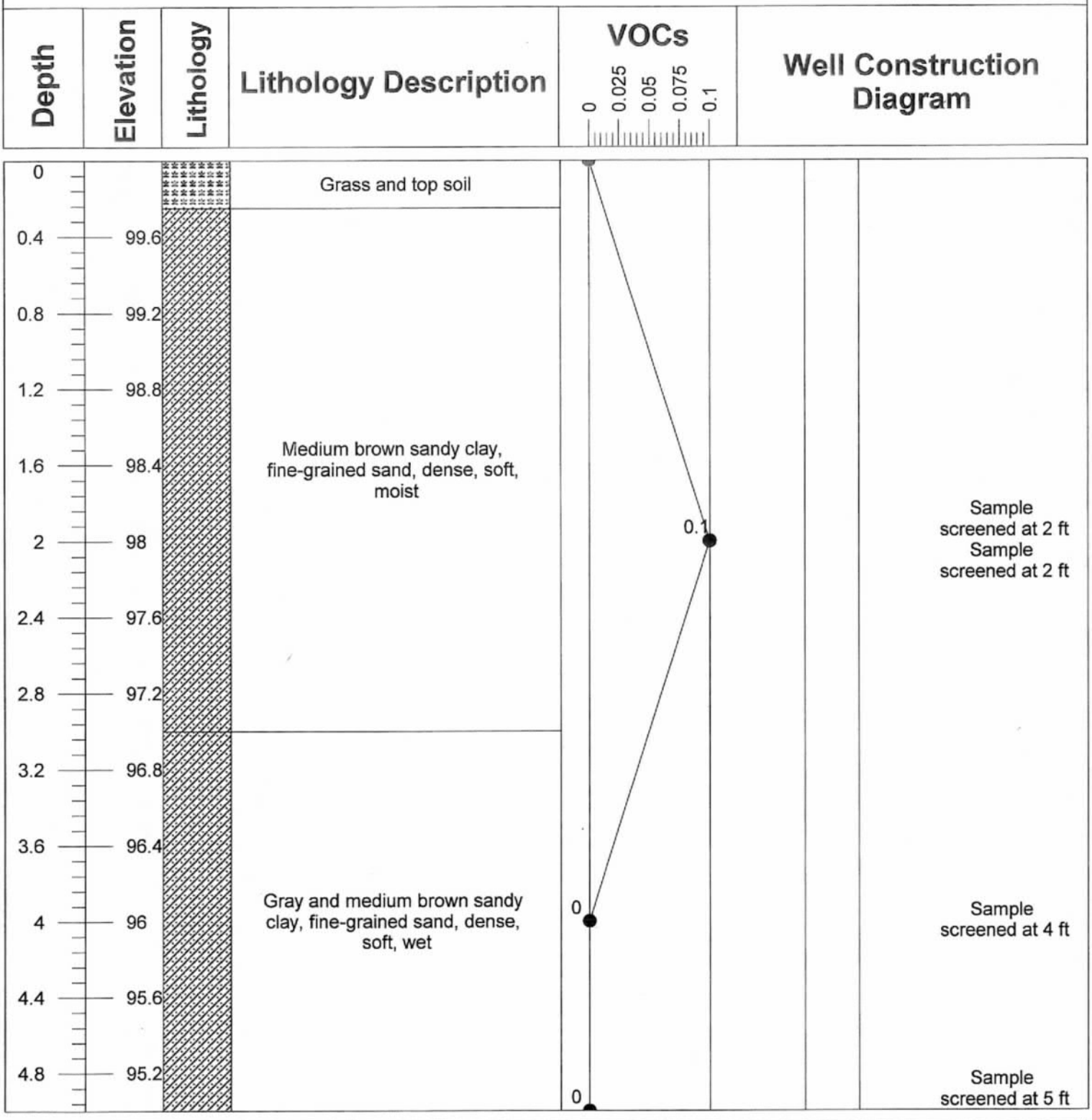
Borehole ID: SB-21



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

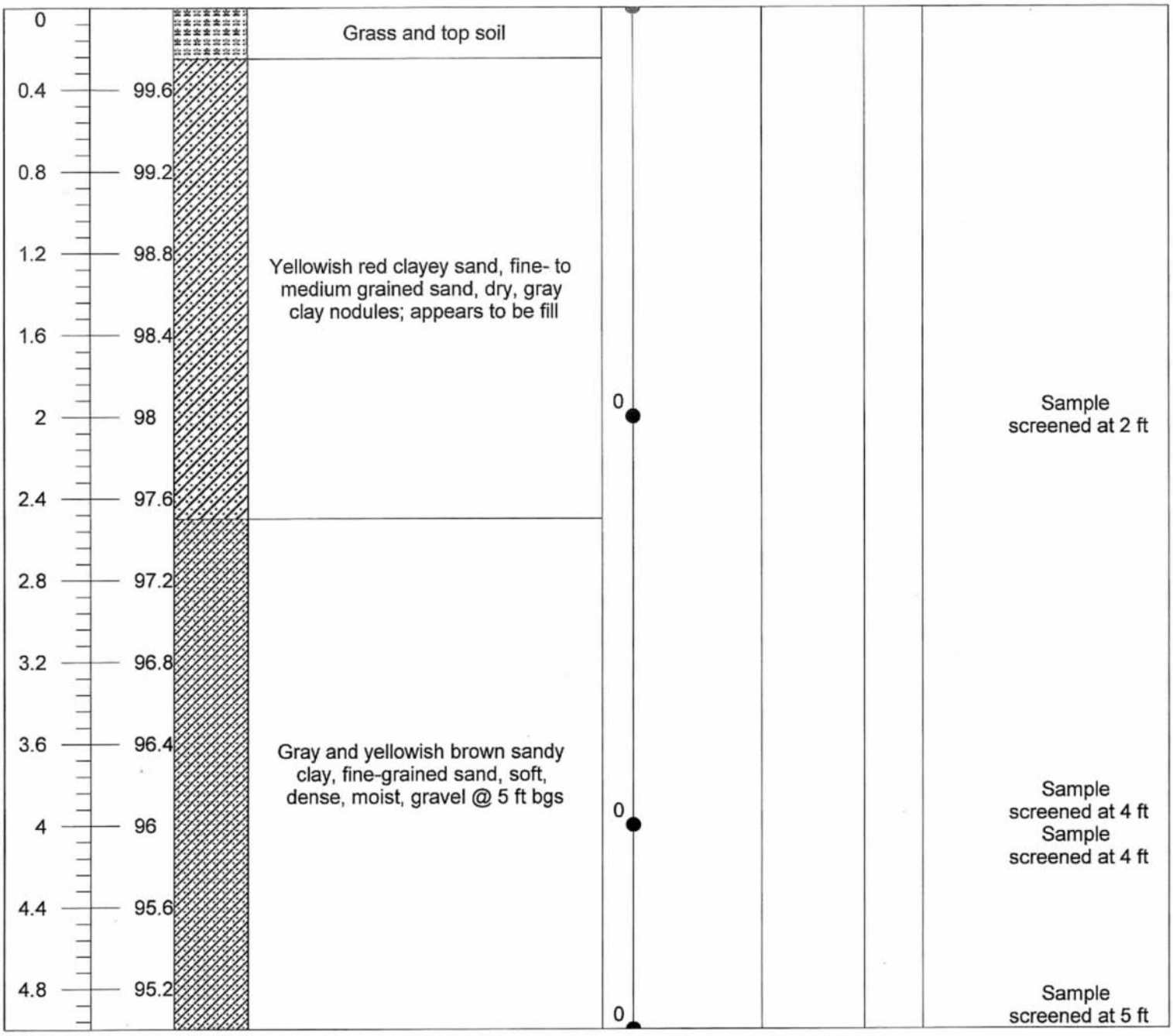
Borehole ID: SB-22



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

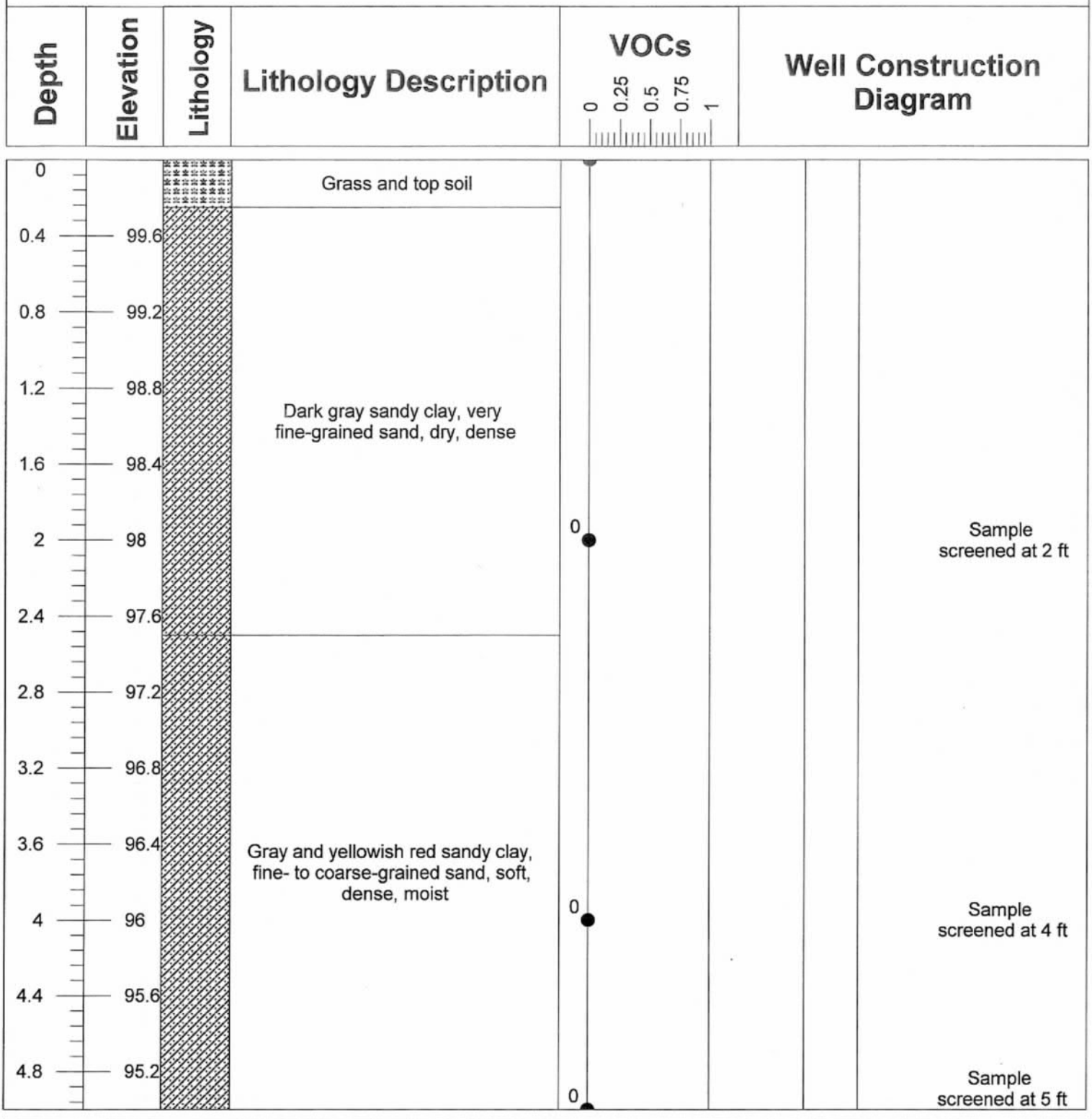
Borehole ID: SB-23



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-24



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-25

Depth	Elevation	Lithology	Lithology Description	VOCs (0, 0.25, 0.5, 0.75, 1)	Well Construction Diagram
0					
0.4	99.6				
0.8	99.2				
1.2	98.8				
1.6	98.4				
2	98		Dark gray and light gray sandy clay, fine-grained sand - coarsens downward to very coarse-grained, sand becomes more abundant with depth, soft, dense, small gravel at 5 ft, saturated from surface to depth	0	Sample screened at 2 ft Sample screened at 2 ft
2.4	97.6				
2.8	97.2				
3.2	96.8				
3.6	96.4				
4	96			0	Sample screened at 4 ft
4.4	95.6				
4.8	95.2			0	Sample screened at 5 ft

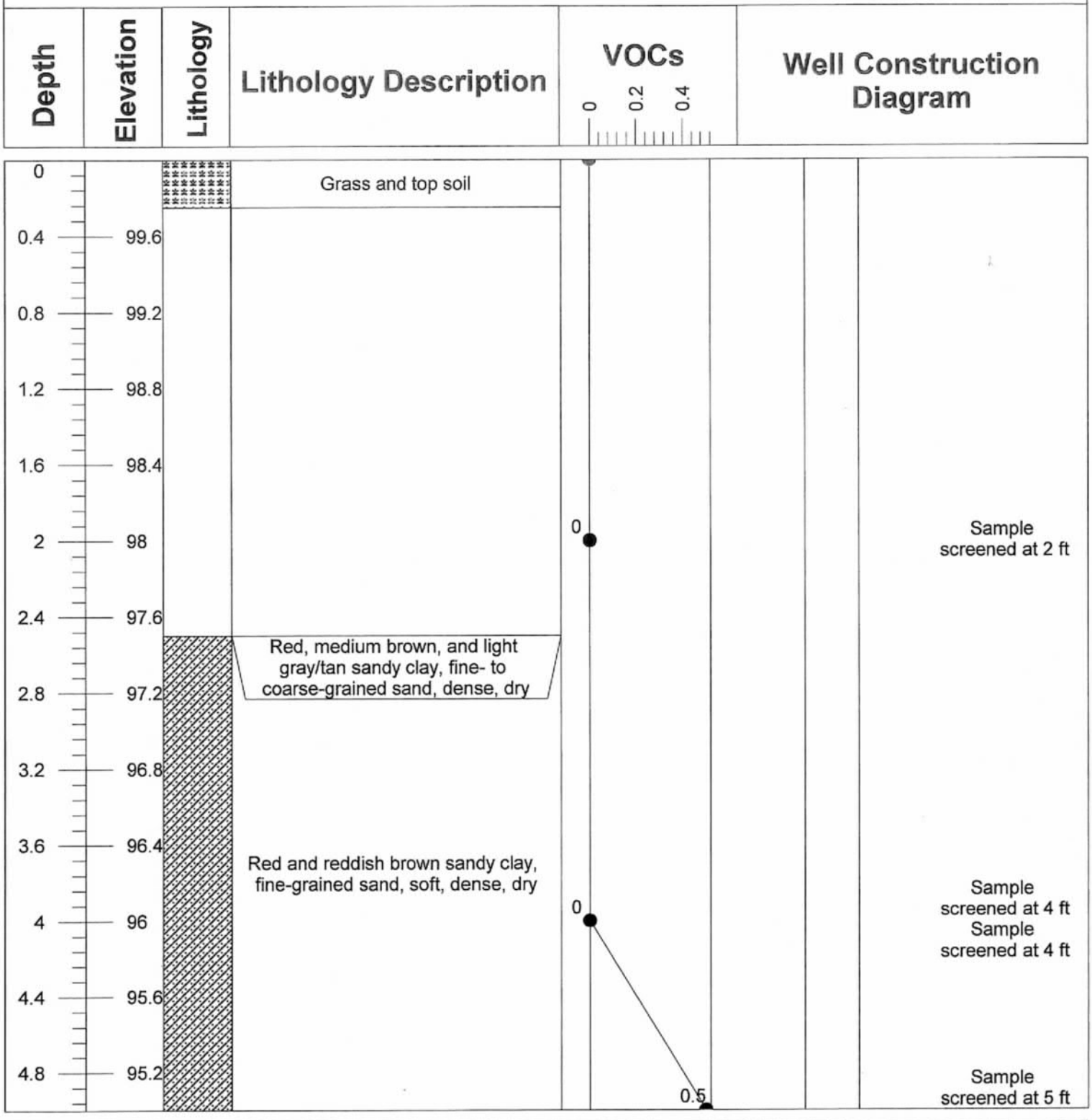
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/26/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-26



Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/26/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-27

Depth	Elevation	Lithology	Lithology Description	VOCs (0, 0.2, 0.4)	Well Construction Diagram
0					
0.4	99.6		Dark gray and light gray sandy clay, fine-grained sand - coarsens downward to very coarse-grained, sand becomes more abundant with depth, soft, dense, small gravel at 5 ft, saturated from surface to depth	0	Sample screened at 2 ft
0.8	99.2				
1.2	98.8				
1.6	98.4				
2	98				
2.4	97.6				
2.8	97.2				
3.2	96.8				
3.6	96.4				
4	96			0.5	Sample screened at 4 ft
4.4	95.6				
4.8	95.2			0.3	Sample screened at 5 ft

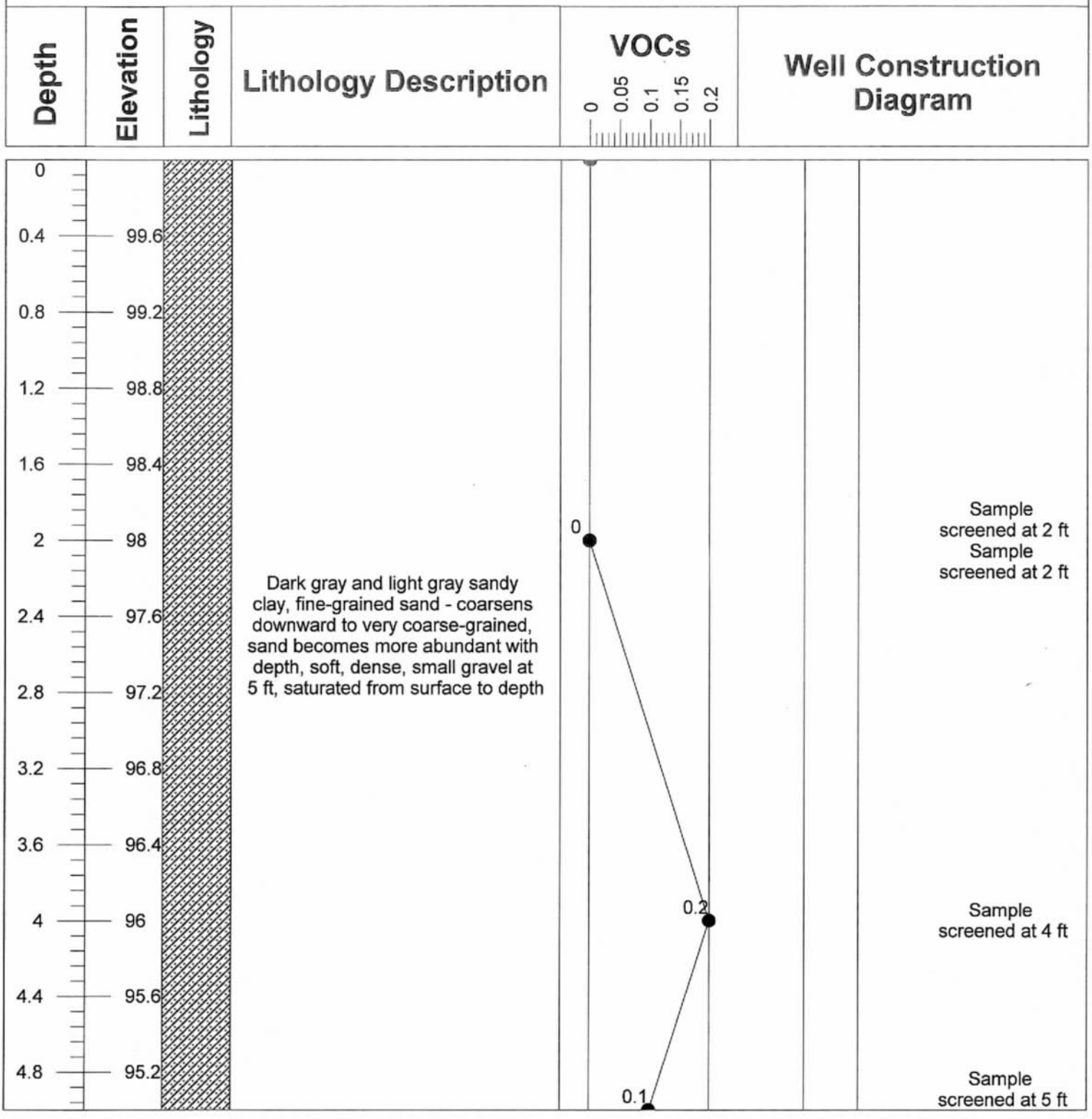
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/26/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: 0.25'

ARM ENVIRONMENTAL SERVICES, INC.

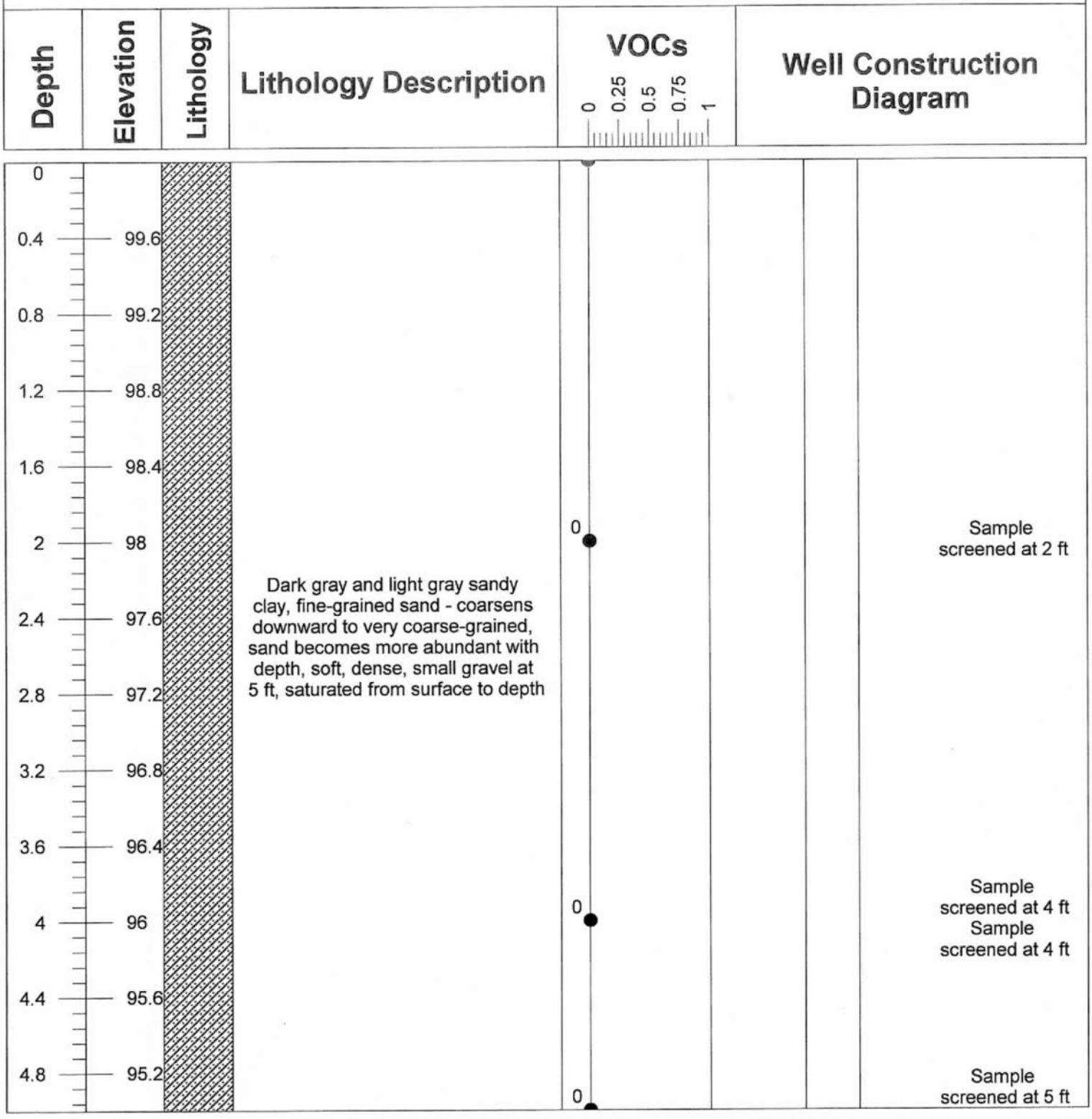
Borehole ID: SB-28



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: 0.25'

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-29



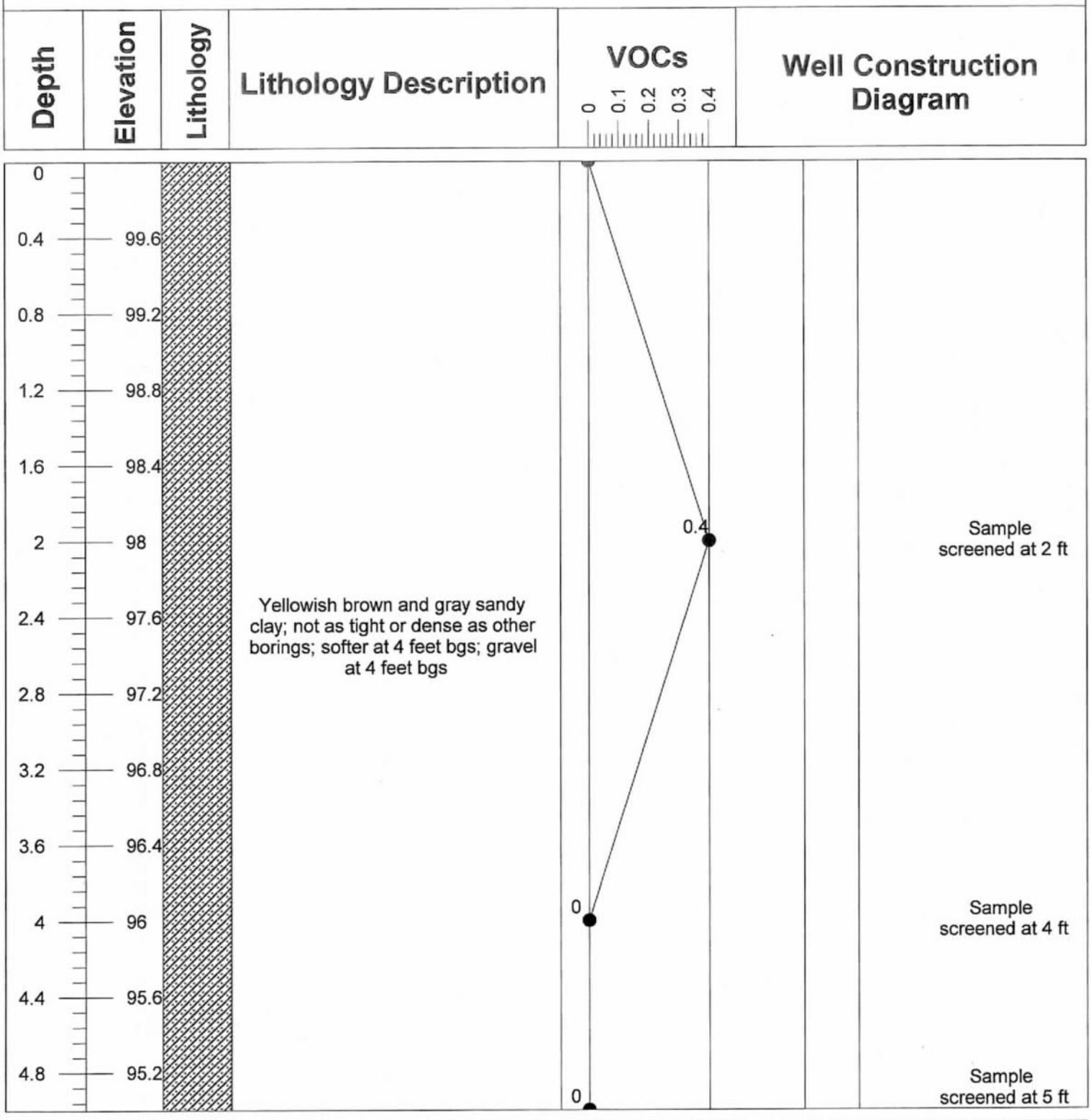
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Hand auger
Drill Date: 11/26/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: David Felder, cert. #2162D
Total Depth of Well: 5.0'
Casing Diameter: N/A"
Depth to Water: 0.25'

ARM ENVIRONMENTAL SERVICES, INC.

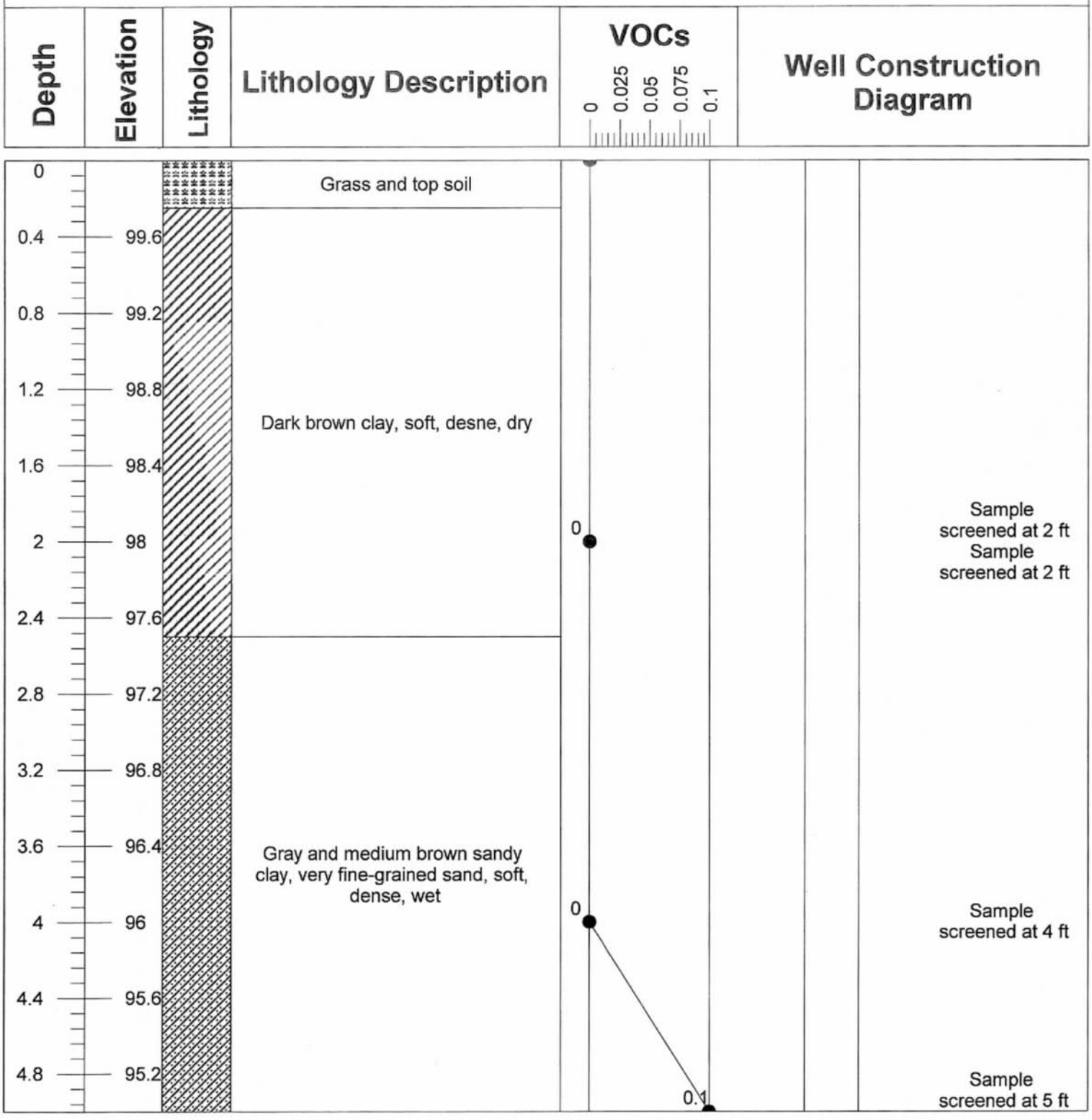
Borehole ID: SB-30



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: 0.25'

ARM ENVIRONMENTAL SERVICES, INC.

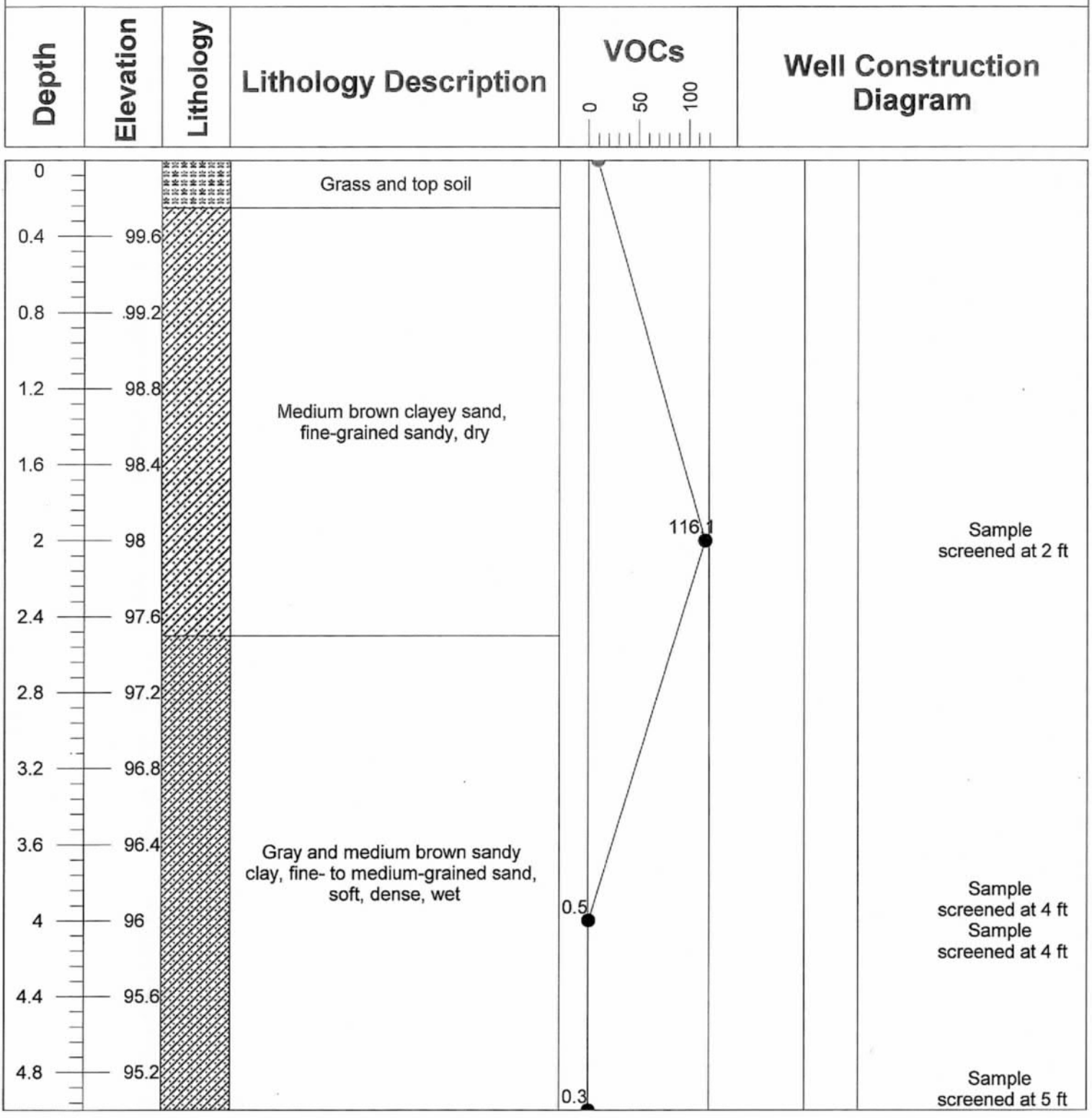
Borehole ID: SB-31



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

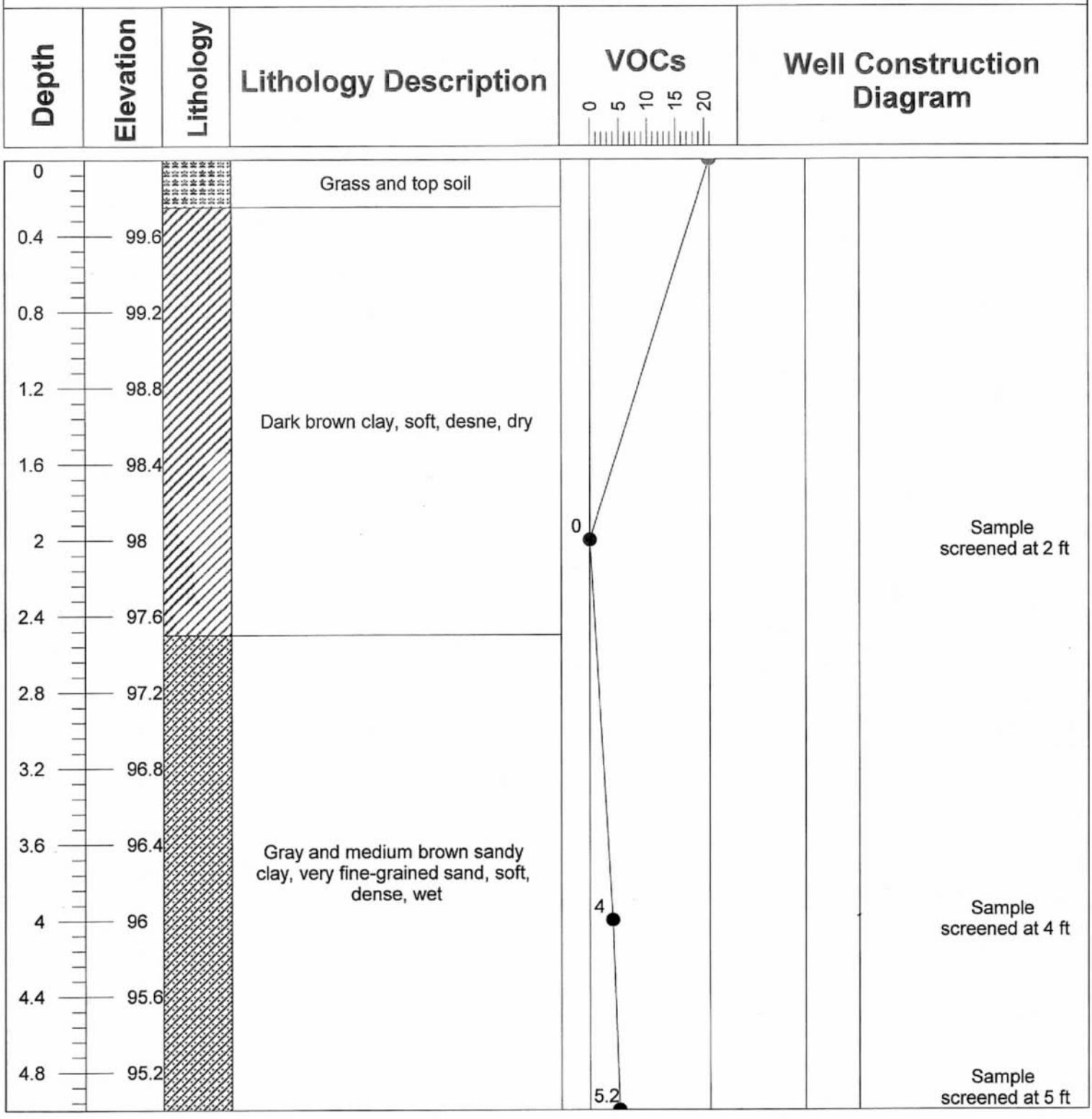
Borehole ID: SB-32



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

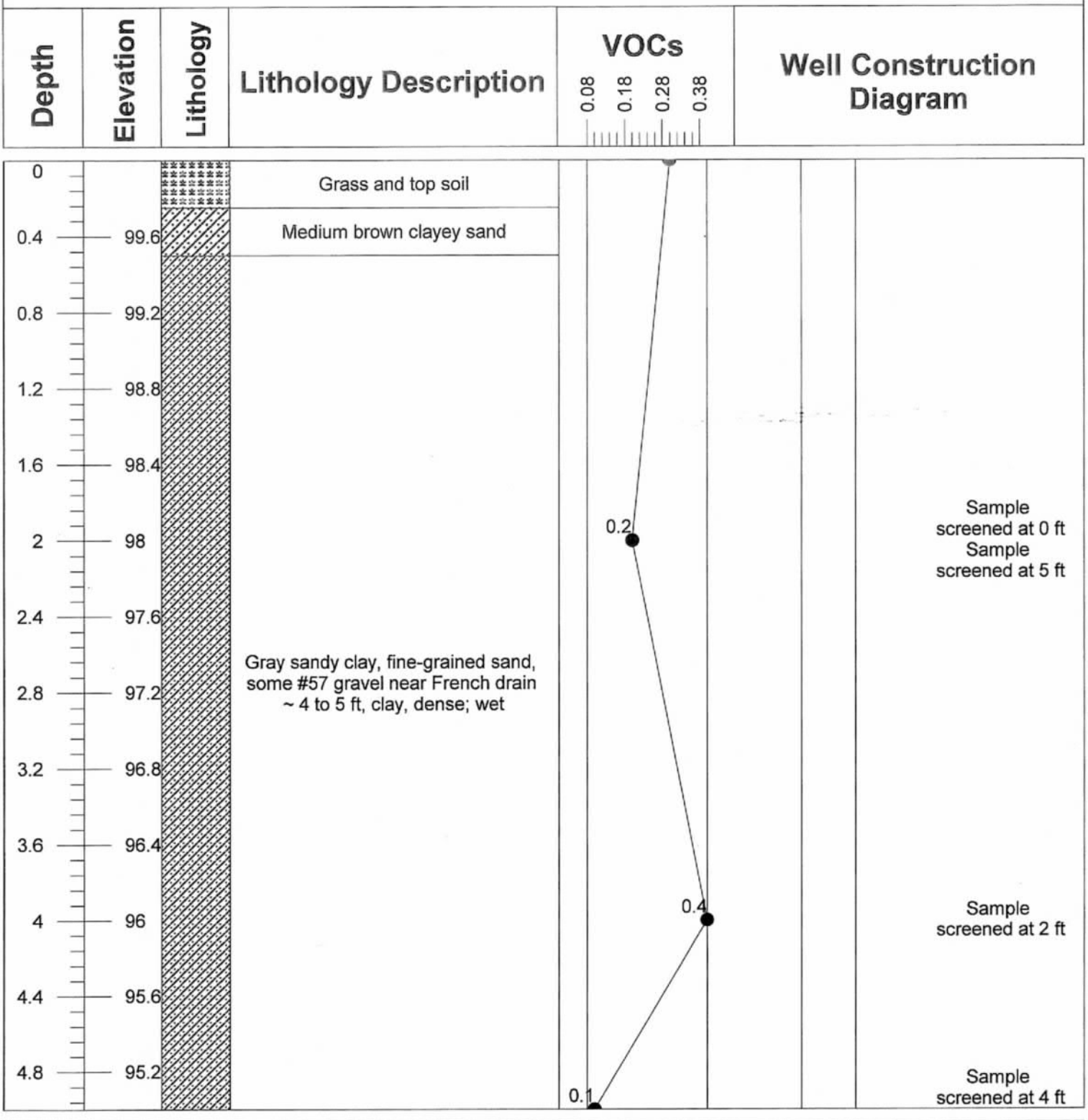
Borehole ID: SB-33



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

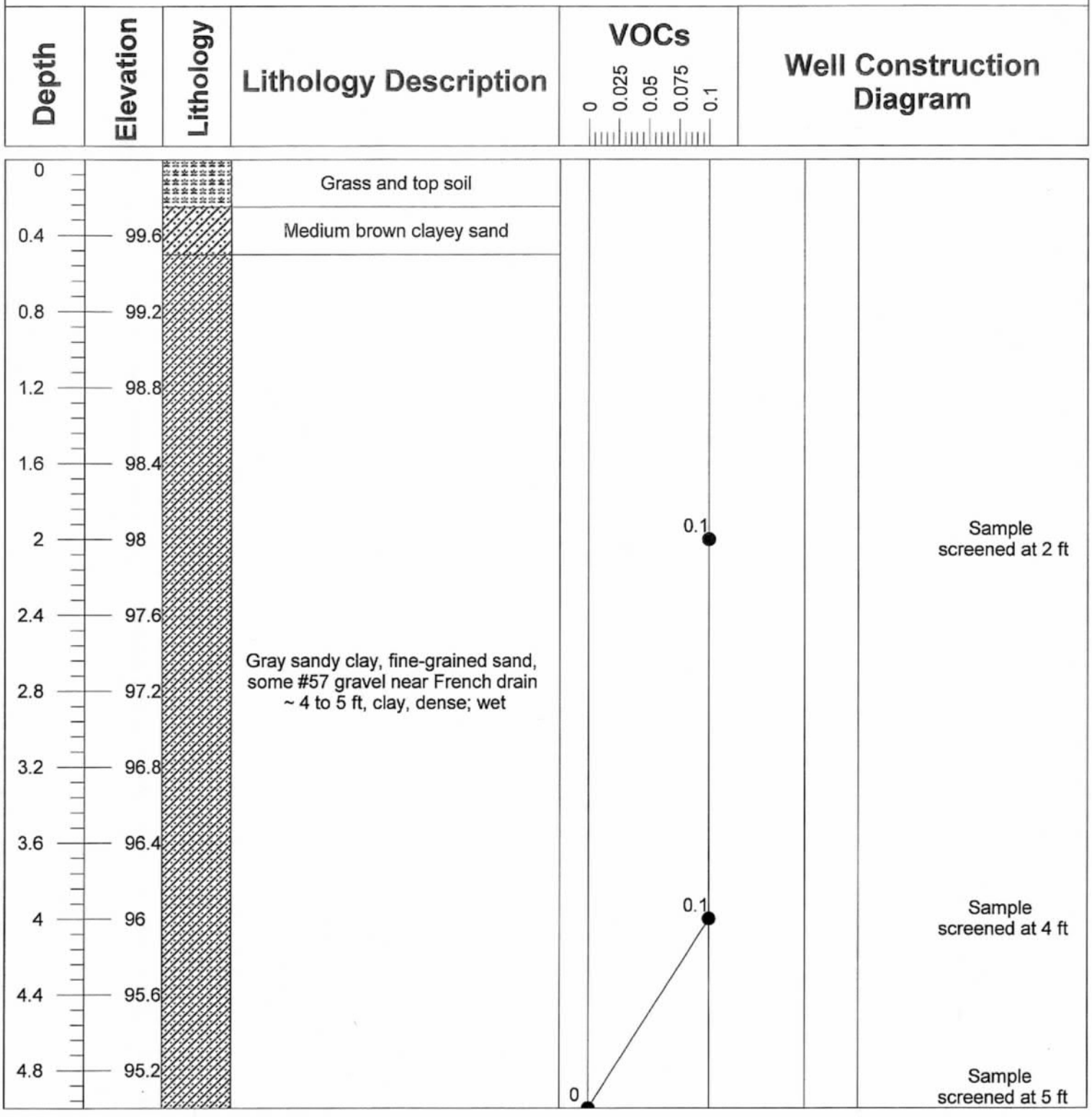
Borehole ID: SB-34



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

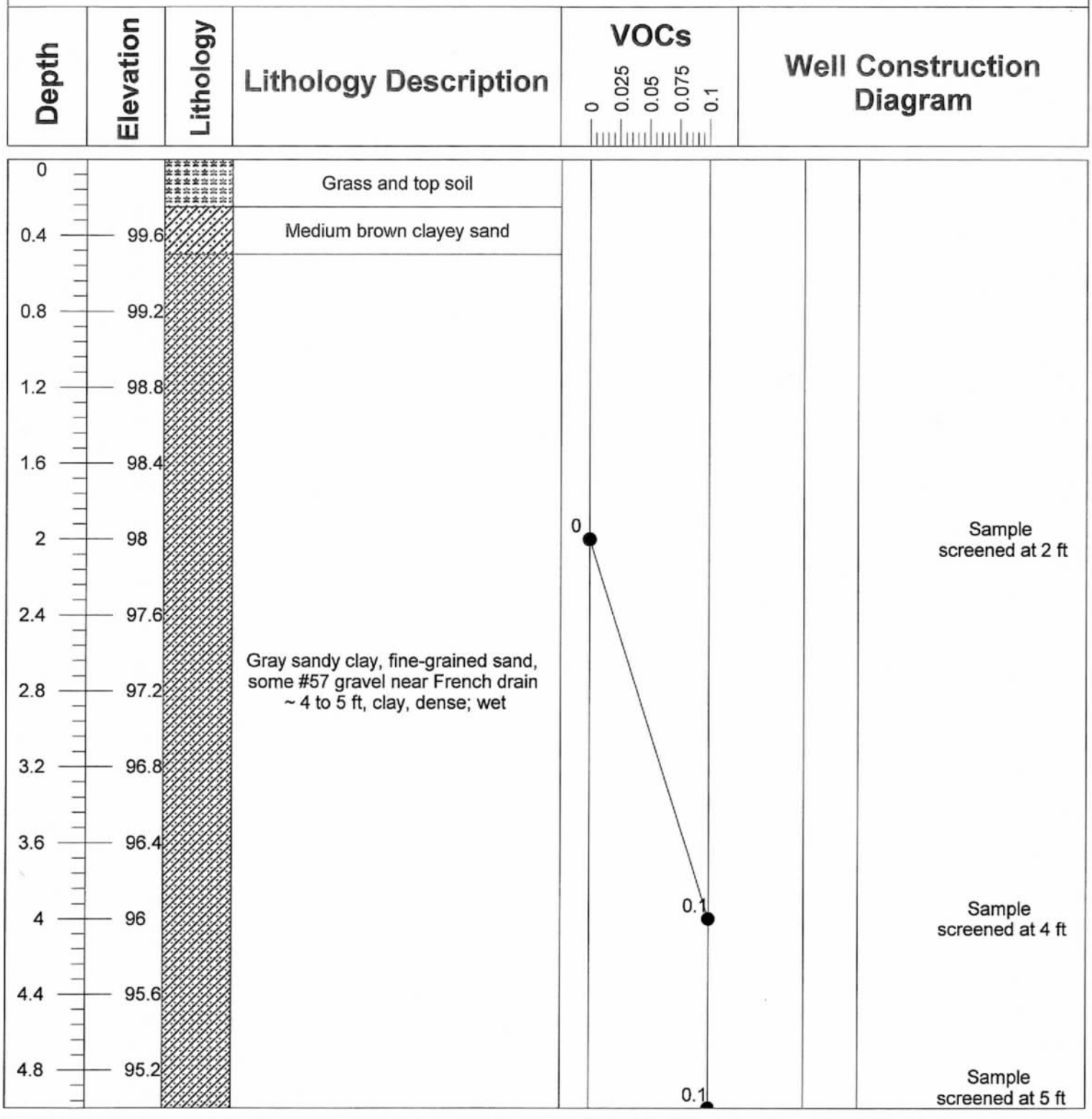
Borehole ID: SB-35



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

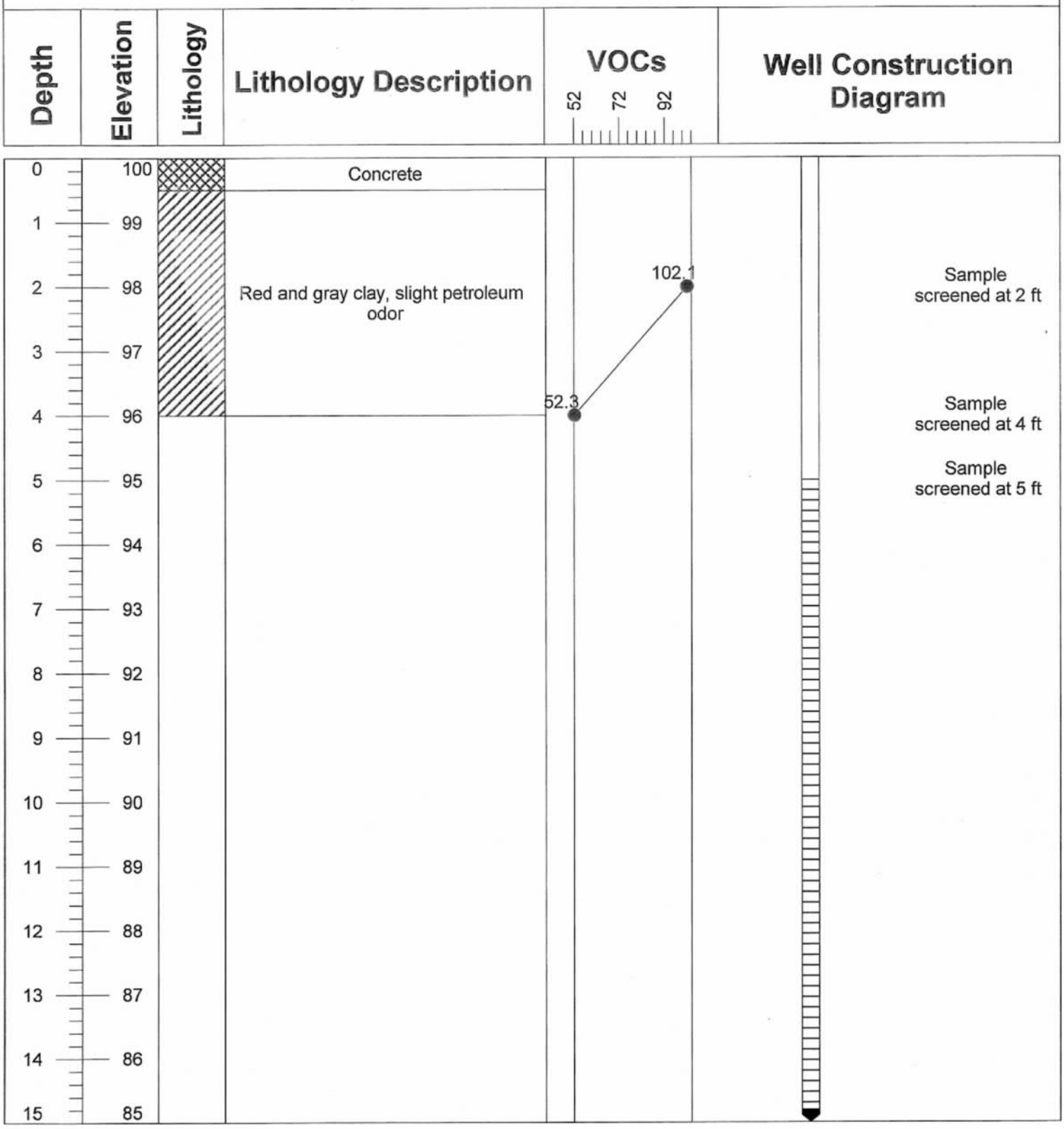
Borehole ID: SB-36



Project Name: Broad River Amoco	Drill Method: Hand auger	Driller: David Felder, cert. #2162D
Project Number: 12-414.2-18	Drill Date: 11/26/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-37/TMW-4



Project Name: Broad River Amoco

Project Number: 12-414.2-18

Client Name: Enviro-Test Services

Location: Columbia, SC

Drill Method: Direct push

Drill Date: 12/10/18

Latitude: 34.065341°

Longitude: -81.117384°

Driller: Joshua Register, cert. #1921C

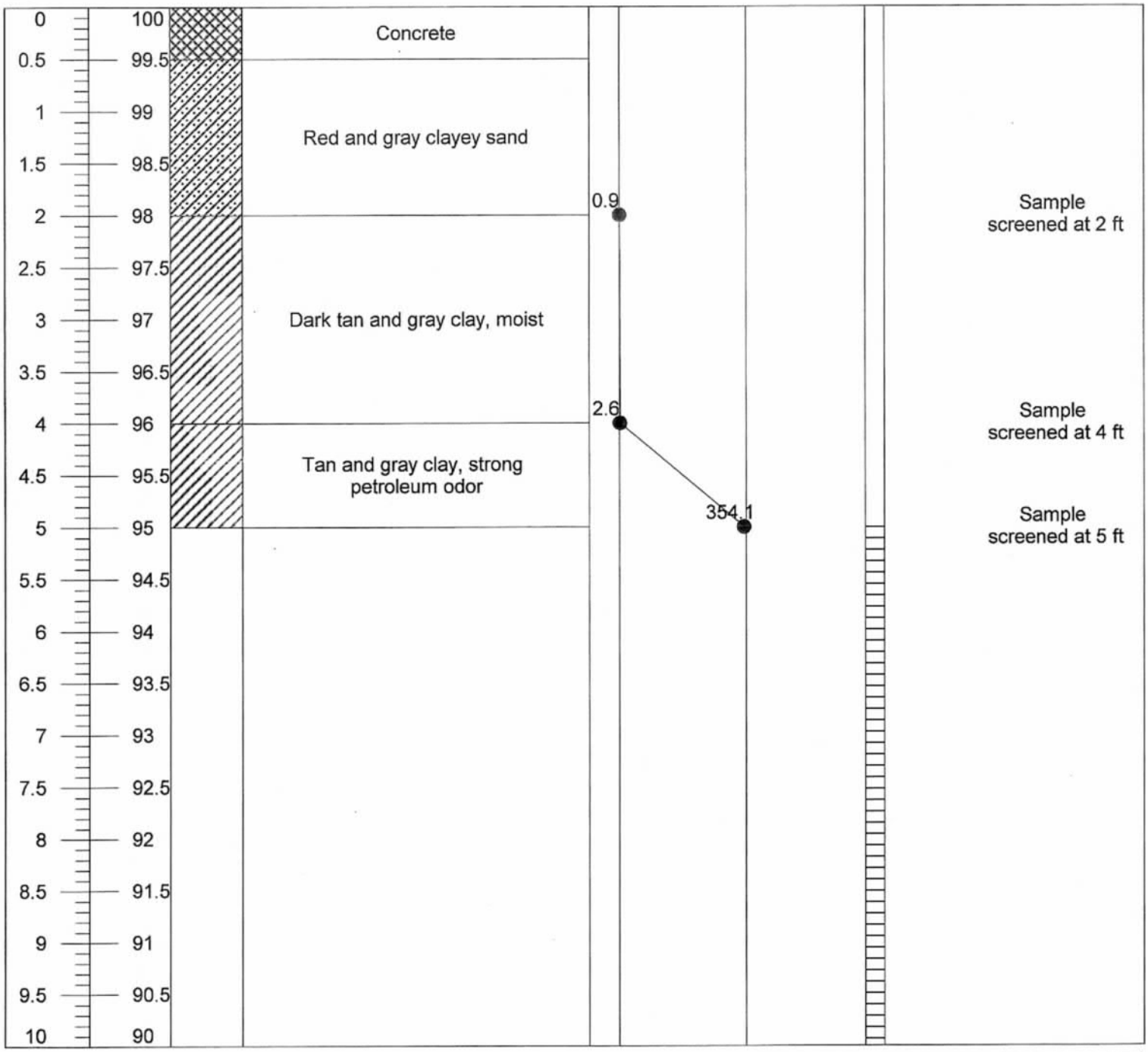
Total Depth of Well: 15.0'

Casing Diameter: 1"

Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-38/TMW-5



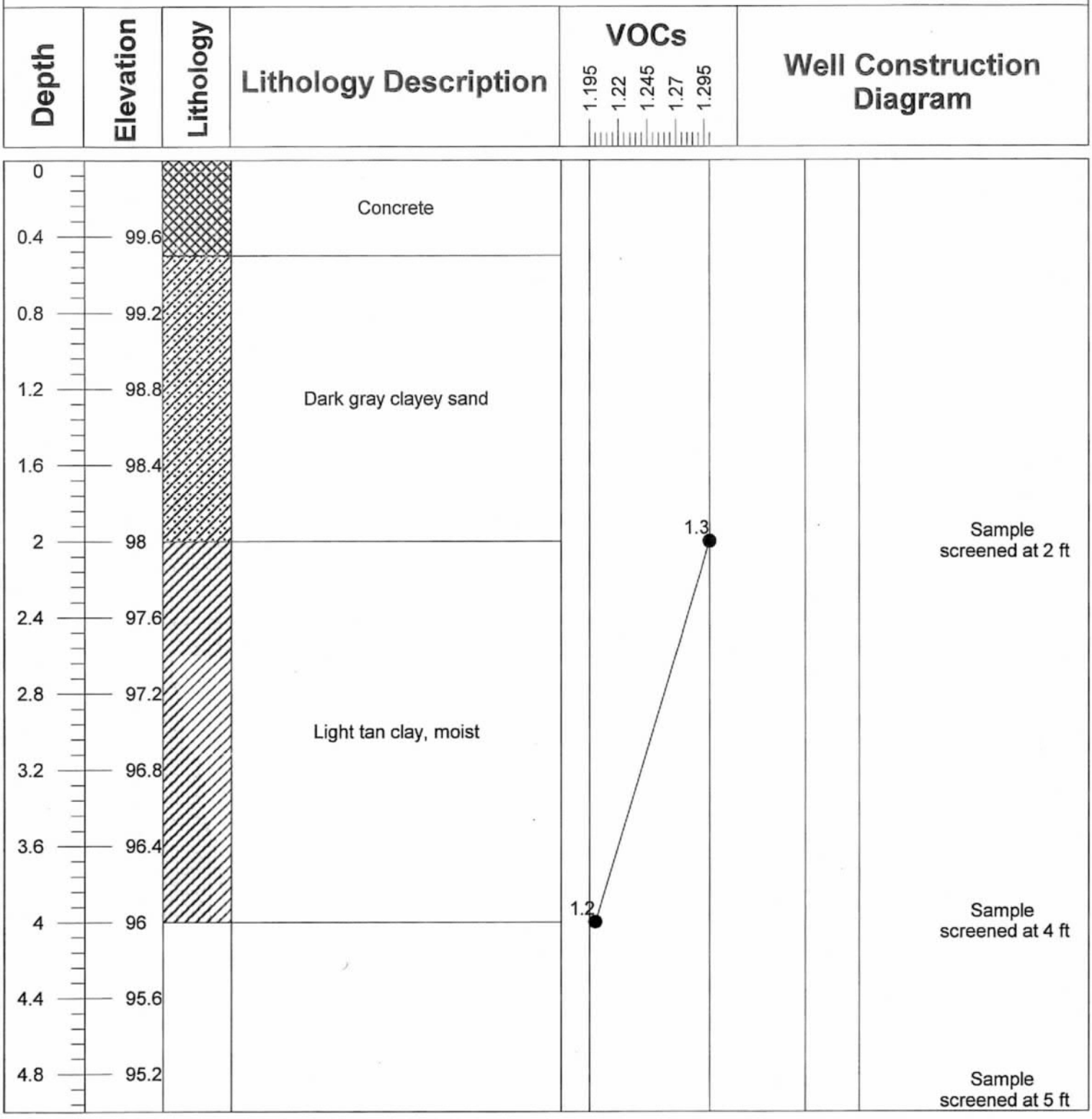
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Direct push
Drill Date: 12/10/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: Joshua Register, cert. #1921C
Total Depth of Well: 10.0'
Casing Diameter: 1"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

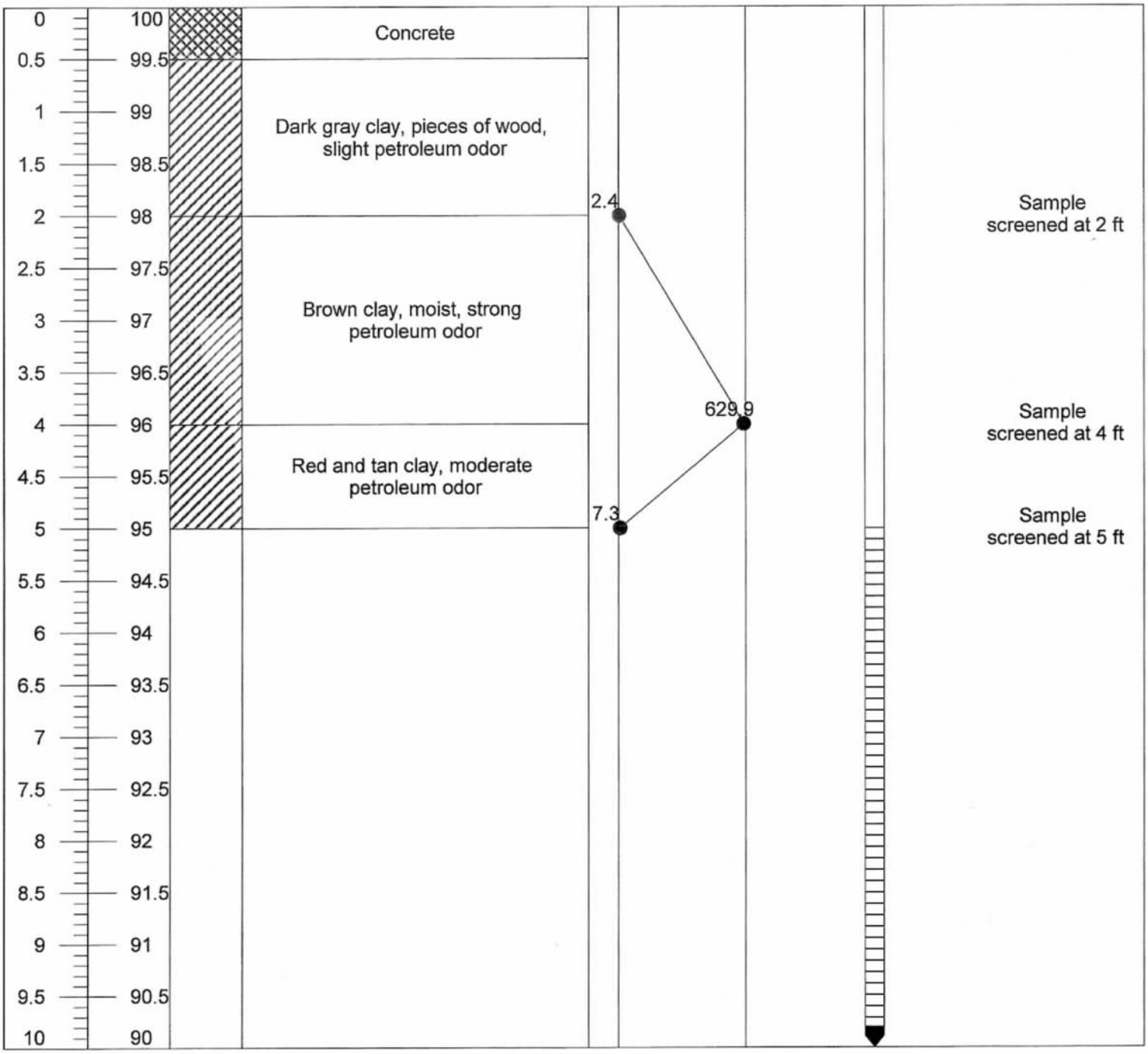
Borehole ID: SB-39



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/14/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

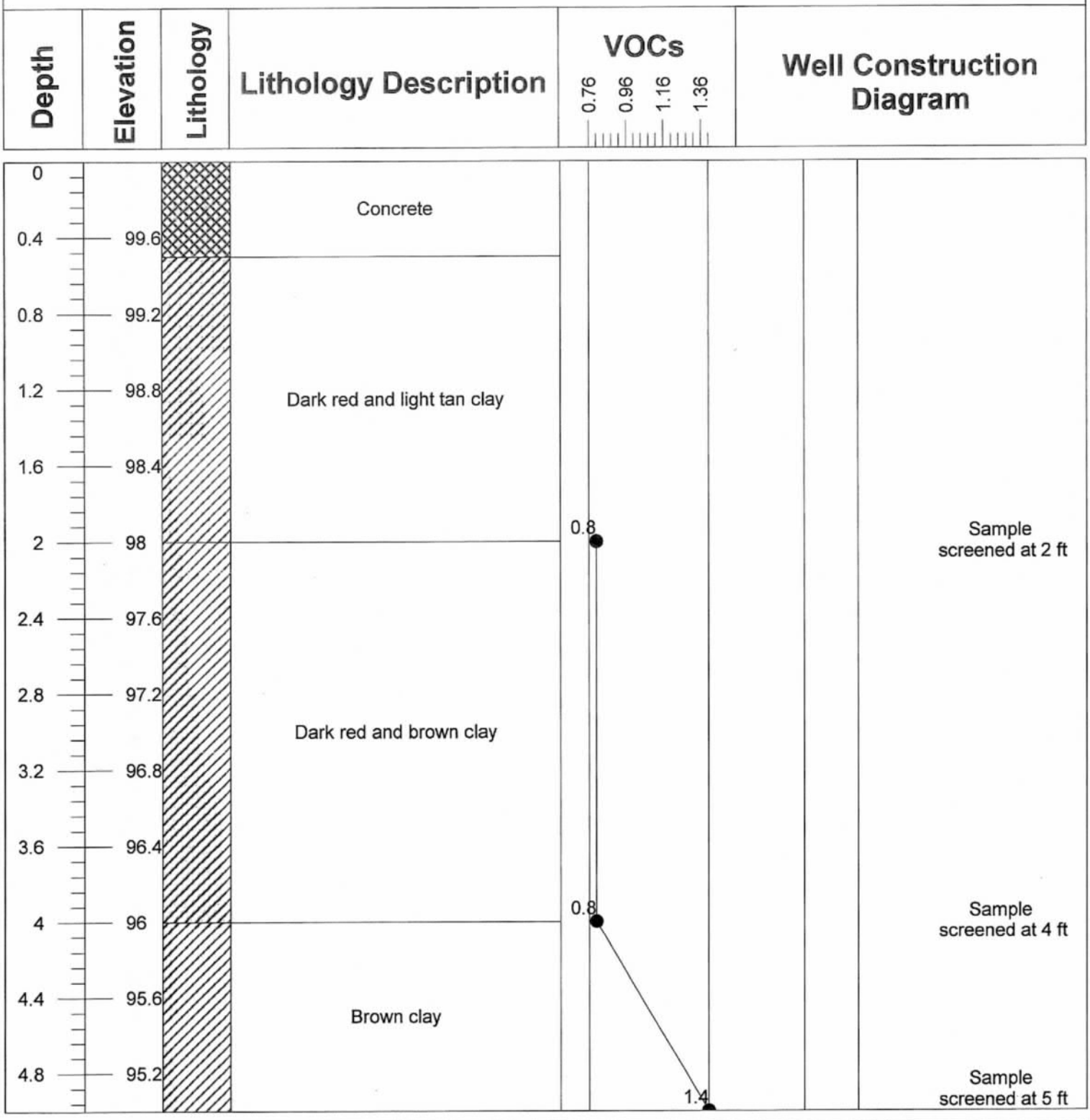
Borehole ID: SB-40/TMW-6



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/10/18	Total Depth of Well: 10.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: 1"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

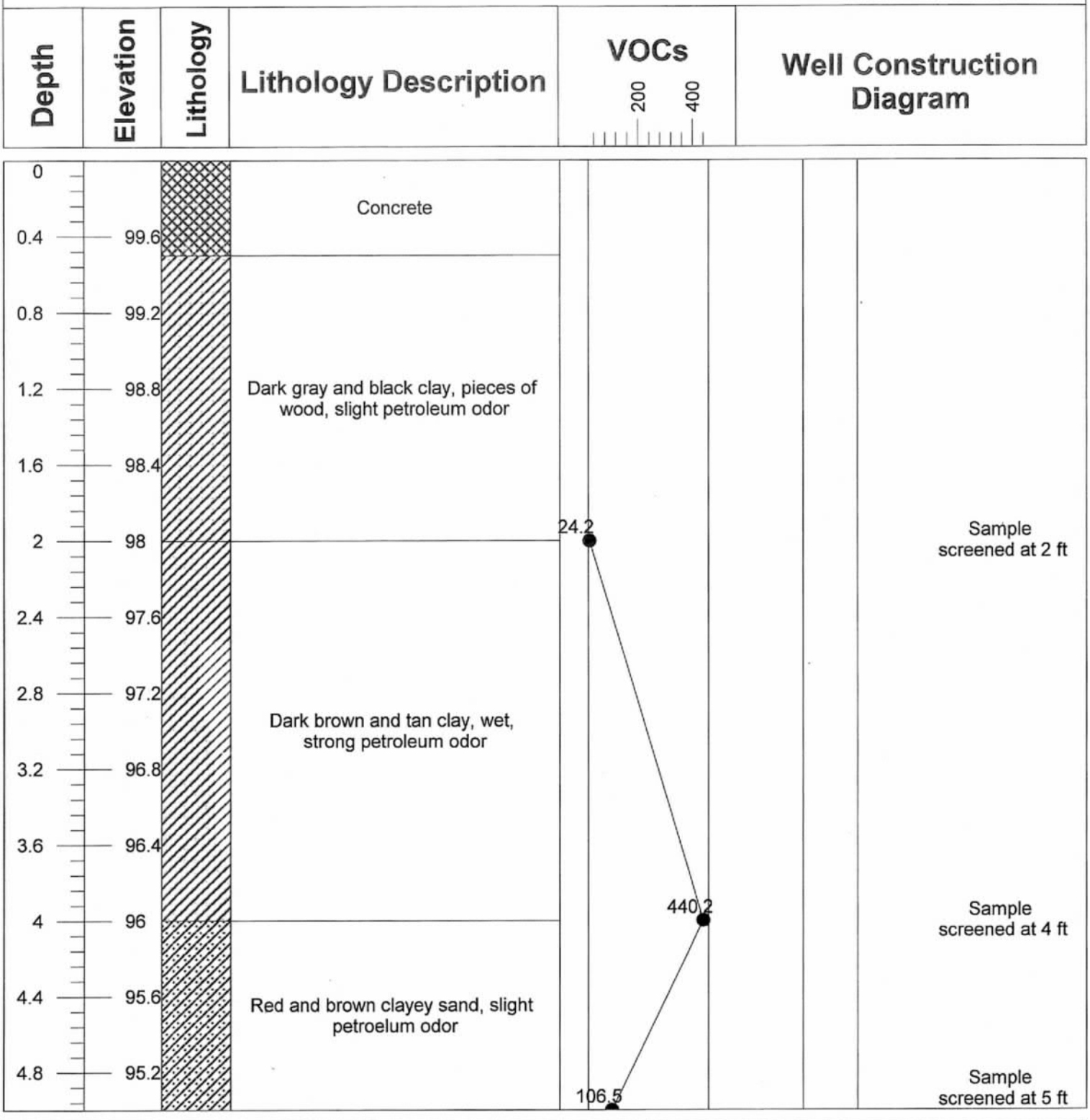
Borehole ID: SB-41



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/14/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

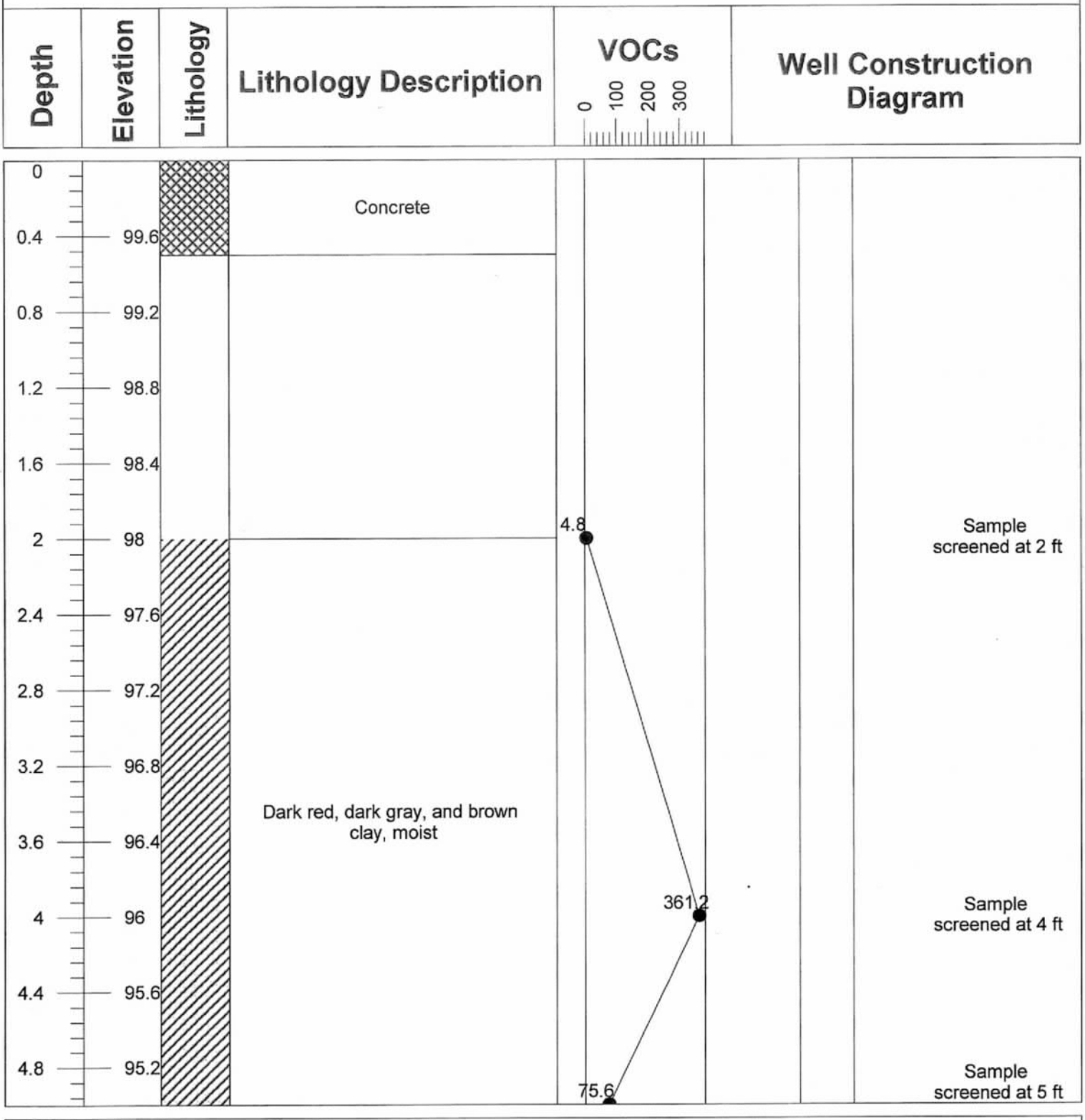
Borehole ID: SB-42



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/14/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

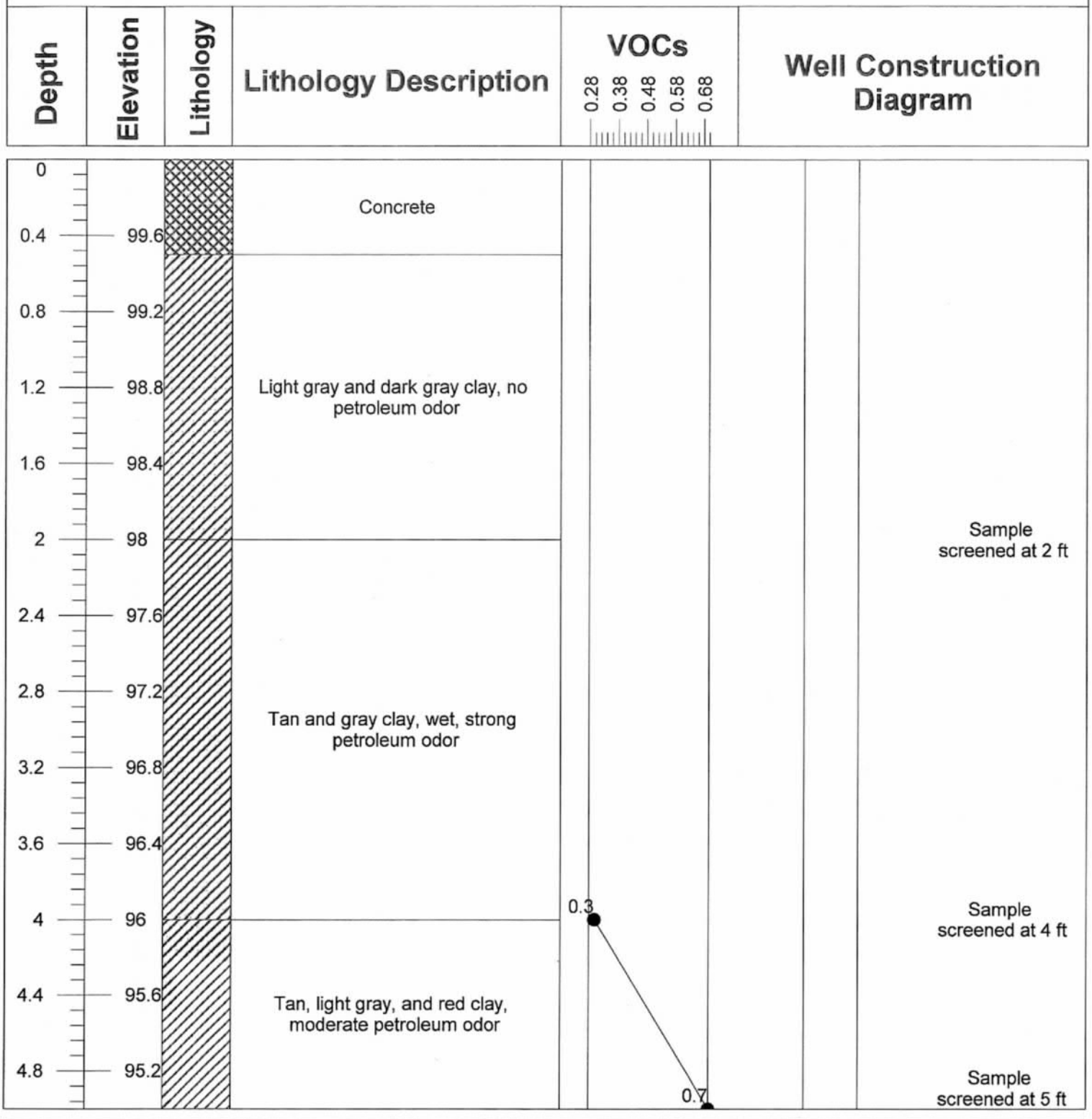
Borehole ID: SB-43



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/14/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

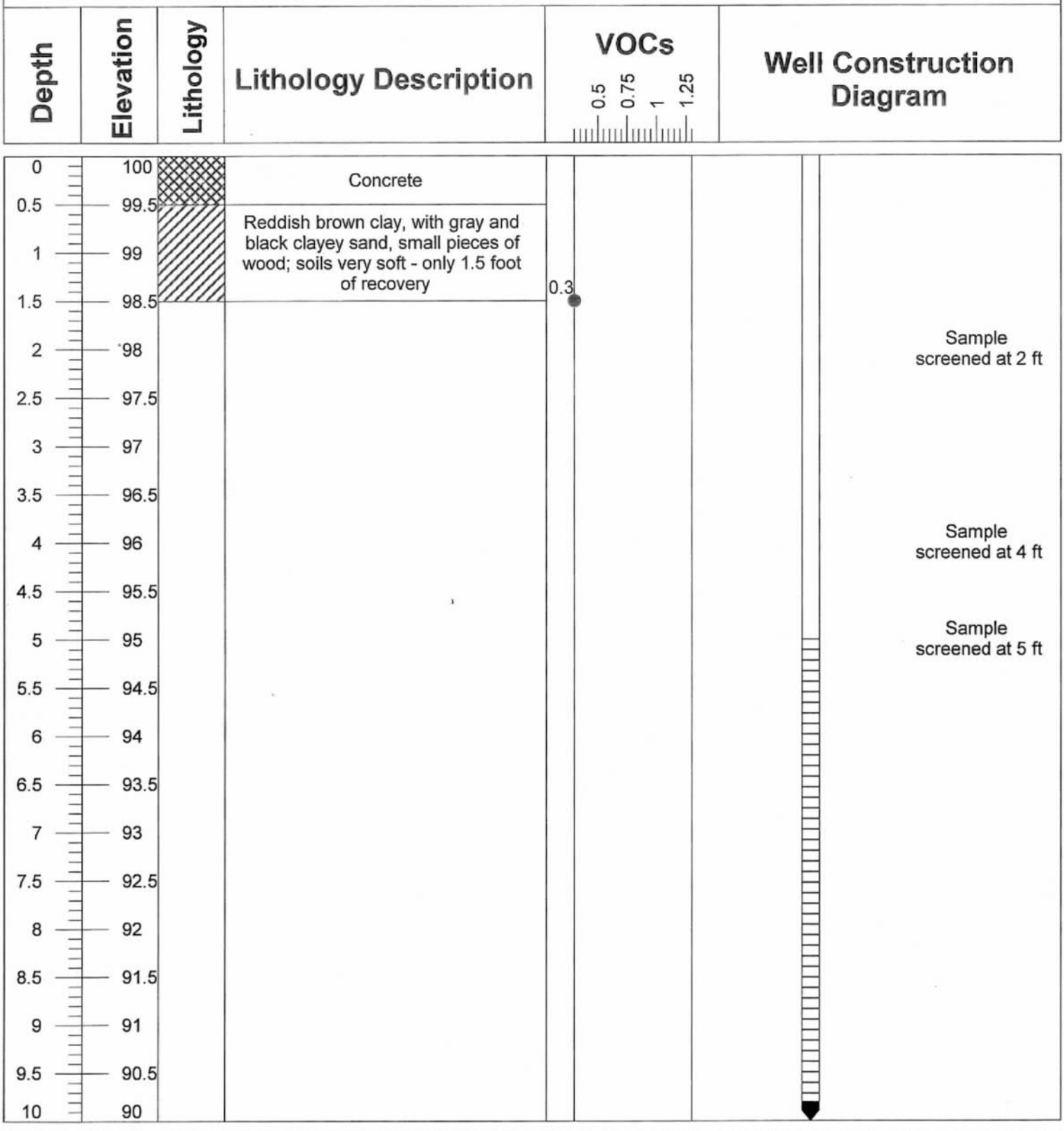
Borehole ID: SB-44



Project Name: Broad River Amoco	Drill Method: Direct push	Driller: Joshua Register, cert. #1921C
Project Number: 12-414.2-18	Drill Date: 12/14/18	Total Depth of Well: 5.0'
Client Name: Enviro-Test Services	Latitude: 34.065341°	Casing Diameter: N/A"
Location: Columbia, SC	Longitude: -81.117384°	Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-45/TMW-7



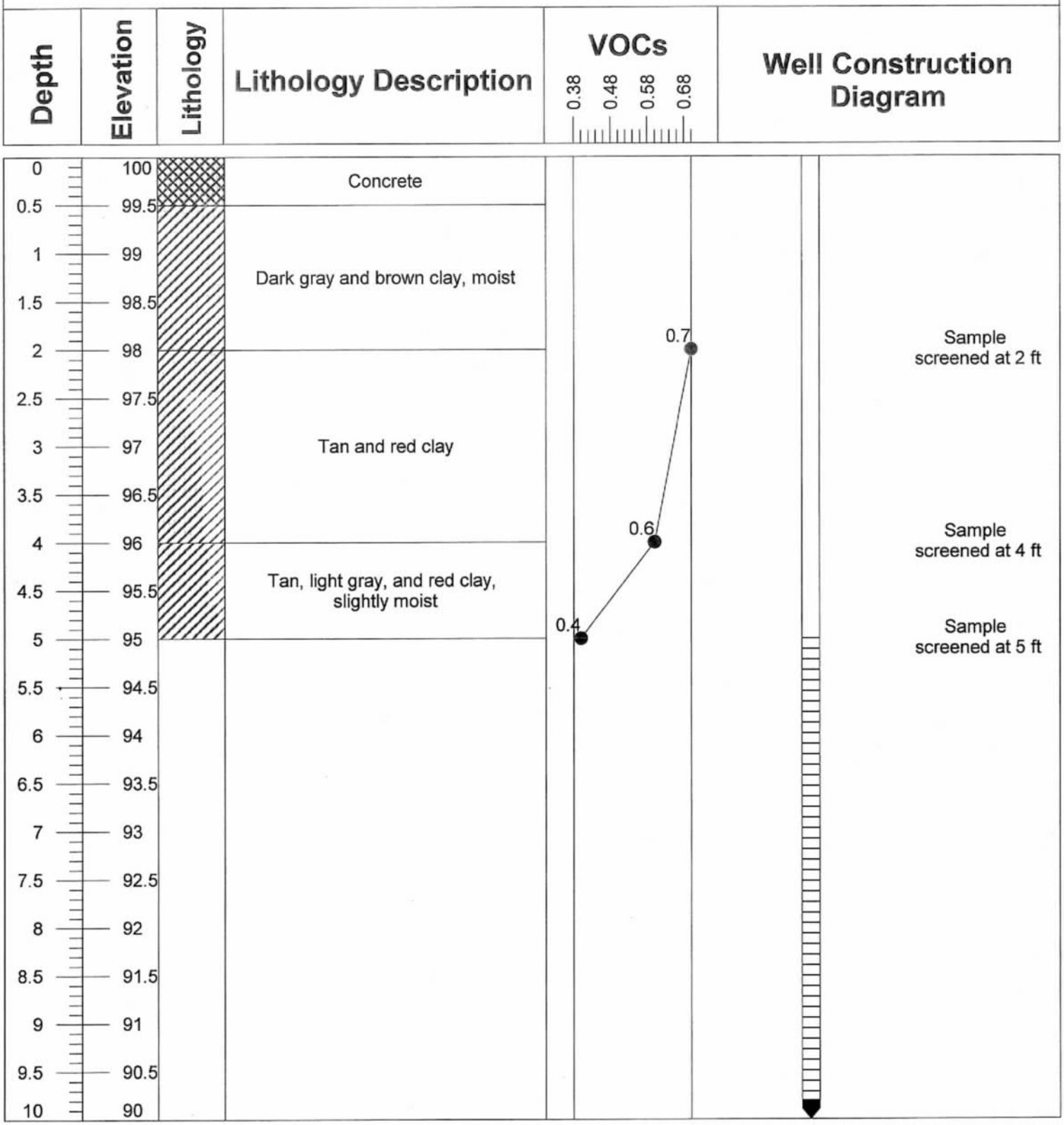
Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Direct push
Drill Date: 12/10/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: Joshua Register, cert. #1921C
Total Depth of Well: 10.0'
Casing Diameter: 1"
Depth to Water: '

ARM ENVIRONMENTAL SERVICES, INC.

Borehole ID: SB-46/TMW-8



Project Name: Broad River Amoco
Project Number: 12-414.2-18
Client Name: Enviro-Test Services
Location: Columbia, SC

Drill Method: Direct push
Drill Date: 12/10/18
Latitude: 34.065341°
Longitude: -81.117384°

Driller: Joshua Register, cert. #1921C
Total Depth of Well: 10.0'
Casing Diameter: 1"
Depth to Water: '

APPENDIX B

1903 WATER WELL RECORDS

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 15.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: TMW-1

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15.0 ft. Date Started: 11/22/18 Date Completed: 11/22/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5.0 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 10.0'
Set Between: 5.0 ft. and 15.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: David Felder **CERT. NO.:** 2162
Address: (Print) Level: A B C D ✓ (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: David Felder (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 15.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
TMW-2

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15.0 ft. Date Started: 11/22/18 Date Completed: 11/22/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5.0 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 10.0'
Set Between: 5.0 ft. and 15.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: David Felder **CERT. NO.:** 2162
Address: (Print) Level: A B C D ✓ (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 15.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
TMW-3

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15.0 ft. Date Started: 11/22/18 Date Completed: 11/22/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5.0 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 10.0'
Set Between: 5.0 ft. and 15.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: David Felder **CERT. NO.:** 2162
Address: (Print) Level: A B C D (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 15.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
TMW-4

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15.0 ft. Date Started: 12/10/18 Date Completed: 12/10/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 10.0'
Set Between: 5.0 ft. and 15.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Joshua Register **CERT. NO.:** 1921
Address: (Print) Level: A B C D (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

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Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 15.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: TMW-5

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15.0 ft. Date Started: 12/10/18 Date Completed: 12/10/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 10.0'
Set Between: 5.0 ft. and 15.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 15 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Joshua Register **CERT. NO.:** 1921
Address: (Print) Level: A B C D (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
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Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 10.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS: TMW-6		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 10.0 ft. Date Started: 12/10/18 Date Completed: 12/10/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 5.0'
Set Between: 5.0 ft. and 10.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 10 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Joshua Register **CERT. NO.:** 1921
Address: (Print) Level: A B C D (circle one)
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Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 10.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: TMW-7

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 10.0 ft. Date Started: 12/10/18 Date Completed: 12/10/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5 ft. depth
in. to ft. depth
Height: Above /Below Surface 0.0' ft.
Weight lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 5.0'
Set Between: 5.0 ft. and 10.0 ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield:

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from ft. to ft.
Effective size Uniformity Coefficient

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 10 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. direction
Type
Well Disinfected ☐ Yes ☑ No Type: Amount:

18. PUMP: Date installed: Not installed ☑
Mfr. Name: Model No.:
H.P. Volts Length of drop pipe ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Joshua Register **CERT. NO.:** 1921
Address: (Print) Level: A B C ✓ D (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 2/11/19

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Fredrick Cecchini (last) (first)
Address: 4335 Broad River Rd.
City: Columbia State: SC Zip: 29210
Telephone: Work: Home:

2. LOCATION OF WELL: COUNTY: Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210
Latitude: N34d03.910' Longitude: W81d07.012'

3. PUBLIC SYSTEM NAME: N/A **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Grouted Depth: from 10.0 ft. to 0.0 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See attached log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: TMW-8

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER:

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 10.0 ft. Date Started: 12/10/18 Date Completed: 12/10/18

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
1.0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above /Below Surface 0.0' ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 1.0"
Slot/Gauge: 0.010' Length: 5.0'
Set Between: 5.0 ft. and 10.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL (enc) ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 10 ft. to 0.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: site ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Joshua Register **CERT. NO.:** 1921
Address: (Print) Level: A B C ✔ D (circle one)
P.O. Box 50285
Columbia, SC 29250
Telephone No.: 803-783-3314 Fax No.: 803-783-2587

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 2/11/19
Well Driller

If D Level Driller, provide supervising driller's name:
Andrew M. Wilson, PG

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

APPENDIX C

LABORATORY ANALYTICAL REPORTS

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

ARM Environmental Services, Inc.
1210 1st Street S. Ext.
Columbia, SC 29209
Attention: Michael Faris

Project Name: Broad River BP

Project Number: 12-414.2-18

Lot Number:**TK28028**

Date Completed:12/04/2018

12/06/2018 2:22 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
ARM Environmental Services, Inc.
Lot Number: TK28028

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W" qualifier

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

VOCs by GC/MS

TK28028-001 was analyzed at a high dilution causing two surrogates to recover outside of method criteria. No corrective action is required as it is known that dilutions of 5X and greater may impact surrogate recoveries.

Sample Summary

ARM Environmental Services, Inc.

Lot Number: TK28028

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	SP-1	Solid	11/27/2018 1045	11/27/2018
002	SP-2	Solid	11/27/2018 1200	11/27/2018

(2 samples)

Detection Summary

ARM Environmental Services, Inc.

Lot Number: TK28028

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	SP-1	Solid	Benzene	8260B	33000		ug/kg	5
001	SP-1	Solid	Ethylbenzene	8260B	110000		ug/kg	5
001	SP-1	Solid	Naphthalene	8260B	30000		ug/kg	5
001	SP-1	Solid	Toluene	8260B	350000		ug/kg	5
001	SP-1	Solid	Xylenes (total)	8260B	590000		ug/kg	5
001	SP-1	Solid	Lead	6010D	9.4		mg/kg	5
002	SP-2	Solid	Lead	6010D	2.5		mg/kg	6

(7 detections)

Client: ARM Environmental Services, Inc.
Description: SP-1
Date Sampled: 11/27/2018 1045
Date Received: 11/27/2018

Laboratory ID: TK28028-001
Matrix: Solid
% Solids: 80.5 11/29/2018 0156

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Wt.(g)
1	5035 High	8260B	40	12/03/2018 1738	JM1		91249	5.73

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	33000		13000	ug/kg	1
Ethylbenzene	100-41-4	8260B	110000		13000	ug/kg	1
Naphthalene	91-20-3	8260B	30000		13000	ug/kg	1
Toluene	108-88-3	8260B	350000		13000	ug/kg	1
Xylenes (total)	1330-20-7	8260B	590000		27000	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		128	53-142
Bromofluorobenzene	N	165	47-138
Toluene-d8	N	156	68-124

ICP-AES

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3050B	6010D	2	12/03/2018 1712	JCF	12/02/2018 1034	91132

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Lead	7439-92-1	6010D	9.4		0.90	mg/kg	2

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: ARM Environmental Services, Inc.
Description: SP-2
Date Sampled: 11/27/2018 1200
Date Received: 11/27/2018

Laboratory ID: TK28028-002
Matrix: Solid
% Solids: 86.8 11/29/2018 0156

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Wt.(g)
1	5035 High	8260B	1	12/03/2018 1800	JM1		91249	5.97

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	8260B	ND		280	ug/kg	1
Ethylbenzene	100-41-4	8260B	ND		280	ug/kg	1
Naphthalene	91-20-3	8260B	ND		280	ug/kg	1
Toluene	108-88-3	8260B	ND		280	ug/kg	1
Xylenes (total)	1330-20-7	8260B	ND		560	ug/kg	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	53-142
Bromofluorobenzene		94	47-138
Toluene-d8		97	68-124

ICP-AES

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	12/03/2018 0443	LLL	12/02/2018 1034	91132

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Lead	**7439-92-1**	**6010D**	**2.5**		**0.50**	**mg/kg**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: TQ91249-001
Batch: 91249
Analytical Method: 8260B

Matrix: Solid
Prep Method: 5035 High

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Benzene	ND		1	250	ug/kg	12/03/2018 1653
Ethylbenzene	ND		1	250	ug/kg	12/03/2018 1653
Naphthalene	ND		1	250	ug/kg	12/03/2018 1653
Toluene	ND		1	250	ug/kg	12/03/2018 1653
Xylenes (total)	ND		1	500	ug/kg	12/03/2018 1653

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		106	53-142
Bromofluorobenzene		95	47-138
Toluene-d8		104	68-124

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: TQ91249-002
Batch: 91249
Analytical Method: 8260B

Matrix: Solid
Prep Method: 5035 High

Parameter	Spike Amount (ug/kg)	Result (ug/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Benzene	2500	2700		1	108	70-130	12/03/2018 1630
Ethylbenzene	2500	2700		1	108	70-130	12/03/2018 1630
Naphthalene	2500	2400		1	96	70-130	12/03/2018 1630
Toluene	2500	2700		1	109	70-130	12/03/2018 1630
Xylenes (total)	5000	5400		1	107	70-130	12/03/2018 1630

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		102	53-142
Bromofluorobenzene		99	47-138
Toluene-d8		105	68-124

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

ICP-AES - MB

Sample ID: TQ91132-001
Batch: 91132
Analytical Method: 6010D

Matrix: Solid
Prep Method: 3050B
Prep Date: 12/02/2018 1034

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Lead	ND		1	0.50	mg/kg	12/03/2018 0338

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

ICP-AES - LCS

Sample ID: TQ91132-002
Batch: 91132
Analytical Method: 6010D

Matrix: Solid
Prep Method: 3050B
Prep Date: 12/02/2018 1034

Parameter	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	250	240		1	94	80-120	12/03/2018 0343

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Chain of Custody
and
Miscellaneous Documents

ARM ENVIRONMENTAL SERVICES, INC.
ASSESSMENT & REMEDIAL SERVICES
1210 1st STREET SOUTH EXTENSION COLUMBIA, SOUTH CAROLINA 29209
PHONE 803-783-3314 FAX 803-783-2587

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Project #	Preservative	1. Unpreserved 2. NaOH / ZnA 3. H_2SO_4 4. HNO3 5. HCl 6. Na Thio. 7. NaOH																		# of Containers
12-414.2-18																				Preservative
Project Name: Broad River BP	Laboratory Utilized: Shealy																			
Sampler Name (print): Michael Faris	Sampler Signature:																			TK28028
Sample ID / Description	Date	Time	G=Grab C=Composite	Matrix S, GW, DW, WW, Other	Analysis: BTEX + N	Total Lead														Remarks
SP-1	11/27/18	1045	G	S	X	X														
SP-2	11/07/18	1200	G	S	X	X														
																				T=1.4°C

Relinquished By / Sampler	Date	Time	Received By	Project Manager
Andrew Deiter	11-27-18	1535		Michael Faris
Relinquished By	Date	Time	Received By	P.O. Number
Relinquished By	Date	Time	Received By: Melody Cordon 11-28 1535	

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: ARM Cooler Inspected by/date: MEC / 11-26-18 Lot #: TK28028

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chlorine Strip ID: _____ Tested by: _____

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: 18-188-9

1.4 / 1.4 °C ___ / ___ °C ___ / ___ °C ___ / ___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____mL of circle one: H2SO4, HNO3, HCl, NuOH using SR # _____.
Time of preservation _____. If more than one preservative is needed, please note in the comments below.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SR barcode labels applied by: ETB Date: 11.28.18

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

ARM Environmental Services, Inc.
1210 1st Street S. Ext.
Columbia, SC 29209
Attention: Michael Faris

Project Name: Broad River BP

Project Number: 12-414.2-18

Lot Number:**TK28026**

Date Completed:12/07/2018

12/07/2018 4:07 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

Case Narrative
ARM Environmental Services, Inc.
Lot Number: TK28026

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

ARM Environmental Services, Inc.

Lot Number: TK28026

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Daycare	Aqueous	11/27/2018 1055	11/27/2018
002	1257 Dothan Rd	Aqueous	11/27/2018 1140	11/27/2018
003	Dup	Aqueous	11/27/2018 1100	11/27/2018
004	FB	Aqueous	11/27/2018 1210	11/27/2018
005	Trip Blank	Aqueous	11/27/2018	11/27/2018

(5 samples)

Detection Summary

ARM Environmental Services, Inc.

Lot Number: TK28026

Sample Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

Client: ARM Environmental Services, Inc.
Description: Daycare
Date Sampled: 11/27/2018 1055
Date Received: 11/27/2018

Laboratory ID: TK28026-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/05/2018 2203	STM		91555

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		95	70-130
1,2-Dichlorobenzene-d4		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/05/2018 1421	CMP2	11/29/2018 1603	90935

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	ug/L	1
Naphthalene	91-20-3	8270D	ND		0.80	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	38-127
2-Fluorobiphenyl		54	37-129
Terphenyl-d14		79	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: ARM Environmental Services, Inc.
Description: Daycare
Date Sampled: 11/27/2018 1055
Date Received: 11/27/2018

Laboratory ID: TK28026-001
Matrix: Aqueous

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/03/2018 1325	DAL1	12/03/2018 0854	91168

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0098	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		119	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: ARM Environmental Services, Inc.
Description: 1257 Dothan Rd
Date Sampled: 11/27/2018 1140
Date Received: 11/27/2018

Laboratory ID: TK28026-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/05/2018 2228	STM		91555

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		100	70-130
1,2-Dichlorobenzene-d4		97	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/06/2018 1356	CMP2	11/29/2018 1603	90935

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	ug/L	1
Naphthalene	91-20-3	8270D	ND		0.80	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		72	38-127
2-Fluorobiphenyl		73	37-129
Terphenyl-d14		86	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: ARM Environmental Services, Inc.
Description: 1257 Dothan Rd
Date Sampled: 11/27/2018 1140
Date Received: 11/27/2018

Laboratory ID: TK28026-002
Matrix: Aqueous

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/03/2018 1349	DAL1	12/03/2018 0854	91168

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0097	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		116	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: ARM Environmental Services, Inc.
Description: Dup
Date Sampled: 11/27/2018 1100
Date Received: 11/27/2018

Laboratory ID: TK28026-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/05/2018 2253	STM		91555

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		96	70-130
1,2-Dichlorobenzene-d4		97	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/06/2018 1421	CMP2	11/29/2018 1603	90935

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	ug/L	1
Naphthalene	91-20-3	8270D	ND		0.80	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		63	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		85	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: ARM Environmental Services, Inc.
Description: Dup
Date Sampled: 11/27/2018 1100
Date Received: 11/27/2018

Laboratory ID: TK28026-003
Matrix: Aqueous

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/03/2018 1401	DAL1	12/03/2018 0854	91168

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.010	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		120	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: ARM Environmental Services, Inc.
Description: FB
Date Sampled: 11/27/2018 1210
Date Received: 11/27/2018

Laboratory ID: TK28026-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/05/2018 2318	STM		91555

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		102	70-130
1,2-Dichlorobenzene-d4		94	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/03/2018 1413	DAL1	12/03/2018 0854	91168

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0097	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		120	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: ARM Environmental Services, Inc.
Description: Trip Blank
Date Sampled: 11/27/2018
Date Received: 11/27/2018

Laboratory ID: TK28026-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/05/2018 2343	STM		91555

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		96	70-130
1,2-Dichlorobenzene-d4		101	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: TQ91555-001
Batch: 91555
Analytical Method: 524.2

Matrix: Aqueous
Prep Method: 524.2

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Benzene	ND		1	0.50	ug/L	12/05/2018 2117
1,2-Dichloroethane	ND		1	0.50	ug/L	12/05/2018 2117
Ethylbenzene	ND		1	0.50	ug/L	12/05/2018 2117
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	ug/L	12/05/2018 2117
Naphthalene	ND		1	0.50	ug/L	12/05/2018 2117
Toluene	ND		1	0.50	ug/L	12/05/2018 2117
Xylenes (total)	ND		1	0.50	ug/L	12/05/2018 2117

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		92	70-130
1,2-Dichlorobenzene-d4		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: TQ91555-002
Batch: 91555
Analytical Method: 524.2

Matrix: Aqueous
Prep Method: 524.2

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Benzene	5.0	4.2		1	83	70-130	12/05/2018 2041
1,2-Dichloroethane	5.0	4.0		1	81	70-130	12/05/2018 2041
Ethylbenzene	5.0	4.2		1	85	70-130	12/05/2018 2041
Methyl tertiary butyl ether (MTBE)	5.0	4.0		1	80	70-130	12/05/2018 2041
Naphthalene	5.0	4.2		1	84	70-130	12/05/2018 2041
Toluene	5.0	4.1		1	82	70-130	12/05/2018 2041
Xylenes (total)	10	8.4		1	84	70-130	12/05/2018 2041

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		94	70-130
1,2-Dichlorobenzene-d4		96	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: TQ90935-001
Batch: 90935
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 11/29/2018 1603

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	0.80	ug/L	12/02/2018 2024
Acenaphthylene	ND		1	0.80	ug/L	12/02/2018 2024
Anthracene	ND		1	0.80	ug/L	12/02/2018 2024
Benzo(a)anthracene	ND		1	0.80	ug/L	12/02/2018 2024
Benzo(a)pyrene	ND		1	0.80	ug/L	12/02/2018 2024
Benzo(b)fluoranthene	ND		1	0.80	ug/L	12/02/2018 2024
Benzo(g,h,i)perylene	ND		1	0.80	ug/L	12/02/2018 2024
Benzo(k)fluoranthene	ND		1	0.80	ug/L	12/02/2018 2024
Chrysene	ND		1	0.80	ug/L	12/02/2018 2024
Dibenzo(a,h)anthracene	ND		1	0.80	ug/L	12/02/2018 2024
Fluoranthene	ND		1	0.80	ug/L	12/02/2018 2024
Fluorene	ND		1	0.80	ug/L	12/02/2018 2024
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	ug/L	12/02/2018 2024
Naphthalene	ND		1	0.80	ug/L	12/02/2018 2024
Phenanthrene	ND		1	0.80	ug/L	12/02/2018 2024
Pyrene	ND		1	0.80	ug/L	12/02/2018 2024

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		82	38-127
2-Fluorobiphenyl		71	37-129
Terphenyl-d14		95	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: TQ90935-002
Batch: 90935
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 11/29/2018 1603

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	34		1	85	30-122	12/02/2018 2049
Acenaphthylene	40	30		1	75	30-130	12/02/2018 2049
Anthracene	40	32		1	80	30-123	12/02/2018 2049
Benzo(a)anthracene	40	34		1	85	40-125	12/02/2018 2049
Benzo(a)pyrene	40	29		1	73	40-128	12/02/2018 2049
Benzo(b)fluoranthene	40	35		1	86	30-130	12/02/2018 2049
Benzo(g,h,i)perylene	40	34		1	86	30-130	12/02/2018 2049
Benzo(k)fluoranthene	40	33		1	83	30-130	12/02/2018 2049
Chrysene	40	35		1	87	30-130	12/02/2018 2049
Dibenzo(a,h)anthracene	40	32		1	81	30-130	12/02/2018 2049
Fluoranthene	40	34		1	85	40-128	12/02/2018 2049
Fluorene	40	33		1	83	30-124	12/02/2018 2049
Indeno(1,2,3-c,d)pyrene	40	33		1	81	30-130	12/02/2018 2049
Naphthalene	40	30		1	76	30-130	12/02/2018 2049
Phenanthrene	40	32		1	79	40-123	12/02/2018 2049
Pyrene	40	36		1	90	40-126	12/02/2018 2049

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		85	38-127
2-Fluorobiphenyl		78	37-129
Terphenyl-d14		96	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MS

Sample ID: TK28026-001MS
Batch: 90935
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 11/29/2018 1603

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	47		1	59	30-122	12/05/2018 1444
Acenaphthylene	ND	80	43		1	54	30-130	12/05/2018 1444
Anthracene	ND	80	48		1	60	30-123	12/05/2018 1444
Benzo(a)anthracene	ND	80	56		1	69	40-125	12/05/2018 1444
Benzo(a)pyrene	ND	80	48		1	60	40-128	12/05/2018 1444
Benzo(b)fluoranthene	ND	80	59		1	74	30-130	12/05/2018 1444
Benzo(g,h,i)perylene	ND	80	55		1	69	30-130	12/05/2018 1444
Benzo(k)fluoranthene	ND	80	58		1	72	30-130	12/05/2018 1444
Chrysene	ND	80	54		1	68	30-130	12/05/2018 1444
Dibenzo(a,h)anthracene	ND	80	54		1	67	30-130	12/05/2018 1444
Fluoranthene	ND	80	56		1	69	40-128	12/05/2018 1444
Fluorene	ND	80	50		1	62	30-124	12/05/2018 1444
Indeno(1,2,3-c,d)pyrene	ND	80	56		1	70	30-130	12/05/2018 1444
Naphthalene	ND	80	48		1	60	30-130	12/05/2018 1444
Phenanthrene	ND	80	52		1	65	40-123	12/05/2018 1444
Pyrene	ND	80	54		1	68	40-126	12/05/2018 1444

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		66	38-127
2-Fluorobiphenyl		52	37-129
Terphenyl-d14		73	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: TK28026-001MD
Batch: 90935
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 11/29/2018 1603

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	53		1	66	12	30-122	40	12/05/2018 1507
Acenaphthylene	ND	80	48		1	59	10	30-130	40	12/05/2018 1507
Anthracene	ND	80	49		1	62	3.7	30-123	40	12/05/2018 1507
Benzo(a)anthracene	ND	80	54		1	67	3.0	40-125	40	12/05/2018 1507
Benzo(a)pyrene	ND	80	46		1	58	3.7	40-128	40	12/05/2018 1507
Benzo(b)fluoranthene	ND	80	59		1	74	0.16	30-130	40	12/05/2018 1507
Benzo(g,h,i)perylene	ND	80	55		1	68	0.44	30-130	40	12/05/2018 1507
Benzo(k)fluoranthene	ND	80	56		1	71	2.4	30-130	40	12/05/2018 1507
Chrysene	ND	80	56		1	70	2.2	30-130	40	12/05/2018 1507
Dibenzo(a,h)anthracene	ND	80	54		1	67	0.22	30-130	40	12/05/2018 1507
Fluoranthene	ND	80	57		1	71	2.0	40-128	40	12/05/2018 1507
Fluorene	ND	80	54		1	67	8.3	30-124	40	12/05/2018 1507
Indeno(1,2,3-c,d)pyrene	ND	80	56		1	71	0.67	30-130	40	12/05/2018 1507
Naphthalene	ND	80	55		1	69	14	30-130	40	12/05/2018 1507
Phenanthrene	ND	80	55		1	69	5.0	40-123	40	12/05/2018 1507
Pyrene	ND	80	55		1	68	0.51	40-126	40	12/05/2018 1507

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		71	38-127
2-Fluorobiphenyl		60	37-129
Terphenyl-d14		71	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: TQ91168-001
Batch: 91168
Analytical Method: 504.1

Matrix: Aqueous
Prep Method: 504.1
Prep Date: 12/03/2018 854

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.010	ug/L	12/03/2018 1037

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		92	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

EDB & DBCP by Microextraction - LCS

Sample ID: TQ91168-002
Batch: 91168
Analytical Method: 504.1

Matrix: Aqueous
Prep Method: 504.1
Prep Date: 12/03/2018 854

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.23		1	90	70-130	12/03/2018 1048

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		96	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Chain of Custody
and
Miscellaneous Documents

ARM ENVIRONMENTAL SERVICES, INC.

ASSESSMENT & REMEDIAL SERVICES

1210 1st STREET SOUTH EXTENSION COLUMBIA, SOUTH CAROLINA 29209 PHONE: 803-783-3314 FAX: 803-783-2587

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Project #	Preservative 1. Unpreserved 4. HNO_3 7 2. NaOH 5. HCl 3. H_2SO_4 6. 5035 Kit														# of Containers
12-414.2-18							2			3		3			Preservative
Project Name	Laboratory Utilized						4			5		7			
Bread River BP	Shealy														# 7 = NAZS203
Sampler Name (print)	Sampler Signature		G = Grab C = Composite	Matrix S, GW, DW, O, Other	BTEX+N+M+DCA+oxy by 8260B	EDB by 8011	PAHs by 8270D	Total Lead by 6010C	Dissolved Lead by 6010C	BTEX+N+M+DCA by 524.2	Oxygenates + ethanol by 8260B	EDB by 504.1			TK28026
Andrew Desilet															
Sample ID / Description	Date	Time													
Daycare	11-27-18	1055	G	DW			X			X		X			LIO
1257 Dixman Rd.	11-27-18	1140	G	DW			X			X		X			
Dup	11-27-18	1100	G	DW			X			X		X			
FB	11-27-18	1210	G	DW			[redacted]			X		X			No PAHs in FB
Trip Blank	11-27-18														
															T = 1.4°C

Relinquished by / Sampler	Date	Time	Received by	Date	Time	Project Manager
Andrew Desilet	11-27-18	1535				Michael Faris
Relinquished by	Date	Time	Received by	Date	Time	P.O. Number
Relinquished by	Date	Time	Received by Maddy Caito	Date 11-27-18	Time 1535	

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SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MT0018C-14

Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: APM Cooler Inspected by/date: MEC / 11-28-18 Lot #: TV28026

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chlorine Strip ID: _____ Tested by: _____ ETB 11-28-18

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: 19389 NA

1.4 / 1.4 °C ___ / ___ °C ___ / ___ °C ___ / ___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # _____.
Time of preservation _____. If more than one preservative is needed, please note in the comments below.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SR barcode labels applied by: ETP Date: 11-28-18

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

ARM Environmental Services, Inc.
1210 1st Street S. Ext.
Columbia, SC 29209
Attention: Michael Faris

Project Name: 4335 Broad River Rd.

Project Number: UST #11946

Lot Number:**TL05009**

Date Completed:12/12/2018

12/13/2018 7:47 AM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

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Case Narrative
ARM Environmental Services, Inc.
Lot Number: TL05009

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

ARM Environmental Services, Inc.

Lot Number: TL05009

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	TMW-4	Aqueous	12/04/2018 1620	12/05/2018
002	TMW-6	Aqueous	12/04/2018 1600	12/05/2018
003	TMW-7	Aqueous	12/04/2018 1545	12/05/2018

(3 samples)

Detection Summary

ARM Environmental Services, Inc.

Lot Number: TL05009

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	TMW-4	Aqueous	Benzene	8260B	6800		ug/L	5
001	TMW-4	Aqueous	Ethylbenzene	8260B	3800		ug/L	5
001	TMW-4	Aqueous	Naphthalene	8260B	610		ug/L	5
001	TMW-4	Aqueous	Toluene	8260B	28000		ug/L	5
001	TMW-4	Aqueous	Xylenes (total)	8260B	20000		ug/L	5
002	TMW-6	Aqueous	tert-Amyl alcohol (TAA)	8260B	360		ug/L	6
002	TMW-6	Aqueous	Benzene	8260B	15		ug/L	6
002	TMW-6	Aqueous	Diisopropyl ether (IPE)	8260B	4.7		ug/L	6
002	TMW-6	Aqueous	Ethylbenzene	8260B	8.6		ug/L	6
002	TMW-6	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260B	1.5		ug/L	6
002	TMW-6	Aqueous	Methyl tertiary butyl ether	8260B	100		ug/L	6
002	TMW-6	Aqueous	Naphthalene	8260B	2.6		ug/L	6
002	TMW-6	Aqueous	tert-butyl alcohol (TBA)	8260B	2500		ug/L	6
002	TMW-6	Aqueous	Toluene	8260B	54		ug/L	6
002	TMW-6	Aqueous	Xylenes (total)	8260B	46		ug/L	6
003	TMW-7	Aqueous	tert-Amyl alcohol (TAA)	8260B	20		ug/L	7
003	TMW-7	Aqueous	Benzene	8260B	23		ug/L	7
003	TMW-7	Aqueous	Ethylbenzene	8260B	25		ug/L	7
003	TMW-7	Aqueous	Naphthalene	8260B	4.7		ug/L	7
003	TMW-7	Aqueous	tert-butyl alcohol (TBA)	8260B	79		ug/L	7
003	TMW-7	Aqueous	Toluene	8260B	150		ug/L	7
003	TMW-7	Aqueous	Xylenes (total)	8260B	140		ug/L	7

(22 detections)

Client: ARM Environmental Services, Inc.
Description: TMW-4
Date Sampled: 12/04/2018 1620
Date Received: 12/05/2018

Laboratory ID: TL05009-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	500	12/08/2018 0416	STM		91832

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		10000	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		5000	ug/L	1
Benzene	**71-43-2**	**8260B**	**6800**		**500**	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		2500	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		10000	ug/L	1
Ethanol	64-17-5	8260B	ND		50000	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**3800**		**500**	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		500	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		500	ug/L	1
Naphthalene	**91-20-3**	**8260B**	**610**		**500**	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		10000	ug/L	1
Toluene	**108-88-3**	**8260B**	**28000**		**500**	ug/L	1
Xylenes (total)	**1330-20-7**	**8260B**	**20000**		**500**	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		85	70-130
Bromofluorobenzene		84	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: **ARM Environmental Services, Inc.**
Description: **TMW-6**
Date Sampled: **12/04/2018 1600**
Date Received: **12/05/2018**

Laboratory ID: **TL05009-002**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	12/08/2018 0033	STM		91832

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**360**		**20**	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	ug/L	1
Benzene	**71-43-2**	**8260B**	**15**		**1.0**	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	ug/L	1
Diisopropyl ether (IPE)	**108-20-3**	**8260B**	**4.7**		**1.0**	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	ug/L	1
Ethanol	64-17-5	8260B	ND		100	ug/L	1
Ethylbenzene	**100-41-4**	**8260B**	**8.6**		**1.0**	ug/L	1
Ethyl-tert-butyl ether (ETBE)	**637-92-3**	**8260B**	**1.5**		**1.0**	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**100**		**1.0**	ug/L	1
Naphthalene	**91-20-3**	**8260B**	**2.6**		**1.0**	ug/L	1
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**2500**		**20**	ug/L	1
Toluene	**108-88-3**	**8260B**	**54**		**1.0**	ug/L	1
Xylenes (total)	**1330-20-7**	**8260B**	**46**		**1.0**	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: ARM Environmental Services, Inc.
Description: TMW-7
Date Sampled: 12/04/2018 1545
Date Received: 12/05/2018

Laboratory ID: TL05009-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
3	5030B	8260B	1	12/11/2018 2258	STM		92143

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**20**		**20**	ug/L	**3**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	ug/L	3
Benzene	**71-43-2**	**8260B**	**23**		**1.0**	ug/L	**3**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	ug/L	3
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	ug/L	3
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	ug/L	3
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	ug/L	3
Ethanol	64-17-5	8260B	ND		100	ug/L	3
Ethylbenzene	**100-41-4**	**8260B**	**25**		**1.0**	ug/L	**3**
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	ug/L	3
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	ug/L	3
Naphthalene	**91-20-3**	**8260B**	**4.7**		**1.0**	ug/L	**3**
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**79**		**20**	ug/L	**3**
Toluene	**108-88-3**	**8260B**	**150**		**1.0**	ug/L	**3**
Xylenes (total)	**1330-20-7**	**8260B**	**140**		**1.0**	ug/L	**3**

Surrogate	Q	Run 3 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: TQ91832-001
Batch: 91832
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	ug/L	12/07/2018 2152
tert-Amyl methyl ether (TAME)	ND		1	10	ug/L	12/07/2018 2152
Benzene	ND		1	1.0	ug/L	12/07/2018 2152
tert-Butyl formate (TBF)	ND		1	5.0	ug/L	12/07/2018 2152
1,2-Dichloroethane	ND		1	1.0	ug/L	12/07/2018 2152
Diisopropyl ether (IPE)	ND		1	1.0	ug/L	12/07/2018 2152
3,3-Dimethyl-1-butanol	ND		1	20	ug/L	12/07/2018 2152
Ethanol	ND		1	100	ug/L	12/07/2018 2152
Ethylbenzene	ND		1	1.0	ug/L	12/07/2018 2152
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	ug/L	12/07/2018 2152
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	ug/L	12/07/2018 2152
Naphthalene	ND		1	1.0	ug/L	12/07/2018 2152
tert-butyl alcohol (TBA)	ND		1	20	ug/L	12/07/2018 2152
Toluene	ND		1	1.0	ug/L	12/07/2018 2152
Xylenes (total)	ND		1	1.0	ug/L	12/07/2018 2152

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		90	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: TQ91832-002
Batch: 91832
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	850		1	85	70-130	12/07/2018 2050
tert-Amyl methyl ether (TAME)	50	39		1	79	70-130	12/07/2018 2050
Benzene	50	37		1	73	70-130	12/07/2018 2050
tert-Butyl formate (TBF)	250	200		1	79	70-130	12/07/2018 2050
1,2-Dichloroethane	50	41		1	81	70-130	12/07/2018 2050
Diisopropyl ether (IPE)	50	38		1	77	70-130	12/07/2018 2050
3,3-Dimethyl-1-butanol	1000	870		1	87	70-130	12/07/2018 2050
Ethanol	5000	4400		1	89	70-130	12/07/2018 2050
Ethylbenzene	50	42		1	83	70-130	12/07/2018 2050
Ethyl-tert-butyl ether (ETBE)	50	38		1	76	70-130	12/07/2018 2050
Methyl tertiary butyl ether (MTBE)	50	35		1	71	70-130	12/07/2018 2050
Naphthalene	50	41		1	82	70-130	12/07/2018 2050
tert-butyl alcohol (TBA)	1000	830		1	83	70-130	12/07/2018 2050
Toluene	50	39		1	79	70-130	12/07/2018 2050
Xylenes (total)	100	81		1	81	70-130	12/07/2018 2050

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: TQ92143-001
Batch: 92143
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	ug/L	12/11/2018 2056
tert-Amyl methyl ether (TAME)	ND		1	10	ug/L	12/11/2018 2056
Benzene	ND		1	1.0	ug/L	12/11/2018 2056
tert-Butyl formate (TBF)	ND		1	5.0	ug/L	12/11/2018 2056
1,2-Dichloroethane	ND		1	1.0	ug/L	12/11/2018 2056
Diisopropyl ether (IPE)	ND		1	1.0	ug/L	12/11/2018 2056
3,3-Dimethyl-1-butanol	ND		1	20	ug/L	12/11/2018 2056
Ethanol	ND		1	100	ug/L	12/11/2018 2056
Ethylbenzene	ND		1	1.0	ug/L	12/11/2018 2056
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	ug/L	12/11/2018 2056
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	ug/L	12/11/2018 2056
Naphthalene	ND		1	1.0	ug/L	12/11/2018 2056
tert-butyl alcohol (TBA)	ND		1	20	ug/L	12/11/2018 2056
Toluene	ND		1	1.0	ug/L	12/11/2018 2056
Xylenes (total)	ND		1	1.0	ug/L	12/11/2018 2056

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		98	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: TQ92143-002
Batch: 92143
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	109	70-130	12/11/2018 1959
tert-Amyl methyl ether (TAME)	50	51		1	102	70-130	12/11/2018 1959
Benzene	50	51		1	103	70-130	12/11/2018 1959
tert-Butyl formate (TBF)	250	290		1	115	70-130	12/11/2018 1959
1,2-Dichloroethane	50	49		1	98	70-130	12/11/2018 1959
Diisopropyl ether (IPE)	50	58		1	117	70-130	12/11/2018 1959
3,3-Dimethyl-1-butanol	1000	1100		1	107	70-130	12/11/2018 1959
Ethanol	5000	5400		1	108	70-130	12/11/2018 1959
Ethylbenzene	50	49		1	98	70-130	12/11/2018 1959
Ethyl-tert-butyl ether (ETBE)	50	58		1	115	70-130	12/11/2018 1959
Methyl tertiary butyl ether (MTBE)	50	55		1	109	70-130	12/11/2018 1959
Naphthalene	50	51		1	102	70-130	12/11/2018 1959
tert-butyl alcohol (TBA)	1000	1100		1	108	70-130	12/11/2018 1959
Toluene	50	51		1	102	70-130	12/11/2018 1959
Xylenes (total)	100	97		1	97	70-130	12/11/2018 1959

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		89	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		99	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Chain of Custody
and
Miscellaneous Documents

ARM ENVIRONMENTAL SERVICES, INC.

ASSESSMENT & REMEDIAL SERVICES

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

1210 1st STREET SOUTH EXTENSION COLUMBIA, SOUTH CAROLINA 29209 PHONE: 803-765-9314 FAX: 803-765-2587

Project #	Preservative 1. Unpreserved 4. HNO_3 2. NaOH 5. HCl 3. H_2SO_4 6. 5035 Kit															# of Containers
UST # 11946																Preservative
Project Name 4335 Broad River Rd	Laboratory Utilized EQI / Shealy															TL05009
Sampler Name (print) Andrew Desilet	Sampler Signature		G = Grab C = Composite	Matrix S, GW, DW, O, Other	BTEX+N+M+DCA+oxy by 8260B	EDB by 8011	PAHs by 8270D	Total Lead by 6010C	Dissolved Lead by 6010C	BTEX+N+M+DCA by 624.2	Oxygenates + ethanol by 8260B	EDB by 504.1				LJO
Sample ID / Description	Date	Time														
TMW-4	12-4-18	1620	G	GW	X											
TMW-6	12-4-18	1600	G	GW	X											
TMW-7	12-4-18	1545	G	GW	X											
																T=2.1°C

Relinquished by / Sampler	Date	Time	Received by	Date	Time	Project Manager
Andrew Desilet	12-5-18	0845				Michael Faris
Relinquished by	Date	Time	Received by	Date	Time	P.O. Number
Relinquished by	Date	Time	Received by	Date	Time	
			Maddy Carter	12-5-18	0845	

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SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc
Document Number: MB0018C-14

Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: ARM Cooler Inspected by/date: LKH/12/05/18 Lot #: TL05009

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chlorine Strip ID: _____ Tested by: _____ _____

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: _____

2.1 / 2.1 °C ___ / ___ °C ___ / ___ °C ___ / ___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) ____ _____ _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # _____.

Time of preservation _____. If more than one preservative is needed, please note in the comments below.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____

SR barcode labels applied by: LKH Date: 12/05/18

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

ARM Environmental Services, Inc.
1210 1st Street S. Ext.
Columbia, SC 29209
Attention: Michael Faris

Project Name: Broad River BP

Project Number: 12-414.2-18

Lot Number:**TL07002**

Date Completed:12/17/2018

12/20/2018 9:38 AM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Shealy Environmental Services, Inc.

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Case Narrative
ARM Environmental Services, Inc.
Lot Number: TL07002

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

ARM Environmental Services, Inc.

Lot Number: TL07002

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	1238 Dothan Rd.	Aqueous	12/06/2018 1530	12/06/2018
002	Dup	Aqueous	12/06/2018 1535	12/06/2018
003	FB	Aqueous	12/06/2018 1540	12/06/2018
004	Trip Blank	Aqueous	12/06/2018	12/06/2018

(4 samples)

Detection Summary

ARM Environmental Services, Inc.

Lot Number: TL07002

Sample Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(0 detections)

Client: **ARM Environmental Services, Inc.**
Description: **1238 Dothan Rd.**
Date Sampled: **12/06/2018 1530**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-001**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/17/2018 1357	BWS		92598

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		88	70-130
1,2-Dichlorobenzene-d4		95	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/12/2018 1342	CMP2	12/10/2018 1403	91945

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	ug/L	1
Naphthalene	91-20-3	8270D	ND		0.80	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		87	38-127
2-Fluorobiphenyl		92	37-129
Terphenyl-d14		104	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: **ARM Environmental Services, Inc.**
Description: **1238 Dothan Rd.**
Date Sampled: **12/06/2018 1530**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-001**
Matrix: **Aqueous**

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/12/2018 1444	DAL1	12/12/2018 0913	92145

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0099	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		95	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: **ARM Environmental Services, Inc.**
Description: **Dup**
Date Sampled: **12/06/2018 1535**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-002**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/17/2018 1422	BWS		92598

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		87	70-130
1,2-Dichlorobenzene-d4		102	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	12/12/2018 1406	CMP2	12/10/2018 1403	91945

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	ug/L	1
Naphthalene	91-20-3	8270D	ND		0.80	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		85	38-127
2-Fluorobiphenyl		90	37-129
Terphenyl-d14		103	10-148

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

Client: **ARM Environmental Services, Inc.**
Description: **Dup**
Date Sampled: **12/06/2018 1535**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-002**
Matrix: **Aqueous**

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/12/2018 1508	DAL1	12/12/2018 0913	92145

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0098	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: **ARM Environmental Services, Inc.**
Description: **FB**
Date Sampled: **12/06/2018 1540**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-003**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/17/2018 1447	BWS		92598

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		92	70-130
1,2-Dichlorobenzene-d4		100	70-130

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	504.1	504.1	1	12/12/2018 1520	DAL1	12/12/2018 0913	92145

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	504.1	ND		0.0098	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		96	57-137

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Client: **ARM Environmental Services, Inc.**
Description: **Trip Blank**
Date Sampled: **12/06/2018**
Date Received: **12/06/2018**

Laboratory ID: **TL07002-004**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	524.2	524.2	1	12/17/2018 1512	BWS		92598

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Benzene	71-43-2	524.2	ND		0.50	ug/L	1
1,2-Dichloroethane	107-06-2	524.2	ND		0.50	ug/L	1
Ethylbenzene	100-41-4	524.2	ND		0.50	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	524.2	ND		0.50	ug/L	1
Naphthalene	91-20-3	524.2	ND		0.50	ug/L	1
Toluene	108-88-3	524.2	ND		0.50	ug/L	1
Xylenes (total)	1330-20-7	524.2	ND		0.50	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		83	70-130
1,2-Dichlorobenzene-d4		93	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: TQ92598-001
Batch: 92598
Analytical Method: 524.2

Matrix: Aqueous
Prep Method: 524.2

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Benzene	ND		1	0.50	ug/L	12/17/2018 1012
1,2-Dichloroethane	ND		1	0.50	ug/L	12/17/2018 1012
Ethylbenzene	ND		1	0.50	ug/L	12/17/2018 1012
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	ug/L	12/17/2018 1012
Naphthalene	ND		1	0.50	ug/L	12/17/2018 1012
Toluene	ND		1	0.50	ug/L	12/17/2018 1012
Xylenes (total)	ND		1	0.50	ug/L	12/17/2018 1012

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		88	70-130
1,2-Dichlorobenzene-d4		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: TQ92598-002
Batch: 92598
Analytical Method: 524.2

Matrix: Aqueous
Prep Method: 524.2

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Benzene	5.0	4.9		1	99	70-130	12/17/2018 0913
1,2-Dichloroethane	5.0	4.8		1	96	70-130	12/17/2018 0913
Ethylbenzene	5.0	4.8		1	95	70-130	12/17/2018 0913
Methyl tertiary butyl ether (MTBE)	5.0	4.8		1	96	70-130	12/17/2018 0913
Naphthalene	5.0	5.2		1	103	70-130	12/17/2018 0913
Toluene	5.0	5.0		1	99	70-130	12/17/2018 0913
Xylenes (total)	10	9.5		1	95	70-130	12/17/2018 0913

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichlorobenzene-d4		97	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: TQ91945-001
Batch: 91945
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 12/10/2018 1403

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Acenaphthene	ND		1	0.80	ug/L	12/12/2018 1052
Acenaphthylene	ND		1	0.80	ug/L	12/12/2018 1052
Anthracene	ND		1	0.80	ug/L	12/12/2018 1052
Benzo(a)anthracene	ND		1	0.80	ug/L	12/12/2018 1052
Benzo(a)pyrene	ND		1	0.80	ug/L	12/12/2018 1052
Benzo(b)fluoranthene	ND		1	0.80	ug/L	12/12/2018 1052
Benzo(g,h,i)perylene	ND		1	0.80	ug/L	12/12/2018 1052
Benzo(k)fluoranthene	ND		1	0.80	ug/L	12/12/2018 1052
Chrysene	ND		1	0.80	ug/L	12/12/2018 1052
Dibenzo(a,h)anthracene	ND		1	0.80	ug/L	12/12/2018 1052
Fluoranthene	ND		1	0.80	ug/L	12/12/2018 1052
Fluorene	ND		1	0.80	ug/L	12/12/2018 1052
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	ug/L	12/12/2018 1052
Naphthalene	ND		1	0.80	ug/L	12/12/2018 1052
Phenanthrene	ND		1	0.80	ug/L	12/12/2018 1052
Pyrene	ND		1	0.80	ug/L	12/12/2018 1052

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		82	38-127
2-Fluorobiphenyl		88	37-129
Terphenyl-d14		101	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: TQ91945-002
Batch: 91945
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 12/10/2018 1403

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	39		1	97	30-122	12/12/2018 1117
Acenaphthylene	40	37		1	92	30-130	12/12/2018 1117
Anthracene	40	39		1	99	30-123	12/12/2018 1117
Benzo(a)anthracene	40	38		1	94	40-125	12/12/2018 1117
Benzo(a)pyrene	40	35		1	86	40-128	12/12/2018 1117
Benzo(b)fluoranthene	40	38		1	95	30-130	12/12/2018 1117
Benzo(g,h,i)perylene	40	48		1	120	30-130	12/12/2018 1117
Benzo(k)fluoranthene	40	37		1	92	30-130	12/12/2018 1117
Chrysene	40	39		1	97	30-130	12/12/2018 1117
Dibenzo(a,h)anthracene	40	45		1	112	30-130	12/12/2018 1117
Fluoranthene	40	38		1	94	40-128	12/12/2018 1117
Fluorene	40	38		1	95	30-124	12/12/2018 1117
Indeno(1,2,3-c,d)pyrene	40	46		1	114	30-130	12/12/2018 1117
Naphthalene	40	37		1	92	30-130	12/12/2018 1117
Phenanthrene	40	41		1	101	40-123	12/12/2018 1117
Pyrene	40	44		1	110	40-126	12/12/2018 1117

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		91	38-127
2-Fluorobiphenyl		93	37-129
Terphenyl-d14		110	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MS

Sample ID: TL07002-002MS
Batch: 91945
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 12/10/2018 1403

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	63		1	78	30-122	12/12/2018 1430
Acenaphthylene	ND	80	54		1	68	30-130	12/12/2018 1430
Anthracene	ND	80	72		1	90	30-123	12/12/2018 1430
Benzo(a)anthracene	ND	80	73		1	92	40-125	12/12/2018 1430
Benzo(a)pyrene	ND	80	71		1	89	40-128	12/12/2018 1430
Benzo(b)fluoranthene	ND	80	77		1	97	30-130	12/12/2018 1430
Benzo(g,h,i)perylene	ND	80	95		1	118	30-130	12/12/2018 1430
Benzo(k)fluoranthene	ND	80	73		1	91	30-130	12/12/2018 1430
Chrysene	ND	80	76		1	95	30-130	12/12/2018 1430
Dibenzo(a,h)anthracene	ND	80	94		1	118	30-130	12/12/2018 1430
Fluoranthene	ND	80	76		1	95	40-128	12/12/2018 1430
Fluorene	ND	80	63		1	78	30-124	12/12/2018 1430
Indeno(1,2,3-c,d)pyrene	ND	80	98		1	123	30-130	12/12/2018 1430
Naphthalene	ND	80	60		1	75	30-130	12/12/2018 1430
Phenanthrene	ND	80	74		1	93	40-123	12/12/2018 1430
Pyrene	ND	80	78		1	98	40-126	12/12/2018 1430

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		71	38-127
2-Fluorobiphenyl		74	37-129
Terphenyl-d14		99	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: TL07002-002MD
Batch: 91945
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 12/10/2018 1403

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	71		1	89	13	30-122	40	12/12/2018 1454
Acenaphthylene	ND	80	64		1	80	16	30-130	40	12/12/2018 1454
Anthracene	ND	80	75		1	93	3.5	30-123	40	12/12/2018 1454
Benzo(a)anthracene	ND	80	74		1	92	0.65	40-125	40	12/12/2018 1454
Benzo(a)pyrene	ND	80	72		1	90	1.9	40-128	40	12/12/2018 1454
Benzo(b)fluoranthene	ND	80	78		1	98	0.74	30-130	40	12/12/2018 1454
Benzo(g,h,i)perylene	ND	80	97		1	122	2.9	30-130	40	12/12/2018 1454
Benzo(k)fluoranthene	ND	80	75		1	94	3.2	30-130	40	12/12/2018 1454
Chrysene	ND	80	77		1	96	0.63	30-130	40	12/12/2018 1454
Dibenzo(a,h)anthracene	ND	80	96		1	120	1.7	30-130	40	12/12/2018 1454
Fluoranthene	ND	80	78		1	98	2.9	40-128	40	12/12/2018 1454
Fluorene	ND	80	72		1	89	13	30-124	40	12/12/2018 1454
Indeno(1,2,3-c,d)pyrene	ND	80	100		1	126	2.3	30-130	40	12/12/2018 1454
Naphthalene	ND	80	69		1	87	15	30-130	40	12/12/2018 1454
Phenanthrene	ND	80	80		1	100	7.4	40-123	40	12/12/2018 1454
Pyrene	ND	80	83		1	104	6.1	40-126	40	12/12/2018 1454

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		80	38-127
2-Fluorobiphenyl		84	37-129
Terphenyl-d14		103	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: TQ92145-001
Batch: 92145
Analytical Method: 504.1

Matrix: Aqueous
Prep Method: 504.1
Prep Date: 12/12/2018 913

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.010	ug/L	12/12/2018 1356

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		89	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

EDB & DBCP by Microextraction - LCS

Sample ID: TQ92145-002
Batch: 92145
Analytical Method: 504.1
Matrix: Aqueous
Prep Method: 504.1
Prep Date: 12/12/2018 913

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.22		1	87	70-130	12/12/2018 1408

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		94	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

EDB & DBCP by Microextraction - MS

Sample ID: TL07002-001MS
Batch: 92145
Analytical Method: 504.1

Matrix: Aqueous
Prep Method: 504.1
Prep Date: 12/12/2018 913

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.25	0.25		1	103	70-130	12/12/2018 1456

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Chain of Custody
and
Miscellaneous Documents

ARM ENVIRONMENTAL SERVICES, INC.

ASSESSMENT & REMEDIAL SERVICES

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

1210 1ST STREET SOUTH EXTENSION COLUMBIA, SOUTH CAROLINA 29209 PHONE: 803-783-3314 FAX: 803-783-2587

Project #	Preservative																# of Containers
12-414.2-18	1. Unpreserved	2. NaOH	3. H_2SO_4	4. HNO_3	5. HCl	6. $Na_2S_2O_3$	7. 5035 Kit			2			3		3		
										1			S		7		Preservative
Project Name: Broad River BP	Laboratory Utilized: Shealy Environmental Svcs.																
Sampler Name (print): Andrew Desilet	Sampler Signature:																TL07002 WO
Sample ID / Description	Date	Time	G = Grab C = Composite	Matrix S, GW, DW, DI, Other	BTEX+N+M+DCA+oxy by 8260B	EDB by 8011	PAHs by 8270D	Total Lead by 6010C	Dissolved Lead by 6010C	BTEX+N+M+DCA by 524.2	Oxygenates + ethanol by 8260B	EDB by 504.1					
1238 Dothan Rd.	12-6-18	1530	G	DW			X			X		X					
Dup	12-6-18	1535	G	DW			X			X		X					
FB	12-6-18	1540	G	DI						X		X					
Trip Blank																	
																	T=4.4°C

Relinquished by / Sampler	Date	Time	Received by	Date	Time	Project Manager
Andrew Desilet	12-6-18	17:30		12/6/18	17:30	Michael Faris
Relinquished by	Date	Time	Received by	Date	Time	P.O. Number
	12-6-18	1800				
Relinquished by	Date	Time	Received by	Date	Time	
			Erin Brown	12-6-18	1800	

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SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: ARM Cooler Inspected by/date: LKH / 12/07/18 Lot#: TL07002

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chlorine Strip ID: _____ Tested by: _____

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: _____

4.4 / 4.4 °C ___ / ___ °C ___ / ___ °C ___ / ___ °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # _____. Time of preservation _____. If more than one preservative is needed, please note in the comments below.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____

SR barcode labels applied by: MEC Date: 12/07/18

Comments:

ALPHA ANALYTICAL

ANALYTICAL REPORT

Lab Number:	L1850295
Client:	ARM Environmental Services, Inc. 1210 First Street South Ext. Columbia, SC 29209
ATTN:	Richard Ciccolella
Phone:	(803) 783-3314
Project Name:	PLAY PALS
Project Number:	12-414.2-18
Report Date:	12/14/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Serial_No:12141814:52

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1850295-01	A-1	AIR	1246 DOTHAN RD.	12/05/18 17:45	12/07/18
L1850295-02	A-2	AIR	1246 DOTHAN RD.	12/05/18 00:00	12/07/18
L1850295-03	A-3	AIR	1246 DOTHAN RD.	12/05/18 18:32	12/07/18
L1850295-04	A-4	AIR	1246 DOTHAN RD.	12/05/18 18:41	12/07/18

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 4, 2018. The canister certification results are provided as an addendum.

L1850295-03: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Sample Receipt

The sample designated A-2 (L1850295-02) was cancelled by the client.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative

Date: 12/14/18

AIR

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

SAMPLE RESULTS

Lab ID: L1850295-01
Client ID: A-1
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/05/18 17:45
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/13/18 18:56
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	0.813	0.200	--	2.60	0.639	--		1
Toluene	2.63	0.200	--	9.91	0.754	--		1
Ethylbenzene	0.467	0.200	--	2.03	0.869	--		1
p/m-Xylene	1.72	0.400	--	7.47	1.74	--		1
o-Xylene	0.666	0.200	--	2.89	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	97		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	98		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

SAMPLE RESULTS

Lab ID: L1850295-03
Client ID: A-3
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/05/18 18:32
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/13/18 19:35
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	57.2	0.200	--	183	0.639	--		1
Toluene	272	0.200	--	1030	0.754	--	E	1
Ethylbenzene	102	0.200	--	443	0.869	--	E	1
p/m-Xylene	287	0.400	--	1250	1.74	--	E	1
o-Xylene	151	0.200	--	656	0.869	--	E	1
Naphthalene	2.46	0.200	--	12.9	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	123		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

SAMPLE RESULTS

Lab ID: L1850295-03 D
Client ID: A-3
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/05/18 18:32
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/14/18 09:18
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Toluene	475	1.00	--	1790	3.77	--		5
Ethylbenzene	122	1.00	--	530	4.34	--		5
p/m-Xylene	476	2.00	--	2070	8.69	--		5
o-Xylene	204	1.00	--	886	4.34	--		5

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	97		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	114		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

SAMPLE RESULTS

Lab ID: L1850295-04
Client ID: A-4
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/05/18 18:41
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/13/18 20:54
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	5.96	0.200	--	19.0	0.639	--		1
Toluene	31.8	0.200	--	120	0.754	--		1
Ethylbenzene	6.76	0.200	--	29.4	0.869	--		1
p/m-Xylene	28.3	0.400	--	123	1.74	--		1
o-Xylene	17.5	0.200	--	76.0	0.869	--		1
Naphthalene	0.464	0.200	--	2.43	1.05	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	105		60-140
Bromochloromethane	101		60-140
chlorobenzene-d5	91		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/13/18 17:50

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01,03-04 Batch: WG1189192-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1189192-3								
Chlorodifluoromethane	77		-		70-130	-		
Propylene	110		-		70-130	-		
Propane	83		-		70-130	-		
Dichlorodifluoromethane	75		-		70-130	-		
Chloromethane	86		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	81		-		70-130	-		
Methanol	106		-		70-130	-		
Vinyl chloride	96		-		70-130	-		
1,3-Butadiene	89		-		70-130	-		
Butane	97		-		70-130	-		
Bromomethane	102		-		70-130	-		
Chloroethane	98		-		70-130	-		
Ethyl Alcohol	51	Q	-		70-130	-		
Dichlorofluoromethane	79		-		70-130	-		
Vinyl bromide	103		-		70-130	-		
Acrolein	80		-		70-130	-		
Acetone	101		-		70-130	-		
Acetonitrile	99		-		70-130	-		
Trichlorofluoromethane	89		-		70-130	-		
iso-Propyl Alcohol	111		-		70-130	-		
Acrylonitrile	85		-		70-130	-		
Pentane	85		-		70-130	-		
Ethyl ether	112		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1189192-3								
1,1-Dichloroethene	93		-		70-130	-		
tert-Butyl Alcohol	113		-		70-130	-		
Methylene chloride	93		-		70-130	-		
3-Chloropropene	113		-		70-130	-		
Carbon disulfide	87		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	108		-		70-130	-		
trans-1,2-Dichloroethene	97		-		70-130	-		
1,1-Dichloroethane	102		-		70-130	-		
Methyl tert butyl ether	99		-		70-130	-		
Vinyl acetate	110		-		70-130	-		
2-Butanone	103		-		70-130	-		
cis-1,2-Dichloroethene	104		-		70-130	-		
Ethyl Acetate	111		-		70-130	-		
Chloroform	91		-		70-130	-		
Tetrahydrofuran	103		-		70-130	-		
2,2-Dichloropropane	79		-		70-130	-		
1,2-Dichloroethane	92		-		70-130	-		
n-Hexane	98		-		70-130	-		
Isopropyl Ether	92		-		70-130	-		
Ethyl-Tert-Butyl-Ether	90		-		70-130	-		
1,1,1-Trichloroethane	93		-		70-130	-		
1,1-Dichloropropene	87		-		70-130	-		
Benzene	85		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1189192-3								
Carbon tetrachloride	84		-		70-130	-		
Cyclohexane	98		-		70-130	-		
Tertiary-Amyl Methyl Ether	85		-		70-130	-		
Dibromomethane	97		-		70-130	-		
1,2-Dichloropropane	103		-		70-130	-		
Bromodichloromethane	90		-		70-130	-		
1,4-Dioxane	105		-		70-130	-		
Trichloroethene	101		-		70-130	-		
2,2,4-Trimethylpentane	102		-		70-130	-		
Methyl Methacrylate	103		-		70-130	-		
Heptane	101		-		70-130	-		
cis-1,3-Dichloropropene	92		-		70-130	-		
4-Methyl-2-pentanone	102		-		70-130	-		
trans-1,3-Dichloropropene	78		-		70-130	-		
1,1,2-Trichloroethane	102		-		70-130	-		
Toluene	117		-		70-130	-		
1,3-Dichloropropane	97		-		70-130	-		
2-Hexanone	121		-		70-130	-		
Dibromochloromethane	124		-		70-130	-		
1,2-Dibromoethane	106		-		70-130	-		
Butyl Acetate	102		-		70-130	-		
Octane	106		-		70-130	-		
Tetrachloroethene	114		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1189192-3								
1,1,1,2-Tetrachloroethane	112		-		70-130	-		
Chlorobenzene	109		-		70-130	-		
Ethylbenzene	120		-		70-130	-		
p/m-Xylene	118		-		70-130	-		
Bromoform	123		-		70-130	-		
Styrene	110		-		70-130	-		
1,1,2,2-Tetrachloroethane	116		-		70-130	-		
o-Xylene	122		-		70-130	-		
1,2,3-Trichloropropane	102		-		70-130	-		
Nonane (C9)	112		-		70-130	-		
Isopropylbenzene	110		-		70-130	-		
Bromobenzene	102		-		70-130	-		
o-Chlorotoluene	112		-		70-130	-		
n-Propylbenzene	113		-		70-130	-		
p-Chlorotoluene	114		-		70-130	-		
4-Ethyltoluene	113		-		70-130	-		
1,3,5-Trimethylbenzene	112		-		70-130	-		
tert-Butylbenzene	130		-		70-130	-		
1,2,4-Trimethylbenzene	**133**	Q	-		70-130	-		
Decane (C10)	116		-		70-130	-		
Benzyl chloride	127		-		70-130	-		
1,3-Dichlorobenzene	117		-		70-130	-		
1,4-Dichlorobenzene	112		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 Batch: WG1189192-3								
sec-Butylbenzene	110		-		70-130	-		
p-Isopropyltoluene	106		-		70-130	-		
1,2-Dichlorobenzene	114		-		70-130	-		
n-Butylbenzene	126		-		70-130	-		
1,2-Dibromo-3-chloropropane	102		-		70-130	-		
Undecane	121		-		70-130	-		
Dodecane (C12)	124		-		70-130	-		
1,2,4-Trichlorobenzene	111		-		70-130	-		
Naphthalene	108		-		70-130	-		
1,2,3-Trichlorobenzene	106		-		70-130	-		
Hexachlorobutadiene	122		-		70-130	-		

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1850295
Report Date: 12/14/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 QC Batch ID: WG1189192-5 QC Sample: L1850295-03 Client ID: A-3						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	57.2	57.8	ppbV	1		25
Toluene	272E	274E	ppbV	1		25
Ethylbenzene	102E	102E	ppbV	0		25
p/m-Xylene	287E	292E	ppbV	2		25
o-Xylene	151E	151E	ppbV	0		25
Naphthalene	2.46	2.92	ppbV	17		25
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01,03-04 QC Batch ID: WG1189192-5 QC Sample: L1850295-03 Client ID: A-3						
Toluene	475	475	ppbV	0		25
Ethylbenzene	122	124	ppbV	2		25
p/m-Xylene	476	471	ppbV	1		25
o-Xylene	204	206	ppbV	1		25

Serial_No:12141814:52

Project Name: PLAY PALS

Project Number: 12-414.2-18

Lab Number: L1850295

Report Date: 12/14/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1850295-01	A-1	0636	Flow 4	12/04/18	280185		-	-	-	Pass	10.0	10.0	0
L1850295-01	A-1	2255	6.0L Can	12/04/18	280185	L1848830-01	Pass	-29.2	-6.2	-	-	-	-
L1850295-02	A-2	0843	Flow 5	12/04/18	280185		-	-	-	Pass	10.0	10.0	0
L1850295-02	A-2	2656	6.0L Can	12/04/18	280185	L1848830-02	Pass	-29.8	-29.8	-	-	-	-
L1850295-03	A-3	0272	Flow 5	12/04/18	280185		-	-	-	Pass	10.0	9.9	1
L1850295-03	A-3	1832	6.0L Can	12/04/18	280185	L1848830-01	Pass	-28.0	-4.1	-	-	-	-
L1850295-04	A-4	0367	Flow 5	12/04/18	280185		-	-	-	Pass	10.0	8.5	16
L1850295-04	A-4	810	6.0L Can	12/04/18	280185	L1848830-02	Pass	-29.9	-6.1	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 11/29/18 20:04
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	78		60-140
Bromochloromethane	84		60-140
chlorobenzene-d5	81		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 11/29/18 20:04
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-01
Client ID: CAN 1551 SHELF 56
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	81		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	82		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 11/29/18 20:36
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	76		60-140
Bromochloromethane	83		60-140
chlorobenzene-d5	78		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 11/29/18 20:36
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848830
Report Date: 12/14/18

Air Canister Certification Results

Lab ID: L1848830-02
Client ID: CAN 2561 SELF 57
Sample Location:

Date Collected: 11/29/18 09:00
Date Received: 11/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	79		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	81		60-140

Serial_No:12141814:52

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	***Custody Seal***
N/A	Present/Intact

Container Information

Container ID	***Container Type***	***Cooler***	***Initial pH***	***Final pH***	***Temp deg C***	***Pres***	***Seal***	***Frozen Date/Time***	***Analysis(*)***
L1850295-01A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850295-02A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1850295-03A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850295-04A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850295
Report Date: 12/14/18

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:12141814:52

AIR ANALYSIS

PAGE 1 OF 2

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/7/18

ALPHA Job #: L1850295

Client Information

Client: ARM ENV. SVCS. INC.
Address: 1210 FIRST STREET SOUTH EXT. COLUMBIA, SC 29209
Phone: 803-783-3314
Fax: 803-783-2587
Email: RCKLOLELLA@ARMENV.COM

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: PLAY PALS
Project Location: 246 DOTHAN RD
Project #: 12-414.2-18
Project Manager: RICHARD CICCOLELLA
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☑ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☑ Same as Client info PO #: 12-414.2-18

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
EPA	OSWER/VISL	RES

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☑ PLEASE LIMIT REPORTING TO ATTACHED LIST

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I.D. Can	I.D. Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
50295.01	A-1	12-5-18	0941	1745	-30.23	-7.50	AA	RC	6L	2258	0636	X					PID ~ 12.4 ppm IN BLDG
.02	A-2	12-5-18	DO	NOT	ANAL.	-	CAN	MALFUNCTION									
.03	A-3	12-5-18	1029	1832	-27.89	-4.46	AA	RC	6L	1832	0272	X					
.04	A-4	12-5-18	1034	1841	~~-30.77~~ -30.39	6.61	AA	RC	6L	810	0367	X					

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Richard Ciccolella FedEx	12-6-18/1630	FedEx Michael Bailey, ALC	12/7/18 0:16

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

L1850295

12-6-18

ARM ENVIRONMENTAL SERVICES

For Play Pals site, 1246 Dothan Road, Columbia, SC

***Please limit reporting to the following list:**

- Methyl Tert Butyl Ether
- 1,2-Dichloroethane
- Benzene
- Toluene
- Ethylbenzene
- p/m Xylene
- o-Xylene
- Naphthalene

ALPHA ANALYTICAL

ANALYTICAL REPORT

Lab Number:	L1850282
Client:	ARM Environmental Services, Inc. 1210 First Street South Ext. Columbia, SC 29209
ATTN:	Richard Ciccolella
Phone:	(803) 783-3314
Project Name:	PLAY PALS
Project Number:	12-414.2-18
Report Date:	12/17/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Serial_No:12171815:14

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1850282-01	SG-1	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 12:52	12/07/18
L1850282-02	SG-2	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 13:15	12/07/18
L1850282-03	SG-3	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 13:40	12/07/18
L1850282-04	SG-4	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 14:06	12/07/18
L1850282-05	SG-5	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 14:26	12/07/18
L1850282-06	SG-6	SOIL_VAPOR	1346 DOTHAN RD.	12/06/18 14:41	12/07/18

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 4, 2018. The canister certification results are provided as an addendum.

L1850282-01, -02, and -06: The samples have elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative

Date: 12/17/18

AIR

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-01 D
Client ID: SG-1
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 12:52
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 09:52
Analyst: RY

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	5.44	--	ND	19.6	--		27.2
1,2-Dichloroethane	ND	5.44	--	ND	22.0	--		27.2
Benzene	8.95	5.44	--	28.6	17.4	--		27.2
Toluene	6.23	5.44	--	23.5	20.5	--		27.2
Ethylbenzene	ND	5.44	--	ND	23.6	--		27.2
p/m-Xylene	ND	10.9	--	ND	47.3	--		27.2
o-Xylene	ND	5.44	--	ND	23.6	--		27.2
Naphthalene	ND	5.44	--	ND	28.5	--		27.2

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	99		60-140
Bromochloromethane	99		60-140
chlorobenzene-d5	99		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-02 D
Client ID: SG-2
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 13:15
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 03:19
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	2.00	--	ND	7.21	--		10
1,2-Dichloroethane	ND	2.00	--	ND	8.09	--		10
Benzene	ND	2.00	--	ND	6.39	--		10
Toluene	8.08	2.00	--	30.4	7.54	--		10
Ethylbenzene	ND	2.00	--	ND	8.69	--		10
p/m-Xylene	7.64	4.00	--	33.2	17.4	--		10
o-Xylene	3.19	2.00	--	13.9	8.69	--		10
Naphthalene	ND	2.00	--	ND	10.5	--		10

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	89		60-140
chlorobenzene-d5	91		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-03
Client ID: SG-3
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 13:40
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 04:35
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	1.78	0.200	--	5.69	0.639	--		1
Toluene	11.5	0.200	--	43.3	0.754	--		1
Ethylbenzene	2.57	0.200	--	11.2	0.869	--		1
p/m-Xylene	10.6	0.400	--	46.0	1.74	--		1
o-Xylene	4.25	0.200	--	18.5	0.869	--		1
Naphthalene	0.513	0.200	--	2.69	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	93		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	96		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-04
Client ID: SG-4
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 14:06
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 05:15
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	1.08	0.200	--	3.45	0.639	--		1
Toluene	8.70	0.200	--	32.8	0.754	--		1
Ethylbenzene	2.11	0.200	--	9.16	0.869	--		1
p/m-Xylene	9.25	0.400	--	40.2	1.74	--		1
o-Xylene	3.55	0.200	--	15.4	0.869	--		1
Naphthalene	0.313	0.200	--	1.64	1.05	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	96		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-05
Client ID: SG-5
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 14:26
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 05:54
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	1.42	0.200	--	4.54	0.639	--		1
Toluene	10.7	0.200	--	40.3	0.754	--		1
Ethylbenzene	2.80	0.200	--	12.2	0.869	--		1
p/m-Xylene	12.1	0.400	--	52.6	1.74	--		1
o-Xylene	4.90	0.200	--	21.3	0.869	--		1
Naphthalene	0.502	0.200	--	2.63	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	94		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	97		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

SAMPLE RESULTS

Lab ID: L1850282-06 D
Client ID: SG-6
Sample Location: 1346 DOTHAN RD.

Date Collected: 12/06/18 14:41
Date Received: 12/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 12/15/18 06:31
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	2.00	--	ND	7.21	--		10
1,2-Dichloroethane	ND	2.00	--	ND	8.09	--		10
Benzene	7.14	2.00	--	22.8	6.39	--		10
Toluene	13.9	2.00	--	52.4	7.54	--		10
Ethylbenzene	2.91	2.00	--	12.6	8.69	--		10
p/m-Xylene	12.7	4.00	--	55.2	17.4	--		10
o-Xylene	4.29	2.00	--	18.6	8.69	--		10
Naphthalene	ND	2.00	--	ND	10.5	--		10

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	94		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	94		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/14/18 17:47

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG1189660-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG1189660-3								
Vinyl chloride	112		-		70-130	-		
1,1-Dichloroethene	111		-		70-130	-		
trans-1,2-Dichloroethene	110		-		70-130	-		
1,1-Dichloroethane	114		-		70-130	-		
Methyl tert butyl ether	118		-		70-130	-		
cis-1,2-Dichloroethene	114		-		70-130	-		
1,2-Dichloroethane	112		-		70-130	-		
1,1,1-Trichloroethane	120		-		70-130	-		
Benzene	103		-		70-130	-		
Trichloroethene	113		-		70-130	-		
Toluene	110		-		70-130	-		
Tetrachloroethene	110		-		70-130	-		
Ethylbenzene	113		-		70-130	-		
p/m-Xylene	114		-		70-130	-		
o-Xylene	118		-		70-130	-		
Naphthalene	120		-		70-130	-		

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1850282
Report Date: 12/17/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1189660-5 QC Sample: L1850282-02 Client ID: SG-2						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	ND	ND	ppbV	NC		25
Toluene	8.08	8.04	ppbV	0		25
Ethylbenzene	ND	ND	ppbV	NC		25
p/m-Xylene	7.64	7.57	ppbV	1		25
o-Xylene	3.19	3.22	ppbV	1		25
Naphthalene	ND	ND	ppbV	NC		25

Serial_No:12171815:14

Project Name: PLAY PALS

Project Number: 12-414.2-18

Lab Number: L1850282

Report Date: 12/17/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1850282-01	SG-1	0852	SV200	12/04/18	280185		-	-	-	Pass	222	219	1
L1850282-01	SG-1	451	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.2	0.69	-	-	-	-
L1850282-02	SG-2	0685	SV200	12/04/18	280185		-	-	-	Pass	220	213	3
L1850282-02	SG-2	532	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.8	0.65	-	-	-	-
L1850282-03	SG-3	0568	SV200	12/04/18	280185		-	-	-	Pass	198	182	8
L1850282-03	SG-3	2608	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.2	0.75	-	-	-	-
L1850282-04	SG-4	0526	SV200	12/04/18	280185		-	-	-	Pass	221	221	0
L1850282-04	SG-4	366	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.0	0.65	-	-	-	-
L1850282-05	SG-5	0664	SV200	12/04/18	280185		-	-	-	Pass	219	209	5
L1850282-05	SG-5	468	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.2	0.55	-	-	-	-
L1850282-06	SG-6	01051	SV200	12/04/18	280185		-	-	-	Pass	218	209	4
L1850282-06	SG-6	403	2.7L Can	12/04/18	280185	L1848913-02	Pass	-29.7	0.62	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 11/30/18 10:31
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	77		60-140
Bromochloromethane	84		60-140
chlorobenzene-d5	80		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 11/30/18 10:31
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1848913
Report Date: 12/17/18

Air Canister Certification Results

Lab ID: L1848913-02
Client ID: CAN 1729 SHELF 3
Sample Location:

Date Collected: 11/29/18 16:00
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	80		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	82		60-140

Serial_No:12171815:14

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
N/A	Present/Intact

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1850282-01A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850282-02A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850282-03A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850282-04A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850282-05A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1850282-06A	Canister - 2.7 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850282
Report Date: 12/17/18

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:12171815:14

AIR ANALYSIS

ALPHA ANALYTICAL — CHAIN OF CUSTODY

PAGE 1 OF 2

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/7/18

ALPHA Job #: L1850282

Client Information

Client: ARM ENV. SVCS INC.
Address: 210 FIRST STREET SOUTH EXT
COLUMBIA SC 29209
Phone: 803-783-3314
Fax: 803-783-2587
Email: RCICCOLELLA@ARMENV.COM
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: PLAY PALS
Project Location: 1246 DOTHAN RD
Project #: 12-414.2-18
Project Manager: RICHARD CICCOLELLA
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #: 12-414.2-18

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
EPA	OSWER/VISL	RES

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☑ PLEASE LIMIT REPORTING TO ATTACHED LIST

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I.D. Can	I.D. - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
50282.01	SG-1	12-6-18	1237	1252	29.53	0	SV	RC	2.7	457	0852	X					PID = 11.2 ppm
.02	SG-2	12-6-18	1300	1315	29.63	0	SV	RC	2.7	532	0685	X					PID = 2.3
.03	SG-3	12-6-18	1322	1340	29.61	0	SV	RC	2.7	2608	0568	X					PID = 1.4
.04	SG-4	12-6-18	1351	1406	29.62	0	SV	RC	2.7	366	0526	X					PID = 1.0
.05	SG-5	12-6-18	1410	1426	29.89	0	SV	RC	2.7	468	0664	X					PID = 1.1
.06	SG-6	12-6-18	1425	1441	29.90	0	SV	RC	2.7	403	01051	X					PID = 3.8

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Fed Ex	12-6-18/1830	Fed Ex	
		[illegible] AAC	12/7/18 12:16

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

L1850282

12-6-18

ARM ENVIRONMENTAL SERVICES

For Play Pals site, 1246 Dothan Road, Columbia, SC

*Please limit reporting to the following list:

- Methyl Tert Butyl Ether
- 1,2-Dichloroethane
- Benzene
- Toluene
- Ethylbenzene
- p/m Xylene
- o-Xylene
- Naphthalene

ANALYTICAL REPORT

Lab Number:	L1850888
Client:	ARM Environmental Services, Inc. 1210 First Street South Ext. Columbia, SC 29209
ATTN:	Richard Ciccolella
Phone:	(803) 783-3314
Project Name:	PLAY PALS
Project Number:	12-414.2-18
Report Date:	12/18/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Serial_No:12181812:57

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1850888-01	A-5	AIR	1246 DOTHAN RD.	12/07/18 19:27	12/11/18
L1850888-02	A-6	AIR	1246 DOTHAN RD.	12/07/18 19:35	12/11/18

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 7, 2018. The canister certification results are provided as an addendum.

The WG1189882-3 LCS recovery for tert-butyl alcohol (135%) is above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of this analyte.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative

Date: 12/18/18

AIR

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

SAMPLE RESULTS

Lab ID: L1850888-01
Client ID: A-5
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/07/18 19:27
Date Received: 12/11/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/16/18 02:58
Analyst: MB

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	4.78	0.200	--	15.3	0.639	--		1
Toluene	21.6	0.200	--	81.4	0.754	--		1
Ethylbenzene	3.54	0.200	--	15.4	0.869	--		1
p/m-Xylene	14.6	0.400	--	63.4	1.74	--		1
o-Xylene	10.8	0.200	--	46.9	0.869	--		1
Naphthalene	0.610	0.200	--	3.20	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	99		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	102		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

SAMPLE RESULTS

Lab ID: L1850888-02
Client ID: A-6
Sample Location: 1246 DOTHAN RD.

Date Collected: 12/07/18 19:35
Date Received: 12/11/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/16/18 03:38
Analyst: MB

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	18.0	0.200	--	57.5	0.639	--		1
Toluene	92.1	0.200	--	347	0.754	--		1
Ethylbenzene	15.2	0.200	--	66.0	0.869	--		1
p/m-Xylene	61.0	0.400	--	265	1.74	--		1
o-Xylene	53.2	0.200	--	231	0.869	--		1
Naphthalene	6.94	0.200	--	36.4	1.05	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	100		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	100		60-140

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/15/18 15:18

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG1189882-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG1189882-3								
Chlorodifluoromethane	90		-		70-130	-		
Propylene	127		-		70-130	-		
Propane	93		-		70-130	-		
Dichlorodifluoromethane	96		-		70-130	-		
Chloromethane	96		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98		-		70-130	-		
Methanol	124		-		70-130	-		
Vinyl chloride	119		-		70-130	-		
1,3-Butadiene	101		-		70-130	-		
Butane	114		-		70-130	-		
Bromomethane	122		-		70-130	-		
Chloroethane	116		-		70-130	-		
Ethyl Alcohol	104		-		70-130	-		
Dichlorofluoromethane	74		-		70-130	-		
Vinyl bromide	107		-		70-130	-		
Acrolein	88		-		70-130	-		
Acetone	122		-		70-130	-		
Acetonitrile	114		-		70-130	-		
Trichlorofluoromethane	113		-		70-130	-		
iso-Propyl Alcohol	122		-		70-130	-		
Acrylonitrile	89		-		70-130	-		
Pentane	128		-		70-130	-		
Ethyl ether	122		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG1189882-3								
1,1-Dichloroethene	114		-		70-130	-		
tert-Butyl Alcohol	135	Q	-		70-130	-		
Methylene chloride	95		-		70-130	-		
3-Chloropropene	128		-		70-130	-		
Carbon disulfide	88		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	117		-		70-130	-		
trans-1,2-Dichloroethene	113		-		70-130	-		
1,1-Dichloroethane	114		-		70-130	-		
Methyl tert butyl ether	87		-		70-130	-		
Vinyl acetate	103		-		70-130	-		
2-Butanone	101		-		70-130	-		
cis-1,2-Dichloroethene	110		-		70-130	-		
Ethyl Acetate	112		-		70-130	-		
Chloroform	100		-		70-130	-		
Tetrahydrofuran	101		-		70-130	-		
2,2-Dichloropropane	84		-		70-130	-		
1,2-Dichloroethane	109		-		70-130	-		
n-Hexane	101		-		70-130	-		
Isopropyl Ether	93		-		70-130	-		
Ethyl-Tert-Butyl-Ether	95		-		70-130	-		
1,2-Dichloroethene (total)	112		-			-		
1,2-Dichloroethene (total)	112		-			-		
1,1,1-Trichloroethane	96		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG1189882-3								
1,1-Dichloropropene	84		-		70-130	-		
Benzene	84		-		70-130	-		
Carbon tetrachloride	92		-		70-130	-		
Cyclohexane	101		-		70-130	-		
Tertiary-Amyl Methyl Ether	81		-		70-130	-		
Dibromomethane	95		-		70-130	-		
1,2-Dichloropropane	102		-		70-130	-		
Bromodichloromethane	97		-		70-130	-		
1,4-Dioxane	104		-		70-130	-		
Trichloroethene	95		-		70-130	-		
2,2,4-Trimethylpentane	106		-		70-130	-		
Methyl Methacrylate	106		-		70-130	-		
Heptane	98		-		70-130	-		
cis-1,3-Dichloropropene	89		-		70-130	-		
4-Methyl-2-pentanone	101		-		70-130	-		
trans-1,3-Dichloropropene	77		-		70-130	-		
1,1,2-Trichloroethane	96		-		70-130	-		
Toluene	107		-		70-130	-		
1,3-Dichloropropane	87		-		70-130	-		
2-Hexanone	109		-		70-130	-		
Dibromochloromethane	112		-		70-130	-		
1,2-Dibromoethane	95		-		70-130	-		
Butyl Acetate	87		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG1189882-3								
Octane	102		-		70-130	-		
Tetrachloroethene	102		-		70-130	-		
1,1,1,2-Tetrachloroethane	100		-		70-130	-		
Chlorobenzene	102		-		70-130	-		
Ethylbenzene	110		-		70-130	-		
p/m-Xylene	110		-		70-130	-		
Bromoform	110		-		70-130	-		
Styrene	97		-		70-130	-		
1,1,2,2-Tetrachloroethane	113		-		70-130	-		
o-Xylene	116		-		70-130	-		
1,2,3-Trichloropropane	95		-		70-130	-		
Nonane (C9)	103		-		70-130	-		
Isopropylbenzene	100		-		70-130	-		
Bromobenzene	97		-		70-130	-		
o-Chlorotoluene	104		-		70-130	-		
n-Propylbenzene	106		-		70-130	-		
p-Chlorotoluene	106		-		70-130	-		
4-Ethyltoluene	103		-		70-130	-		
1,3,5-Trimethylbenzene	102		-		70-130	-		
tert-Butylbenzene	124		-		70-130	-		
1,2,4-Trimethylbenzene	107		-		70-130	-		
Decane (C10)	114		-		70-130	-		
Benzyl chloride	118		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG1189882-3								
1,3-Dichlorobenzene	108		-		70-130	-		
1,4-Dichlorobenzene	106		-		70-130	-		
sec-Butylbenzene	100		-		70-130	-		
p-Isopropyltoluene	104		-		70-130	-		
1,2-Dichlorobenzene	107		-		70-130	-		
n-Butylbenzene	121		-		70-130	-		
1,2-Dibromo-3-chloropropane	99		-		70-130	-		
Undecane	120		-		70-130	-		
Dodecane (C12)	123		-		70-130	-		
1,2,4-Trichlorobenzene	101		-		70-130	-		
Naphthalene	97		-		70-130	-		
1,2,3-Trichlorobenzene	96		-		70-130	-		
Hexachlorobutadiene	109		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1189882-5 QC Sample: L1850894-01 Client ID: DUP Sample						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	0.731	0.744	ppbV	2		25
Toluene	1.47	1.49	ppbV	1		25
Ethylbenzene	ND	ND	ppbV	NC		25
p/m-Xylene	0.493	0.504	ppbV	2		25
o-Xylene	ND	ND	ppbV	NC		25
Naphthalene	ND	ND	ppbV	NC		25

Serial_No:12181812:57

Project Name: PLAY PALS

Project Number: 12-414.2-18

Lab Number: L1850888

Report Date: 12/18/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1850888-01	A-5	0335	Flow 5	12/07/18	280755		-	-	-	Pass	10.0	10.0	0
L1850888-01	A-5	707	6.0L Can	12/07/18	280755	L1849034-03	Pass	-29.8	-3.0	-	-	-	-
L1850888-02	A-6	0203	Flow 5	12/07/18	280755		-	-	-	Pass	9.9	8.2	19
L1850888-02	A-6	1644	6.0L Can	12/07/18	280755	L1849034-03	Pass	-29.7	-8.0	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 11/30/18 19:24
Analyst: RY

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	95		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 11/30/18 19:24
Analyst: RY

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849034
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849034-03
Client ID: CAN 706 SHELF 54
Sample Location:

Date Collected: 11/30/18 08:30
Date Received: 11/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	96		60-140

Serial_No:12181812:57

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	***Custody Seal***
N/A	Absent

Container Information

Container ID	***Container Type***	***Cooler***	***Initial pH***	***Final pH***	***Temp deg C***	***Pres***	***Seal***	***Frozen Date/Time***	***Analysis(*)***
L1850888-01A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-LL(30)
L1850888-02A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The lower value for the two columns has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P	- The RPD between the results for the two columns exceeds the method-specified criteria.
Q	- The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R	- Analytical results are from sample re-analysis.
RE	- Analytical results are from sample re-extraction.
S	- Analytical results are from modified screening analysis.
J	- Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
ND	- Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: PLAY PALS
Project Number: 12-414.2-18

Lab Number: L1850888
Report Date: 12/18/18

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial No:12181812:57

AIR ANALYSIS

PAGE 1 OF 2

Date Rec'd in Lab: 12/11/18

ALPHA Job #: L1850888

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: ARM ENV. SVCS, INC.
Address: 1210 FIRST STREET SOUTH EXT.
COLUMBIA SC 29209
Phone: 803 783 3314
Fax: 803 783 2587
Email: RICCOLELLA@ARMENV.COM

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: PLAY PALS
Project Location: 1246 DOTHAN RD
Project #: 12-414.2-18
Project Manager: RICHARD CICCOLELLA
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #: 12-414.2-18

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
EPA	OSWER/VISL	RES

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ PLEASE LIMIT REPORTING TO ATTACHED LIST

ANALYSIS

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15	☐	Sample Comments (i.e. PID)
50888.01	A-5	12-7-18	1123	1927	30.67	4.40	AA	AD	6L	707	0335	X						PID = 0.4 PPM
.02	A-6	12-7-18	1130	1935	30.13	9.21	AA	AD	6L	1644	0203	X						PID = 2.5 PPM

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Fed Ex	12-10-18/1600	Fed Ex	12/11/18 1246

12-10-18
~~12-6-18~~

ARM ENVIRONMENTAL SERVICES

For Play Pals site, 1246 Dothan Road, Columbia, SC

* Please limit reporting to the following:

- Methyl Tert Butyl Ether
- 1,2-Dichloroethane
- Benzene
- Toluene
- Ethylbenzene
- p/m Xylene
- o–Xylene
- Naphthalene

ALPHA ANALYTICAL

ANALYTICAL REPORT

Lab Number:	L1850894
Client:	ARM Environmental Services, Inc. 1210 First Street South Ext. Columbia, SC 29209
ATTN:	Richard Ciccolella
Phone:	(803) 783-3314
Project Name:	1238 DOTHAN RD.
Project Number:	12-414.2-18
Report Date:	12/18/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Serial_No:12181812:59

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1850894-01	A-7	AIR	1238 DOTHAN RD.	12/07/18 19:42	12/11/18
L1850894-02	UNUSED 2448	AIR	1238 DOTHAN RD.		12/11/18

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 7, 2018. The canister certification results are provided as an addendum.

The WG1189882-3 LCS recovery for tert-butyl alcohol (135%) is above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of this analyte.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative

Date: 12/18/18

AIR

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

SAMPLE RESULTS

Lab ID: L1850894-01
Client ID: A-7
Sample Location: 1238 DOTHAN RD.

Date Collected: 12/07/18 19:42
Date Received: 12/11/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/16/18 01:39
Analyst: MB

	ppbV			ug/m3				Dilution
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Factor**
Volatile Organics in Air - Mansfield Lab								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	0.731	0.200	--	2.34	0.639	--		1
Toluene	1.47	0.200	--	5.54	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	0.493	0.400	--	2.14	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	96		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	95		60-140

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 12/15/18 15:18

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG1189882-4								
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1189882-3								
Chlorodifluoromethane	90		-		70-130	-		
Propylene	127		-		70-130	-		
Propane	93		-		70-130	-		
Dichlorodifluoromethane	96		-		70-130	-		
Chloromethane	96		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98		-		70-130	-		
Methanol	124		-		70-130	-		
Vinyl chloride	119		-		70-130	-		
1,3-Butadiene	101		-		70-130	-		
Butane	114		-		70-130	-		
Bromomethane	122		-		70-130	-		
Chloroethane	116		-		70-130	-		
Ethyl Alcohol	104		-		70-130	-		
Dichlorofluoromethane	74		-		70-130	-		
Vinyl bromide	107		-		70-130	-		
Acrolein	88		-		70-130	-		
Acetone	122		-		70-130	-		
Acetonitrile	114		-		70-130	-		
Trichlorofluoromethane	113		-		70-130	-		
iso-Propyl Alcohol	122		-		70-130	-		
Acrylonitrile	89		-		70-130	-		
Pentane	128		-		70-130	-		
Ethyl ether	122		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1189882-3								
1,1-Dichloroethene	114		-		70-130	-		
tert-Butyl Alcohol	135	Q	-		70-130	-		
Methylene chloride	95		-		70-130	-		
3-Chloropropene	128		-		70-130	-		
Carbon disulfide	88		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	117		-		70-130	-		
trans-1,2-Dichloroethene	113		-		70-130	-		
1,1-Dichloroethane	114		-		70-130	-		
Methyl tert butyl ether	87		-		70-130	-		
Vinyl acetate	103		-		70-130	-		
2-Butanone	101		-		70-130	-		
cis-1,2-Dichloroethene	110		-		70-130	-		
Ethyl Acetate	112		-		70-130	-		
Chloroform	100		-		70-130	-		
Tetrahydrofuran	101		-		70-130	-		
2,2-Dichloropropane	84		-		70-130	-		
1,2-Dichloroethane	109		-		70-130	-		
n-Hexane	101		-		70-130	-		
Isopropyl Ether	93		-		70-130	-		
Ethyl-Tert-Butyl-Ether	95		-		70-130	-		
1,2-Dichloroethene (total)	112		-			-		
1,2-Dichloroethene (total)	112		-			-		
1,1,1-Trichloroethane	96		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1189882-3								
1,1-Dichloropropene	84		-		70-130	-		
Benzene	84		-		70-130	-		
Carbon tetrachloride	92		-		70-130	-		
Cyclohexane	101		-		70-130	-		
Tertiary-Amyl Methyl Ether	81		-		70-130	-		
Dibromomethane	95		-		70-130	-		
1,2-Dichloropropane	102		-		70-130	-		
Bromodichloromethane	97		-		70-130	-		
1,4-Dioxane	104		-		70-130	-		
Trichloroethene	95		-		70-130	-		
2,2,4-Trimethylpentane	106		-		70-130	-		
Methyl Methacrylate	106		-		70-130	-		
Heptane	98		-		70-130	-		
cis-1,3-Dichloropropene	89		-		70-130	-		
4-Methyl-2-pentanone	101		-		70-130	-		
trans-1,3-Dichloropropene	77		-		70-130	-		
1,1,2-Trichloroethane	96		-		70-130	-		
Toluene	107		-		70-130	-		
1,3-Dichloropropane	87		-		70-130	-		
2-Hexanone	109		-		70-130	-		
Dibromochloromethane	112		-		70-130	-		
1,2-Dibromoethane	95		-		70-130	-		
Butyl Acetate	87		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1189882-3								
Octane	102		-		70-130	-		
Tetrachloroethene	102		-		70-130	-		
1,1,1,2-Tetrachloroethane	100		-		70-130	-		
Chlorobenzene	102		-		70-130	-		
Ethylbenzene	110		-		70-130	-		
p/m-Xylene	110		-		70-130	-		
Bromoform	110		-		70-130	-		
Styrene	97		-		70-130	-		
1,1,2,2-Tetrachloroethane	113		-		70-130	-		
o-Xylene	116		-		70-130	-		
1,2,3-Trichloropropane	95		-		70-130	-		
Nonane (C9)	103		-		70-130	-		
Isopropylbenzene	100		-		70-130	-		
Bromobenzene	97		-		70-130	-		
o-Chlorotoluene	104		-		70-130	-		
n-Propylbenzene	106		-		70-130	-		
p-Chlorotoluene	106		-		70-130	-		
4-Ethyltoluene	103		-		70-130	-		
1,3,5-Trimethylbenzene	102		-		70-130	-		
tert-Butylbenzene	124		-		70-130	-		
1,2,4-Trimethylbenzene	107		-		70-130	-		
Decane (C10)	114		-		70-130	-		
Benzyl chloride	118		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG1189882-3								
1,3-Dichlorobenzene	108		-		70-130	-		
1,4-Dichlorobenzene	106		-		70-130	-		
sec-Butylbenzene	100		-		70-130	-		
p-Isopropyltoluene	104		-		70-130	-		
1,2-Dichlorobenzene	107		-		70-130	-		
n-Butylbenzene	121		-		70-130	-		
1,2-Dibromo-3-chloropropane	99		-		70-130	-		
Undecane	120		-		70-130	-		
Dodecane (C12)	123		-		70-130	-		
1,2,4-Trichlorobenzene	101		-		70-130	-		
Naphthalene	97		-		70-130	-		
1,2,3-Trichlorobenzene	96		-		70-130	-		
Hexachlorobutadiene	109		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1189882-5 QC Sample: L1850894-01 Client ID: A-7						
Methyl tert butyl ether	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
Benzene	0.731	0.744	ppbV	2		25
Toluene	1.47	1.49	ppbV	1		25
Ethylbenzene	ND	ND	ppbV	NC		25
p/m-Xylene	0.493	0.504	ppbV	2		25
o-Xylene	ND	ND	ppbV	NC		25
Naphthalene	ND	ND	ppbV	NC		25

Serial_No:12181812:59

Project Name: 1238 DOTHAN RD.

Lab Number: L1850894

Project Number: 12-414.2-18

Report Date: 12/18/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1850894-01	A-7	0967	Flow 5	12/07/18	280755		-	-	-	Pass	10.0	9.6	4
L1850894-01	A-7	2441	6.0L Can	12/07/18	280755	L1849354-03	Pass	-29.8	-4.4	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 12/04/18 09:11
Analyst: MB

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	92		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	94		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/04/18 09:11
Analyst: MB

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1849354
Report Date: 12/18/18

Air Canister Certification Results

Lab ID: L1849354-03
Client ID: CAN 905 SHELF 53
Sample Location:

Date Collected: 12/03/18 16:00
Date Received: 12/04/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	94		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	97		60-140

Serial_No:12181812:59

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	***Custody Seal***
N/A	Absent

Container Information

Container ID	***Container Type***	***Cooler***	***Initial pH***	***Final pH***	***Temp deg C***	***Pres***	***Seal***	***Frozen Date/Time***	***Analysis(*)***
L1850894-01A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-LL(30)
L1850894-02A	Canister - 6 Liter	N/A	NA			Y	Absent		CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	1238 DOTHAN RD.	**Lab Number:**	L1850894
Project Number:	12-414.2-18	**Report Date:**	12/18/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name: 1238 DOTHAN RD. **Lab Number:** L1850894

Project Number: 12-414.2-18 **Report Date:** 12/18/18

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: 1238 DOTHAN RD.
Project Number: 12-414.2-18

Lab Number: L1850894
Report Date: 12/18/18

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:12181812:59

AIR ANALYSIS

PAGE 2 OF 2

ALPHA
CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/11/18

ALPHA Job #: L1850894

Client Information

Client: ARM ENV. SVCS., INC.
Address: 1210 FIRST STREET SOUTH EXT
COLUMBIA SC 29209
Phone: 803 783 3304
Fax: 803 783 2587
Email: RCICCOLELLA@ARMENV.COM

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 1238 DOTHAN RD
Project Location: 1238 DOTHAN RD
Project #: 12-414-2-18
Project Manager: RICHARD CICCOLELLA
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #: 12-414-2-18

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
EPA	OSWER/VISL	RES

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ PLEASE LIMIT REPORTING TO ATTACHED LIST

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
0894.01	A-7	12-7-18	1138	1442	30.63	5.41	AA	AD	6L	2441	0967	X					PID = 0.1 PPM
					RETURNED UNUSED →					2448	0773						

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Richard Ciccolella FedEx	12-10-18/1000	FedEx [illegible] AAL	12/11/18 1246

12-10-18
~~12-6-18~~

ARM ENVIRONMENTAL SERVICES

For 1238 Dothan Rd
~~For Play Pals site, 1246 Dothan Road, Columbia, SC~~

*Please limit reporting to the following list:

- Methyl Tert Butyl Ether
- 1,2-Dichloroethane
- Benzene
- Toluene
- Ethylbenzene
- p/m Xylene
- o–Xylene
- Naphthalene

APPENDIX D

ASBESTOS WASTE SHIPMENT RECORD

D H E C
PROMOTE PROTECT PROSPER

Notification of Non-Friable Asbestos Abatement Project

(Contractor Form)

ASBESTOS SECTION - 2600 BULL STREET - COLUMBIA - SC - 29201
PHONE (803) 898-4289 - FAX (803) 898-4281

Office Use Only: Project License No. Issued: Date Issued:

I. *Circle One:* Original Notification/Revision (Project License No.): /Cancellation (Project License No.):

II. FACILITY OWNER: William & Bonnie Saville Trust
MAILING ADDRESS: 4509 Wade Street
CITY: Columbia STATE: SC ZIP: 29210
CONTACT PERSON: Bonnie Saville PHONE: (803) 798-3535

III. ASBESTOS REMOVAL CONTRACTOR: ARM Environmental Services, Inc. (ARM)
MAILING ADDRESS: 1210 First Street South Extension
CITY: Columbia STATE: SC ZIP: 29209
CONTACT PERSON: Sid Havird PHONE: (803) 783-3314
E-MAIL ADDRESS: shavird@armenv.com E-MAIL PERMIT ☑ OR MAIL PERMIT ☐
DHEC CONTRACTOR LICENSE NO. (If applicable): EXPIRATION DATE:
FEDERAL I.D. NUMBER: 57-0925448

IV. FACILITY NAME: Play Pals Daycare
STREET ADDRESS: (physical location preferred) 1246 Dothan Road
CITY: Columbia STATE: SC ZIP: 29210 COUNTY: Richland

V. ASBESTOS-CONTAINING MATERIALS (ACM) **TO BE REMOVED ONLY:**

TYPE (FLOORING, ROOFING, OTHER)	**AMOUNT** (SQUARE FEET, LINEAR FEET, CUBIC FEET)	**CONDITION OF THE MATERIAL**
Floor Tile & Mastic	6 Square Feet	Good

VI. SCHEDULED DATES OF REMOVAL: START DATE: 12/06/2018 COMPLETION DATE: 12/07/2018
WORK DAYS: Monday to Friday WORK HOURS: 0730 - 1900-hours

VII. DESCRIPTION OF PLANNED ABATEMENT WORK & METHOD(S) TO BE USED:
Manual removal of 6 floor tiles and associated mastic, using heat gun and mastic solvent.

VIII. WASTE DISPOSAL SITE: Loveless and Loveless Landfill
ADDRESS: 1703 Screaming Eagle Road
CITY: Lugoff STATE: SC ZIP: 29073
CONTACT PERSON: John Loveless PHONE: (803) 788-6418

IX. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:
If unexpected ACM is found, or becomes friable, ARM will stop work and renotify DHEC.

X. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

(SIGNATURE OF OWNER/OPERATOR) 12/05/2018 (DATE)

Applications must be submitted at least 4 working days prior to the scheduled start date for NESHAP-sized non-friable projects. Applications for non-friable projects smaller than a NESHAP-sized project must be submitted prior to disposal.

For additional information concerning regulatory requirements call or visit our Web site at http://www.scdhec.gov/environment/baq/asbestos.aspx

DHEC
PROMOTE PROTECT PROSPER

Asbestos Waste Shipment Record

1. SCDHEC ASBESTOS ABATEMENT PROJECT LICENSE: R1812025

Generator Information

2. Waste Generator/Owner Name & Address:	Work Site Name & Physical Address:	Waste Generator/Owner Telephone Number
Play Pals Daycare 1246 Dothan Rd Columbia, SC		( )
3. Abatement Contractor Name & Address: ARM Environmental Services 1210 1st St S Ext Columbia SC 29209		Abatement Contractor Telephone Number (803) 983 5314
4. Name of waste disposal site (WDS), mailing address, and physical site location: Lovelesss Landfill 1703 Screaming Eagle Rd Lugoff SC 29078		WDS Telephone Number: (803) 784-6418

5. Description of Waste Materials (please circle): Friable (Regulated) / Nonfriable (Nonregulated)	6. Bags of Containers: No. Type ___ Drums ___ Bags ___ Bulk Load	7. Total Quantity: m3 (yd3)
Co SFNF Floor tile mastic		1 yd3

8. Special handling instructions & additional information:

9. Generator's/Contractor's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled. The contents are in all respects in proper condition for transport by highway according to applicable international and government regulations.

Print Name:	Signature:	Date:
M. Burakiewicz	M Burakiewicz	12-12-18

Transporter Information (Acknowledgment of Receipt of Materials):

10. Name, title, address, telephone number: supervisor Michael Burakiewicz 1210 First St South Ext Columbia SC	Signature: M Burakiewicz	Date: 12-12-18
11. Name, title, address, telephone number:	Signature:	Date:

Disposal Site Operator

12. Discrepancy:

	Bags or Containers	Total Quantity

13. Waste Disposal Site Owner or Operator certification of receipt of asbestos materials covered by this manifest except as noted in Item 11.

Print Name: Shannee Gardner	Signature: S Gardner	Date: 12/12/18

Please forward a completed copy of this record to: SCDHEC, Bureau of Air Quality, Asbestos Section, 2600 Bull Street, Columbia, SC 29201
(803) 898-4389 office. (803) 898-4281 fax.

APPENDIX E

SOIL DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST TRK# 12

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

3. Generator's Name and Mailing Address [redacted] 4335 Broad River Rd. Columbia, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name: L. AuBarrier

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services, Inc. 425 Boulevard Rd. Sumter, SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL			10.490	T
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER				
c.				
d.				

G. Additonal Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Michael Faris (ARM) as agent for Fred Ceccone		11	20	18

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
BILL CRAWFORD	Bill Crawford	11	21	18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
Richard Smoot	Richard Smoot	11	21	18

NON-HAZARDOUS WASTE — GENERATOR — TRANSPORTER — FACILITY

NON-HAZARDOUS WASTE MANIFEST TK #3

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 2

3. Generator's Name and Mailing Address 4335 Broad River Rd. Columbia, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address TK Tank Services 425 Boulevard Rd. Sumter, SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL			10.445	T
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER				
c.				
d.				

G. Additonal Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Michael Faris, P.G. as agent for Fred Cecioni

Signature

Date: Month 11 Day 20 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: James Smith

Signature: James Smith

Date: Month 11 Day 24 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: James Smith

Signature: James Smith

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Richard Smart

Signature

Date: Month 11 Day 24 Year 18

NON-HAZARDOUS WASTE

F-14 © 2002 LABELMASTER (800) 621-5808 www.labelmaster.com

PRINTED ON RECYCLED PAPER USING SOYBEAN INK Printed with SOY INK

Rev. 3/95

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 3

3. Generator's Name and Mailing Address 4335 Broad River Rd. Columbia, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name: LA Barrier

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services 425 Boulevard Rd Sumter, SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL			15.925	T
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER				
c.				
d.				

G. Additonal Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Michael Faris, PG as agent for: Fred Cecchini

Signature: Michael Faris

Date: Month 11 Day 21 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Robert Baughman

Signature: Robert Baughman

Date: Month 11 Day 21 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman

Signature: Casey Newman

Date: Month 11 Day 21 Year 18

NON-HAZARDOUS WASTE

F-14 © 2002 LABELMASTER (800) 621-5808 www.labelmaster.com

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Rev. 3/95

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3383

2. Page 1 of 4

3. Generator's Name and Mailing Address 4335 Broad River Rd. Columbia, SC

4. Generator's Phone ( )

5. Transporter 1 Company Name: L. A. Barnes

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services 425 Boulevard Rd. Sumter, SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL			11.64	T
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER				
c.				
d.				

G. Additonal Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Michael Farris as agent for Fred Cecchini

Signature

Date: Month 11 Day 21 Year 18

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Richard Smoot

Signature

Date: Month 11 Day 26 Year 18

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Truck #12

1

CERTIFIED WEIGHT
HARKINS MOVING & STORAGE, INC.
885 S. Guignard Drive, Sumter, SC 29150
(803) 775-2700

Customers Name TK Tank EWT

Address 28120

Commodity

Carrier

Lbs. Gross 07:41 PM11/21/2018 49100 lb G

Lbs. Tare

Lbs. Net

Driver ON OFF

Fee Weigher Clay Sink

Truck # 13

2

CERTIFIED WEIGHT
HARKINS MOVING & STORAGE, INC.
885 S. Guignard Drive, Sumter, SC 29150
(803) 775-2700

Customers Name TK Tank EWT

Address 28120

Commodity

Carrier

Lbs. Gross 07:41 PM11/21/2018 49100 lb G

Lbs. Tare

Lbs. Net 10.5

Driver ON OFF

Fee Weigher Clay Sink

CERTIFIED WEIGHT 3

HARKINS MOVING & STORAGE, INC.

885 S. Guignard Drive, Sumter, SC 29150

(803) 775-2700

Customers Name TK Tank

Address _____

Commodity _____

Carrier _____

28210

Lbs. Gross _____ 09:00 PM11/21/2018 60060 lb 6

Lbs. Tare _____

Lbs. Net _____

Driver ON ____ OFF ✓

Fee _____ Weigher Donna McMillan

CERTIFIED WEIGHT 4

HARKINS MOVING & STORAGE, INC.

885 S. Guignard Drive, Sumter, SC 29150

(803) 775-2700

Customers Name ARM

Address _____

Commodity _____

Carrier _____

07:03 PM11/26/2018 51280 lb 6

Lbs. Gross _____ 28,000

Lbs. Tare _____

Lbs. Net _____

Driver ON ____ OFF ✓

Fee _____ Weigher _____

CERTIFICATE OF DISPOSAL

Certify to all that

T K TANK SERVICES, INC.

OF TONS 48.5 TONS Contaminant: NONHAZARDOUS PETROLEUM CONTAMINATED SOIL/PRODUCT

This is to certify that the above SOIL/product has been disposed of

In accordance with EPA regulations on PETROLEUM CONTAMINATED SOIL

4335 BROAD RIVER ROAD

11/28/2018

DATE

SIGNATURE

APPENDIX F

WATER / PRODUCT DISPOSAL MANIFESTS

NON-HAZARDOUS WASTE MANIFEST

Please print or type. (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3169

2. Page 1 of

3. Generator's Name and Mailing Address 4335 Broad River Rd Columbia, S.C

4. Generator's Phone ( )

5. Transporter 1 Company Name ARM Env. Svcs.

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
TK Tank Services
425 Boulevard Rd
Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	3676	Gal
c.				
d.				

G. Additional Descriptions for Materials Listed Above
1450 gallons - fuel
2426_Water

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Billy Pittenger Agent for Fred Cecchini | Signature: Billy Pittenger | Date: Month 11 Day 26 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pittenger | Signature: Billy Pittenger | Date: Month 11 Day 26 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 11 Day 26 Year 18

NON-HAZARDOUS WASTE

35635338
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY©

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 11-26-18

SCALE: 38 208

LOCATION: PILOT TRAVEL CENTER
I 20 EXIT 92
LUGOFF SC

STEER AXLE	12680 lb
DRIVE AXLE	48140 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	60820 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

Manifest 3169 3676 gallons

IMPRINT SEAL HERE (IF APPLICABLE)

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED: FREIGHT ALL KINDS

COMPANY: ARM ENVIROMENTAL TRACTOR #: 1 TRAILER #:

WEIGH NUMBER: 5338

FEE: $11.50

WEIGHMASTER OR WEIGHER SIGNATURE: JA JENNY HUMPHREY

TICKET # OF FULL $ WEIGH (IF REWEIGH):

DRIVER IN TRUCK UNLESS CHECKED HERE:

CUSTOMER COPY

© CAT Scale® Reg 3063 11/17

NON-HAZARDOUS WASTE MANIFEST

(Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3170

2. Page 1 of

3. Generator's Name and Mailing Address 4335 Broad River RD Columbia, S.C

12-414.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name ARM Env. SVCS

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address TK Tank Services 425 Boulevard RD Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	1434	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: 1434 gallons product

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Billy Pittenger Agent for Fred Cecchini | Signature: Billy Pittenger | Date: Month 11 Day 27 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pittenger | Signature: Billy Pittenger | Date: Month 11 Day 27 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 11 Day 27 Year 18

NON-HAZARDOUS WASTE

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Rev. 3/95

35635392
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY®

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

*The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 11-27-18

16:32
35635392

SCALE: 203
LOCATION: PILOT TRAVEL CENTER
I 20 EXIT 92
LUGOFF SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	10260 lb
DRIVE AXLE	31860 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	42120 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

IMPRINT SEAL HERE (IF APPLICABLE)

manifest 3170
1434 gallons

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED FREIGHT ALL KINDS

COMPANY ARM ENVIROMENTAL TRACTOR # 3 TRAILER # 0

WEIGH NUMBER
5392

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE JENNY HUMPHREY

TICKET # OF FULL $ WEIGH (IF REWEIGH)

STOMER COPY

© CAT Scale® Reg 3063 11/17

DRIVER IN TRUCK UNLESS CHECKED HERE: ___

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3171A

2. Page 1 of

3. Generator's Name and Mailing Address 4335 Broad River Rd Columbia, S.C

12-414.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name: ARM Env. Svcs.

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services 425 Boulevard Rd Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	582	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: gallons product - 35

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations

Printed/Typed Name: Billy Pittenger Agent for Fred Cucchini | Signature: Billy Pittenger | Date: Month 11 Day 28 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pittenger | Signature: Billy Pittenger | Date: Month 11 Day 28 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 11 Day 28 Year 18

NON-HAZARDOUS WASTE

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Rev. 3/95

53682327

TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY©

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 11-28-18

18:05

53682327 **SCALE:** 1503

LOCATION: FLYING J / PILOT
I 20 EXIT 70
COLUMBIA SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	9680 lb
DRIVE AXLE	25340 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	35020 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

IMPRINT SEAL HERE (IF APPLICABLE)

manifest 3171
582 gallons

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED: FREIGHT ALL KINDS

COMPANY: ARM

TRACTOR #: 3 TRAILER #: 0

WEIGH NUMBER 2327

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE: PSAHA HENRY

TICKET # OF FULL $ WEIGH (IF REWEIGH)

DRIVER IN TRUCK UNLESS CHECKED HERE: ☐

CUSTOMER COPY

©CAT Scale® Reg 3067 7/18

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3391

2. Page 1 of

3. Generator's Name and Mailing Address Gibson one stop
291 W. Palmetto St
Florence SC

25-410.10-18

4. Generator's Phone ( )

5. Transporter 1 Company Name ARM

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address TK Tank Ser
425 Boulevard Rd Sumter SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	2261	gal
c.				
d. 62991		Product		

G. Additional Descriptions for Materials Listed Above
12-H14.2-18-BP. Broad River Rd 1,264 991
25-410.10-19 Gibson one stop 997 991
2,261

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Agent for Gibson / Broad River Rd
Denver Thompson

Signature

Date: Month 12 Day 3 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Denver Thompson

Signature

Date: Month 12 Day 3 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Richard Smoot

Signature

Date: Month 12 Day 18 Year 18

NON-HAZARDOUS WASTE

13286
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.®

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY®

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

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2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 12-03-18

09:21

SCALE: 1868

53713286 LOCATION:
LOVES COUNTRY STORES
I-77 AND HWY 48 EXIT 5
CAYCE SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	11000	lb
DRIVE AXLE	28780	lb
TRAILER AXLE	00	lb
GROSS WEIGHT	39780	lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

IMPRINT SEAL HERE (IF APPLICABLE)

391

1,269 gal

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED FREIGHT ALL KINDS

COMPANY ARM ENVIRONMENTAL TRACTOR # 2 TRAILER # 0

WEIGH NUMBER 3286

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE LAKEYTA RICHMOND

TICKET # OF FULL $ WEIGH (IF REWEIGH) 18,860

CUSTOMER COPY

© CAT Scale Reg 3057 7/18

DRIVER IN TRUCK UNLESS OTHERWISE NOTED

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3393

2. Page 1 of

3. Generator's Name and Mailing Address 4335 Broad River Rd Columbia SC BP

12-4/4.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name ARM

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address TK TANK SER 425 Boulevard Rd Sumter SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	2,531	gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: #102 Prod

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Agent FOR Broad River Rd BP

Printed/Typed Name: Denver Thompson | Signature | Date: Month 12 Day 19 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Denver Thompson | Signature | Date: Month 12 Day 16 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this maifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 12 Day 10 Year 18

NON-HAZARDOUS WASTE

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Rev. 3/95

53713561
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY©

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

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1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 12-09-18

16:34 SCALE: 1868

53713561 LOCATION: LOVES COUNTRY STORES
I-77 AND HWY 48 EXIT 5
CAYCE SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	13580 lb
DRIVE AXLE	27820 lb
TRAILER AXLE	00 lb
GROSS WEIGHT	41400 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

3393

IMPRINT SEAL HERE (IF APPLICABLE)

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED FREIGHT ALL KINDS

COMPANY ARM ENVIRONMENTAL TRACTOR # 2 TRAILER # 0

WEIGH NUMBER 3561

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE KEVIN NEALS

TICKET # OF FULL $ WEIGH (IF REWEIGH)

CUSTOMER COPY

© CAT Scale® Reg 3067 7/18

DRIVER IN TRUCK UNLESS CHECKED HERE: ☐

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3175

2. Page 1 of

3. Generator's Name and Mailing Address: Fred Cecchini, 4335 Broad River Rd, Columbia, S.C

12-414.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name: ARM Env. Svcs

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services, 425 Boulevard RD, Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	3311	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: 198 gallons fuel

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Billy Pitenger Agent for Fred Cecchini | Signature: Billy Pitenger | Date: Month 12 Day 15 Year 18

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pitenger | Signature: Billy Pitenger | Date: Month 12 Day 15 Year 18

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 12 Day 15 Year 18

NON-HAZARDOUS WASTE

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Rev. 3/05

45416022

TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY©

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
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2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 12-15-18

SCALE: 217

LOCATION: TA COLUMBIA
I 20 US 21 EXT 71
COLUMBIA SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	17220 lb
DRIVE AXLE	40560 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	57780 lb

IMPRINT SEAL HERE (IF APPLICABLE)

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

3311 gallons manifest 3175

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED FREIGHT ALL KINDS

COMPANY ARM TRACTOR # _____ TRAILER # _____

WEIGH NUMBER 6022

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE _____ DANIEL BROWER

TICKET # OF FULL $ WEIGH (IF REWEIGH) _____

DRIVER IN TRUCK UNLESS CHECKED HERE: ☐

CUSTOMER COPY

© CAT Scale® Reg 3063 11/17

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3213

2. Page 1 of

3. Generator's Name and Mailing Address
Fred Cecchini
4335 Broad River Rd
Columbia, S.C

12-414.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name
ARM Env. Svcs.

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
TK Tank Services
425 Boulevard Rd
Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	3842	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above
110 gallons - fuel

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Billy Pittenger - Agent for Fred Cecchini	Billy Pittenger	1	3	19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
Billy Pittenger	Billy Pittenger	1	3	19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
Ashley Turner	Ashley	1	3	19

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Rev. 3/95

54745529
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY©

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IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DRIVER IN TRUCK UNLESS CHECKED HERE

DATE: 1-03-19

18:02 **SCALE:** 389

54745529 **LOCATION:** PILOT TRAVEL CENTER
I 26 EXIT 115
CAYCE SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	13080 lb
DRIVE AXLE	49460 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	62540 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

IMPRINT SEAL HERE (IF APPLICABLE)

manifest #	gallons	total 3882 gallons
3211	20	
3212	20	
3213	3842	

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED: FREIGHT ALL KINDS

COMPANY: ARM ENVIRONMENTAL TRACTOR #: 3 TRAILER #: 0

WEIGH NUMBER 5529

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE: Lakeita Simons
LAKEITA SIMONS

TICKET # OF FULL $ WEIGH (IF REWEIGH)

USTOMER COPY

© CAT Scale® Reg 3067 7/18

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE

GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No. 3214	2. Page 1 of
3. Generator's Name and Mailing Address: Fred Cucchini, 4335 Broad River Rd, Columbia, S.C		12-414.2-18	
4. Generator's Phone ( )			
5. Transporter 1 Company Name: ARM Env. Svcs.	6. US EPA ID Number	A. State Transorter's ID	
		B. Transporter 1 Phone	
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID	
		D. Transporter 2 Phone	
9. Designated Facility Name and Site Address: Tk Tank Services, 425 Boulevard Rd, Sumter, S.C	10. US EPA ID Number	E. State Facility's ID	
		F. Facility's Phone	

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	4026	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: 75 gallons fuel

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date (Month / Day / Year)
Billy Pittenger Agent for Fred Cucchini	Billy Pittenger	1 / 7 / 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)
Billy Pittenger	Billy Pittenger	1 / 7 / 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month / Day / Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this maifest, except as noted in item 19.

Printed/Typed Name	Signature	Date (Month / Day / Year)

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3216

2. Page 1 of

3. Generator's Name and Mailing Address: Fred Cecchini, 4335 Broad River Rd, Columbia, S.C

12-414.2-18

4. Generator's Phone ( )

5. Transporter 1 Company Name: ARM

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: TK Tank Services, 425 Boulevard Rd, Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	2261	Gal
c.				
d.				

G. Additional Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

GENERATOR

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Billy Pittenger Agent for

Signature: Billy Pittenger

Date: Month 1 Day 10 Year 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pittenger

Signature: Billy Pittenger

Date: Month 1 Day 10 Year 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Ashley Turner

Signature

Date: Month 1 Day 10 Year 19

53657272

TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY®

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 1-10-19

12:21
53657272

SCALE: 203

LOCATION: PILOT TRAVEL CENTER
I 20 EXIT 92
LUGOFF SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	16080	lb
DRIVE AXLE	32940	lb
TRAILER AXLE	00	lb
* GROSS WEIGHT	49020	lb

IMPRINT SEAL HERE (IF APPLICABLE)

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

manifest 3216 2261 gallons

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED FREIGHT ALL KINDS

COMPANY ARM ENVIROMENTAL TRACTOR # 03 TRAILER # 0

WEIGH NUMBER
7272

FEE $11.50

WEIGHMASTER OR WEIGHER SIGNATURE C Green
CHAVONNA GREEN

TICKET # OF FULL $ WEIGH (IF REWEIGH)

JSTOMER COPY

DRIVER IN TRUCK UNLESS CHECKED HERE: ☐

© CAT Scale® Reg 3067 7/18

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 3416

2. Page 1 of

3. Generator's Name and Mailing Address
Broad River BP
4335 Broad River Rd
Columbia SC

4. Generator's Phone ( )

12-414.2-18

5. Transporter 1 Company Name
ARM Environmental

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
TK Tank Serv.
4125 Boulevard Rd
Sumter SC

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	1,398	gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

NON-HAZARDOUS WASTE

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Agent FOR Broad River BP

Printed/Typed Name: Denver Thompson | Signature | Date: Month 1 Day 26 Year 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Mark Kolb | Signature: Mark Kolb | Date: Month 1 Day 28 Year 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this maifest, except as noted in item 19.

Printed/Typed Name: Corey Newman | Signature | Date: Month 1 Day 28 Year 19

54959535
TICKET NUMBER

CERTIFIED AUTOMATED TRUCK SCALE

CAT SCALE COMPANY
P.O. BOX 630
WALCOTT, IA 52773
(563) 284-6263
www.catscale.com

THE CAT SCALE GUARANTEE

The CAT Scale Company guarantees that our scales will give an accurate weight. What makes us different from other scale companies is that we back up our guarantee with cash.©

WEIGH FASTER WITH OUR APP. FIND OUT MORE AT WEIGHMYTRUCK.COM

WEIGH WHAT WE SAY OR WE PAY®

If you get an overweight fine from the state **AFTER** one of our CAT Scales showed a legal weight, we will immediately check our scale and we will:

(1) Reimburse you for the cost of the overweight fine if our scale is wrong, **OR**
(2) A representative of CAT Scale Company will appear in court **WITH** the driver as an expert witness if we believe our scale was correct.

IF YOU SHOULD GET AN OVERWEIGHT FINE, YOU SHOULD DO THE FOLLOWING TO GET THE PROBLEM RESOLVED:

1) Post bond and request a court date.
2) Call CAT Scale Company direct 24 hours a day at 1-877-CAT-SCALE, ext. 7 (Toll Free) or visit www.catscaleguarantee.com for instructions.
3) **IMMEDIATELY** send a copy of the citation, CAT Scale Ticket, your name, company, address, and phone number to CAT Scale Company Attn: Guarantee Department.

* The four weights shown below are separate weights. The GROSS WEIGHT is the CERTIFIED WEIGHT and was weighed on a full length platform scale. All weights are guaranteed by CAT Scale.

DATE: 1-26-19
13:26
54959535

SCALE: 1868
LOCATION: LOVES COUNTRY STORES
I-77 AND HWY 48 EXIT 5
CAYCE SC

PUBLIC WEIGHMASTER'S CERTIFICATE OF WEIGHT & MEASURE

STEER AXLE	8960 lb
DRIVE AXLE	27200 lb
TRAILER AXLE	00 lb
* GROSS WEIGHT	36160 lb

This is to certify that the following described merchandise was weighed, counted, or measured by a public or deputy weighmaster, and when properly signed and sealed shall be prima facia evidence of the accuracy of the weight shown as prescribed by law.

IMPRINT SEAL HERE (IF APPLICABLE)

LIVESTOCK, PRODUCE, PROPERTY, COMMODITY, OR ARTICLE WEIGHED: FREIGHT ALL KINDS

COMPANY: ARM EN

TRACTOR # 1 TRAILER # 0

WEIGH NUMBER
9533

FEE $2.00

WEIGHMASTER OR WEIGHER SIGNATURE: SHONTA HARRIS

TICKET # OF FULL $ WEIGH (IF REWEIGH): 54959533

DRIVER IN TRUCK UNLESS CHECKED HERE: ___

CUSTOMER COPY

© CAT Scale® Reg 3067 7/18

Healthy People. Healthy Communities.

CERTIFIED MAIL
9214 8969 0099 9790 1534 7739 00

APR 0 8 2019

UST 14 3 DOCKETING

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Request for March 2019 Activities Report**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Summary report received March 26, 2019
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by ARM Environmental Services Inc. (ARM) on behalf of Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the abatement activities on the site for the month of March, 2019. This report should include the dates and descriptions of the work performed and the quantities of free product and contaminated storm water recovered and any other notable observations. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the March 2019 abatement activities within thirty (30) days of the date of this letter.

Additionally, upon reviewing the report submitted March 26, 2019 detailing the ARM response from November 26, 2018 through January 31, 2019, a summary is needed of Enviro-Test response activities for the dates prior to ARM's involvement (November 16, 2018 through November 26, 2018). Also, please clarify if the ARM report includes all of the response activities by Enviro-Test from November 26, 2018 through January 31, 2019 or if the report is detailing solely ARM's activities. If any additional work was performed by Enviro-Test from November 26, 2018 through January 31st that is not included in the ARM report, a summary is needed detailing these activities, as was requested in the letters dated January 25, 2019 and February 4, 2019.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

enc: Copy of letters requesting abatement activities dated January 25, 2019 and February 4, 2019

dhec
Healthy People. Healthy Communities.

JAN 2 5 2019

UST DOCKETING 121

CERTIFIED MAIL
9214 8969 0099 9790 1413 8770 95

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Request for November 2018 Incident Report, including December 2018 Activities**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the incident that was reported on November 16, 2018. This report should include all the known details of the incident, including timelines and locations of free product appearance and the subsequent emergency responses to contain, abate, and quantify the product and the effects on the adjacent properties and neighborhoods. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the November 2018 incident and subsequent emergency and abatement response, including December activities, within thirty (30) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

dhec
Healthy People Healthy Communities

CERTIFIED MAIL
9214 8969 0099 9790 1413 9553 80

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

FEB 0 4 2019

Re: **Request for January 2019 Activities Report**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported January 4, 2011
Monitoring report received November 27, 2018
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). The next appropriate step for this site is a report documenting the abatement activities on the site for the month of January, 2019. This report should include the dates and descriptions of the work performed and the quantities of free product and contaminated storm water recovered and any other notable observations. It should also include recommendations of solutions for remediation and restoration of the impacted facility and adjacent properties.

Please have your contractor complete and submit the report detailing the January 2019 abatement activities within thirty (30) days of the date of this letter.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

dhec
Healthy People. Healthy Communities.

CERTIFIED MAIL
9214 8969 0099 9790 1414 4507 92

APR 0 8 2019

MR PAUL DESAI
BROAD RIVER C STORE LLC
41 CROMWELL COURT
IRMO, SC 29063

Re: **Notice of Alleged Violation**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit #11946
Release #2 Reported November 16, 2018
Tier II Assessment Notice to Proceed mailed November 27, 2018
Richland County

Dear Mr. Desai:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) directed you on **November 27, 2018** to complete a Tier II Assessment with the report due within **90 days**. A Due Date Extension was requested by your consultant, Carolina Technical Services, on **February 27, 2019** with the new due date set to **April 5, 2019**. A second Due Date Extension was requested by your consultant on **April 5, 2019** with a new requested due date of **April 30, 2019**. In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, this assessment must be conducted expediently due to the continued presence of free phase petroleum product (FPP) and further potential impacts to human health and the environment.

Please submit the report on or before April 30, 2019. Should you not submit the report on or before this date, this office will initiate enforcement action.

On all correspondence regarding this site, please reference UST Permit #11946. If you have any questions concerning this correspondence, please call me at (803) 898-7542, e-mail me at mendenje@dhec.sc.gov, or fax me at (803) 898-0673.

Sincerely,

Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Carolina Technical Services, 7130-A Broad River Road, Irmo, SC 29063
Technical File

April 4, 2019

ENVIRO-TEST SERVICES

PROGRAM
APR 0 9 2019
UST

Carolyn Moores, Hydrogeologist
Corrective Action Section
Underground Storage Tank Program
Bureau of Land and Waste management
SCDHEC 2600 Bull Street
Columbia, SC 29210

UST
145
DOCKETING

RE: Monitor Well Replacement
Broad River Amoco
Permit # 11946; CA # 59018 UMW-27419
4335 Broad River Road Columbia, SC
Richland, County

Dear Ms. Moores,

Enviro-Test Services Inc. Has completed the installation and replacement of 2 Monitor Wells MW-16-A and MW-16 B as outlined in the Site-Specific Work Plan dated February 7, 2019. and an additional Shallow Monitor well as you requested between MW-21B and MW-22B which is MW-22A. See Attachment A: DHEC 1903 Well Completion and DHEC 2099 Well Development forms.

Thank you for Recognizing our commitment to continuing working on this site.

Terry L. Teate
Project Manager,
Enviro-Test Services Inc.

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: DHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: (803) 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Road
City: Columbia, SC Zip: 29018-9330
Latitude: N 34.0655340 Longitude: W 81.11751621

3. PUBLIC SYSTEM NAME: Monitor Well-16B **PUBLIC SYSTEM NUMBER:** MW-16B

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Lt TN mxln sandy-cly	0 ft.	5 ft.
Lt Brn fxln cly-snd	5 ft.	10 ft.
Tn Lt Brn fxln cly-snd	10 ft.	15 ft.
Lt Tn fxln sndy Cly	15 ft.	20 ft.
Lt Gry fxln hd snd dry	20 ft.	25 ft.
Gry fxln hd snd dry	25 ft.	30 ft.
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: DHEC Permit # UMW-27419

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 03-7-2019
30 ft. Date Completed: 03-08-2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 Inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 20 ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 2 Inch
Slot/Gauge: .010 Length: 10.0 ft
Set Between: 30.0 ft. and 20.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.58 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 30.0 ft. to 19.0 ft.
Effective size No. 2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 19.0 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 200 ft. NE direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one)
P.O. Box 2237 Irmo, SC 29063
Telephone No.: 803-413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate (Well Driller) Date: 03/24/2019

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: DHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: (803) 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Road
City: Columbia, SC Zip: 29018-9330
Latitude: N 34.0655341 Longitude: W 81.11751622

3. PUBLIC SYSTEM NAME: Monitor Well-16A **PUBLIC SYSTEM NUMBER:** MW-16A

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Lt TN mxln sandy-cly	0 ft.	5 ft.
Lt Brn fxln cly-snd	5 ft.	10 ft.
TN Lt Brn fxln cly-snd	10 ft.	16 ft.
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: DHEC Permit # UMW-27419

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 16 ft. Date Started: 03-7-2019 Date Completed: 03-08-2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 Inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 6 ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 2 Inch
Slot/Gauge: .010 Length: 10.0 ft
Set Between: 16 ft. and 6 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 11.64 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 16.0 ft. to 5.0 ft.
Effective size No. 2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 5.0 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 200 ft. NE direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one)
P.O. Box 2237 Irmo, SC 29063
Telephone No.: 803-413-4956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate Well Driller Date: 03/24/2019

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: DHEC (last) (first)
Address: 2600 Bull Street
City: Columbia State: SC Zip: 29201-0000
Telephone: Work: (803) 898-3432 Home:

2. LOCATION OF WELL: **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Road
City: Columbia, SC Zip: 29018-9330
Latitude: N 34.0650391 Longitude: W 81.1174256

3. PUBLIC SYSTEM NAME: Monitor Well-22A **PUBLIC SYSTEM NUMBER:** MW-22A

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Lt Tn mxln Sndy Cly	0 ft.	2 ft.
Lt Tn fxln Cly Gumbo	2 ft.	4 ft.
Orange mxln sndy cly dry	4 ft.	8 ft.
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: DHEC Permit # UMW-27419

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 03-7-2019
8.0 ft. Date Completed: 03-08-2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 Inch
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to 0 ft. depth
_____ in. to 1.0 ft. depth
Height: Above/Below Surface 0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 2 Inch
Slot/Gauge: .010 Length: 7.0 ft
Set Between: 8.0 ft. and 1.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 0.57 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
NA ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 8.0 ft. to 1.0 ft.
Effective size No. 2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 1.0 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 200 ft. N direction
Type Petroleum
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: NA Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Terry L. Teate **CERT. NO.:** 1242
Address: (Print) Level: A B C D (circle one) ✓
P.O. Box 2237 Irmo, SC 29063
Telephone No.: 803-413-4936 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Terry L. Teate (Well Driller) Date: 03/24/2019

If D Level Driller, provide supervising driller's name:

DHEC 1903 (03/2004)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

DHEC
PROMOTE PROTECT PROSPER

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: March 16, 2019 Field Personnel:

Drilling Company: Enviro-Test Driller's Name: Terry L. Teate

Driller's Certification Number: 1242 Weather Conditions: Clear, Cool

Well Development Method

Surge Block ○ Submersible Pump ✓ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	871931	serial no.	871931	serial no. 871931	serial no	201404347
pH=4.0	4.1	standard	1000uS/cm		NTU=0.0	0.02 NTU
pH=7.0	7.0				NTU=1.0	10.0 NTU
pH=10.0	10.0				NTU=10.0	1000 NTU

Drilling Method

Hollow Stem Augers ○ Solid Flight Augers ✓ Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# 22-A Well Casing Diameter 2" inches Borehole Diameter 4½ inches

Depth to Ground Water (DGW) 0.57 ft. Screen Length/Slot Size 7 ft./ 0.10 in.

Total Well Depth (TWD) 8.0 ft. Screen Interval 1.0 ft. to 8.0 ft.

Length of water column (LWC=TWD-DGW) 7.43 ft. Type of Drilling Fluids used: NA

Total Gallons of Water Removed: ____ gals. Drilling Fluids recovered NA gals.

Time (military)	915	930	945	955			
pH (s.u.)*	7.7	7.7	7.5	7.5			
Specific Conductivity (mmhos/cm)*	207	76	50	48			
Water Temperature (C)*	14.2	13.9	14.1	14.0			
Turbidity (NTU) *	21.66	471.8	1100	1092			
Physical Characteristics (color/odor)	Clr-No	Clr-No	Orng-No	Cloudy			
Water Level Measurement (ft) from TOC	0.57	1.25	6.22	7.05			
Total Well Depth (ft) from TOC	8.0	8.0	8.0	8.0			
Cumulative Gallons Removed	.1 gals	.12 gals	.7 gals	.5 gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Turn on Submersible Pump Then Take a bailer Sample.

Driller Signature: Terry L. Teate Date: 3-9-19

D H E C
PROMOTE PROTECT PROSPER

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946
Date: March 16, 2019 Field Personnel:
Drilling Company: Enviro-Test Driller's Name: Terry L. Teate
Driller's Certification Number: 1242 Weather Conditions: Clear, Cool

Well Development Method

Surge Block ○ Submersible Pump ✓ Air Lifting ○
* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter	Conductivity meter	Temperature meter	Turbidity meter
serial no. 871931	serial no. 871931	serial no. 871931	serial no. 20140434
pH=4.0 4.0	standard 1000 us-cm		NTU=0.0 0.02
pH=7.0 7.0			NTU=1.0 10.0
pH=10.0 10.0			NTU=10.0 1000 NTU

Drilling Method

Hollow Stem Augers ○ Solid Flight Augers ✓ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# 16-A Well Casing Diameter 2" inches Borehole Diameter 4 1/2 inches
Depth to Ground Water (DGW) 11.64 ft. Screen Length/Slot Size 10 ft./ 0.10 in.
Total Well Depth (TWD) 16.0 ft. Screen Interval 6 ft. to 16 ft.
Length of water column (LWC=TWD-DGW) 4.36 ft. Type of Drilling Fluids used: NA
Total Gallons of Water Removed: gals. Drilling Fluids recovered NA gals.

Time (military)	1030	1050	1110	1130	1150		
pH (s.u.)*	7.5	7.6	7.6	7.6	7.6		
Specific Conductivity (mmhos/cm)*	238	296	147	214	210		
Water Temperature (C)*	17.7	18.2	18.8	18.7	18.5		
Turbidity (NTU) *	42.32	52.77	453.9	349.8	345.7		
Physical Characteristics (color/odor)	clr-NO	clr-NO	clr-N	clr-N	clr/NO		
Water Level Measurement (ft) from TOC	11.64	12.25	13.10	14.44	15.23		
Total Well Depth (ft) from TOC	16.0	16.0	16.0	16.0	16.0		
Cumulative Gallons Removed	0.2 gals	0.2 gals	0.3 gals	0.4 gals	0.1 gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Turn Submersible pump on and wait for Reading

Driller Signature: Terry L. Teate Date: 3-9-19

DHEC
PROMOTE PROTECT PROSPER

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: March 16, 2019 Field Personnel:

Drilling Company: Enviro-Test Driller's Name: Terry L. Teate

Driller's Certification Number: 1242 Weather Conditions: Clear, Cool

Well Development Method

Surge Block ○ Submersible Pump ✓ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter	Conductivity meter	Temperature meter	Turbidity meter
serial no. 871931	serial no. 871931	serial no. 871931	serial no 20140434
pH=4.0 4.0	standard 1000uscm		NTU=0.0 0.02
pH=7.0 7.0			NTU=1.0 10.0
pH=10.0 10.0			NTU=10.0 1000NTU

Drilling Method

Hollow Stem Augers ○ Solid Flight Augers ✓ Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# 16-B Well Casing Diameter 2" inches Borehole Diameter 4½ inches

Depth to Ground Water (DGW) 9.58 ft. Screen Length/Slot Size 10 ft./ 0.10 in.

Total Well Depth (TWD) 30.0 ft. Screen Interval 20 ft. to 30 ft.

Length of water column (LWC=TWD-DGW) 20.42 ft. Type of Drilling Fluids used: NA

Total Gallons of Water Removed: ____ gals. Drilling Fluids recovered NA gals.

Time (military)	1205	1218	1240	1300			
pH (s.u.)*	8.0	8.1	8.1	8.1			
Specific Conductivity (mmhos/cm)*	189	187	187	184			
Water Temperature (C)*	18.2	18.4	18.6	18.6			
Turbidity (NTU) *	10.71	11.30	8.36	8.81			
Physical Characteristics (color/odor)	clr-no	clr-no	clr-no	clr-no			
Water Level Measurement (ft) from TOC	9.58	10.02	12.20	16.71			
Total Well Depth (ft) from TOC	30.0	30.0	30.0	30.0			
Cumulative Gallons Removed	.05 gals	.25 gals	.10 gals	.5 gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Turn on Submersible Pump Take readings Turn pump back on Take Readings

Driller Signature: Terry L Teate Date: 3-9-19

ACA options paperwork

Moores, Carolyn T.

Thu 4/11/2019 12:08 PM

To:pallavr@aol.com <pallavr@aol.com>;

Cc:Mendenhall, Jeffery E. <MENDENJE@dhec.sc.gov>;

1 attachments (843 KB)

11946 Options package for rel2 041119.pdf;

Dear Mr. Desai,

These are the ACA options forms that were delivered to your address by certified mail on March 23, 2019. The due date for the form to be returned was 15 days from the date of the letter.

Please choose either the State Lead Option or the Owner/Operator (O/O) Lead option, fill out the paperwork, sign (and have a witness sign), then fax to the number listed below. The original will then need to be submitted to the address below.

Thank you for your time and attention to this matter,

Carolyn Moores
Hydrogeologist
Corrective Action & Quality Assurance
UST Management Division
Bureau of Land & Waste Management

2600 Bull Street
Columbia SC 29201-1708
Office: (803) 898-2622
Fax: (803) 898-0673

Scanned _____

Verified _____

dhec
Healthy People. Healthy Communities.

APR 15 2019

MR FREDERICK N CECCHINI
429 PRESS LINDLER ROAD
COLUMBIA SC 29212-8322

Re: **Cost Agreement for ongoing FP containment measures**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946; CA# 59405
Release reported January 4, 2011
Monitoring report received March 26, 2019
Richland County

Dear Mr. Cecchini:

The UST Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by Enviro-Test Services, Inc. (Enviro-Test). To address the current site conditions that began in November of 2018, and the containment of migrating free product, DHEC has written a cost proposal for removing and disposing of the accumulating free product on the adjacent Play Pals property downgradient from the site.

The cost proposal includes costs for weekly vacuuming and removal of the free product from the trenches and areas where it collects as well as removing free product and storm water from trenches after rain events and disposal. Additionally, the cost proposal includes expenses relating to the prevention of plume migration such as boom replacement in areas that are at risk of contributing to surface water contamination and to prevent migration.

On all correspondence regarding this site, please reference UST Permit # 11946. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-2622, by fax at (803) 898-0673, or by e-mail at mooresct@dhec.sc.gov.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Enviro-Test Services, Inc., PO Box 2237, Irmo, SC 29063
Technical File

Approved Cost Agreement 59405

Facility: 11946 BROAD RIVER AMOCO
MOORESCT
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
17 DISPOSAL						
		AA	WASTEWATER	6,500.0000	$0.560	3,640.00
		BB	FREE PRODUCT	100.0000	$0.500	50.00
18 MISCELLANEOUS						
			ARM INVOICE 0319 B	1.0000	$6,203.040	6,203.04
			ENVIRO-TEST INVOICE A	1.0000	$16,000.000	16,000.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	$25,893.040	3,107.16
				Total Amount		29,000.20

UST Caroline APR 12 2019 PROG

dhec

UST DOCKETING

State Lead Option Permission Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of the existing or former underground storage tanks located identified below and for the release reported the date listed below or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (DHEC) to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select a corrective action contractor, on my behalf, after bid solicitation results are received. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. I understand that DHEC or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report.

UST Permit #	11946	**Release Report Date:**	11/16/2018
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:		803/798/3051	
Is facility within city limits? (check yes/no)		☑ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:		Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?		☑ **Yes**	☐ **No**

*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:

Name:		**Phone Number:**	
Were USTs previously removed from the ground at this facility?		☐ **Yes**	☒ **No**

*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):

Name:		**Phone Number:**	
Is the facility currently leased to someone?		☒ **Yes**	☐ **No**

*If yes, notify them of the pending work scope, and please provide their name/contact number:

Name:	Bhavik Patel	**Phone Number:**	803/741/4832

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of UST owner/former owner or authorized representative (Print):	Broad River C-store LLC	
Signature of UST owner/former owner or authorized representative:	(Paul Desai)	4/11/2019 **Date**
Affiliation (if applicable)		
Signature of Witness	Pooja Desai	4/11/2019 **Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**	803/477/7575
Email Address:	PallavR@aol.com		

UST PROGRAM dhec
Caitlyn APR 12 2019

149 CAP

Owner/Operator Lead Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of record for the underground storage tanks identified below for the release date reported below or serve as the authorized representative for the owner. I wish for DHEC to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select my own corrective action contractor after bid solicitation results are received. **I understand the lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. I understand if the selected contractor is not able to complete the required activities, I will be required to find another certified contractor to complete the required activities. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for the active corrective action.**

UST Permit #	11946	**Release Report Date:**	11/16/2018
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			

Name of UST owner/former owner or authorized representative (Print):	Broad River C-Store LLC	
Signature of UST owner/former owner or authorized representative:	(Paul Desai)	4/11/2019 **Date**
Affiliation (if applicable)		
Signature of Witness	Priya Desai	4/11/2019 **Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**	803 147 7525
Email Address:	pallavk@aol.com		

ENVIRO-TEST SERVICES

UST
15 tech
DOCKETING

February 4, 2011

Mr. Arthur Shrader Hydrogeologist
Assessment Section
Underground Storage Tank Program
Bureau of Land and Waste Management
SCDHEC
2600 Bull Street
Columbia, SC 29201

UST
FEB 2 1 2012
PROGRAM

RE: QAPP Contractor Addendum Directive
for Tier II Assessment, Revision #1
Broad River Amoco (BP)
4335 Broad River Road
Columbia, SC Site # 11946
Richland County

Dear Mr. Shrader,

Pursuant to your January 20, 2012 request, the attached QAPP Contractor Addendum Directive for a Tier II Assessment (Revision Number 1) for the above referenced site is provided for review and approval.

Should you have any questions, comments or require any additional information, please call (803)-413-4936 at your convenience.

Very truly yours,

Terry L. Teate

Terry L. Teate

Site Rehabilitation Contractor

ENVIRO-TEST SERVICES, INC.

Attachments

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Broad River Amoco, UST Permit # 11946

4335 Broad River Road, Columbia, SC – Richland County

Prepared by: Terry L. Teate
Enviro-Test Services Inc. - SCDHEC Certified Contractor No. 14
Date: February 20, 2012

Approvals

Arthur Shrader, Hydrogeologist _____ Date_____
SCDHEC Project Manager Signature

Terry L. Teate Terry L. Teate Date 2-17-12
Site Rehabilitation Contractor Signature
Enviro-Test Services, Inc.

Jim Kotti, P.G Jim Kotti Date 2-17-12
Contractor QA Manager Signature

Ashley B. Amick
Laboratory Director Date 2-17-12
Access Analytical, Inc. Signature

Scott Bailey _____ Date_____
Laboratory Director Signature
GCAL

Appendix B: Contractor Addendum

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Attachment A: Tier II Assessment Plan and Assessment Component Cost Agreement
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Attachment C: Access Analytical, Inc. – Chain of Costody

A3 Distribution List

Name	Title	Organization/Address	Telephone Number	Fax Number	Email Address
Arthur Shrader, Hydrogeologist	SCDHEC Technical Project Manager	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Enviro-Test Services Inc.	Site Rehabilitation Contractor	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936	-	terryteate@gmail.com
Terry Teate	Field Manager, SC Certified Well Driller	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936	-	terryteate@gmail.com
Jim Kotti, P.G.	Project Verifier	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936	-	jdkottboy@aol.com
Ashley B. Amick	Laboratory Director, Access	Access Analytical, Inc. 7478 Carlisle St. Irmo, SC 29063	803-781-4243	803-781-4303	aamick@axs-inc.com
Scott Bailey	Laboratory Director, GCAL	GCAL 7979 GSRI Rd. Baton Rouge, LA 70820	225-769-4900	225-767-5717	scott.bailey@gcal.com

Table 1A Addendum Distribution List

A4 Project Organization

Role from the UST Master QAPP	Name of person in this Role for this Project	Organization/Address	Telephone Number	Fax Number	Email Address
Technical Project Manager	Arthur Shrader, Hydrogeologist	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Site Rehabilitation Contractor	Terry Teate	Enviro-Test Services, Inc. P.O. Box 2237 Irmo, SC 29063	803-413-4936	-	terryteate@gmail.com
Field Manager	Terry Teate	Enviro-Test Services P.O. Box 2237 Irmo, SC 20963	803-413-4936	-	terryteate@gmail.com
Project Verifier	Jim Kotti P.G.	Enviro-Test Services P.O. Box 2237 Irmo, SC 20963	803-413-4936	-	jdkottboy@aol.com
Analytical Laboratory Director	Ashley Amick	Access Analytical, Inc. 7478 Carlisle St. Irmo, SC 29063	803-781-4243	803-781-4303	aamick@axs-inc.com

Table 2A Addendum Role Identification and Contact Information

Technical Project Manager: The Technical Project Manager (Art Shrader) is responsible for direct oversight of contractors conducting assessment and site rehabilitation of releases at UST sites. The Technical Project Manager performs day-to-day review of plans and reports related to site rehabilitation activities on his or her assigned sites. These reviews include verification and analysis of data laboratories and recommendations for future work. The Technical Project Manager is responsible for the review of and approval of the site-specific QAPPs to ensure compliance with the UST Master QAPP. The Technical Project Manager is also responsible for validating the Project Data.

Site Rehabilitation Contractor: The role of the Contractor (Enviro-Test Services, Inc. - ETS) is to manage and coordinate field and office activities in order to complete all phases of the project. This includes, but not limited to, preparation of Quality Assurance Project Plan Contractor Addendum, property access, oversight of field activities, data analysis and interpretation, validating and verifying project data and preparation of a report. Enviro-Test is a Class I and Class II site Rehabilitation Contractor.

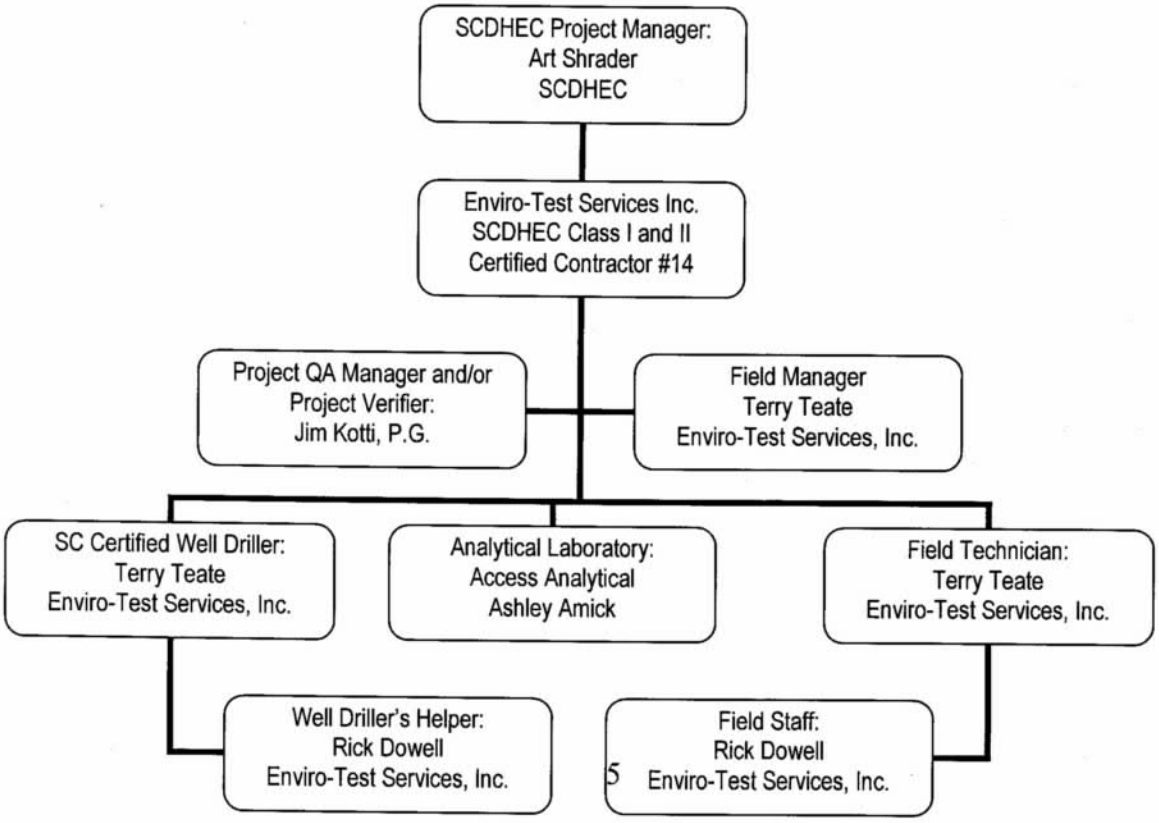
Project QA Manager: The Contractor Quality Assurance Manager (Jim Kotti - ETS) is responsible for the oversight of all quality assurance activities associated with this project, including independent review of field data and laboratory analytical data. The QA Manager will resolve any issues when correctitude actions are needed to address data quality issues.

Field Manager: Responsibilities of the Field Manager (Terry Teate - ETS) include, but are not limited to, preparation of field files detailing the project description and necessary task for the field crewman, oversight of field activities conducted by the technician, onsite data collection and decision making, verification of the collected field and laboratory analytical data and report preparation.

Field Technician: The Field Technician (Terry Teate - ETS) will collect groundwater samples for analytical qualitative and quantitative analyses.

Field Staff: The Field Staff (Rick Dowell - ETS) will assist the Field Manager with field activities as necessary to complete the project.

Figure 1A: Organizational Chart



A5 Problem Definition/Background

Discuss the background (as much as is known) of the site and appropriate historical information, and why this site is being assessed.

From the Richland County Geographic Information System (GIS), a 1939 aerial photograph shows that the subject property was utilized for agriculture and was partially wooded. Broad River Road appears as a two-lane road. Information available through the Richland County Assessors Office indicates that property was owned by B.O. Derrick in 1955 and a 1959 aerial photograph indicates that the property had apparently been developed as a petroleum retail facility. Subsequently, the property was acquired by Associated Oils of South Carolina, Inc. in February 1988, and the previous UST system (B.O. Derrick) was properly closed, as reported to the SCDHEC in 1989. Reportedly, the closure included proper abandonment by removal of one 2,000-gallon UST and one 3,000-gallon UST. Additionally, the property redevelopment activities of 1988 and 1989 reportedly included the demolition of pre-existing structures and construction of the existing store building, dispenser islands and UST system. Subsequently, the property was acquired by Mr. Frederick N. Cecchini in June 1997, and Mr. Cecchini remains the current owner.

Reportedly, no soil samples were collected for analysis at the time of proper abandonment of the previous UST system as reported to SCDHEC in 1989. In December 2010, a Phase II Subsurface Investigation was performed by Partner Engineering and Science, Inc. of El Segundo, California. The Phase II investigation included the installation of four soil borings and a Temporary Monitoring Well Permit (Approval No. 4053) was obtained from the SCDHEC for the purpose of groundwater sample collection. Reportedly, the soil borings extended to terminal depths of 26 feet below land surface (BLS) utilizing direct push penetration technology with continuous soil sample collection. Drilling refusal was encountered in all four soil borings before groundwater was encountered; therefore, no groundwater samples were collectable for laboratory analysis. Eight soil samples (two from each soil boring) were submitted for laboratory analysis for Volatile Organic Compounds (VOC) and Polynuclear Aromatic Hydrocarbons (PAH). The laboratory analytical results indicated the detection of various VOC and PAH chemical compounds at concentrations deemed reportable to the SCDHEC.

An Initial Groundwater Assessment (IGWA) was completed by Enviro-Test Services, Inc. during January, 2011 and an IGWA report was submitted on February 4, 2011. On January 20, 2011, the soil boring for monitoring well MW-1 was installed. The soil sample from the 10 to 15 feet sampling interval yielded the highest PID reading of 1,782 ppm and accordingly was submitted for laboratory analysis for BTEX, MTBE, naphthalene, PAH and lead. Moderately elevated concentrations of toluene, ethylbenzene, xylenes and naphthalene were detected in the soil sample. Saturated sediments were encountered at the depth interval of 35 to 40 feet below grade level (BGL). As such, monitoring well MW-1 was installed to a depth of 40 feet BGL and was screened from 40 to 20 feet BGL. On January 21, 2011, a groundwater sample was collected from monitoring well MW-1 and laboratory analysis for BTEX, naphthalene, MTBE, PAH and lead was performed. The depth to groundwater in monitoring well MW-1 was measured from the top-of-casing to be 20.92 feet. The groundwater sample yielded detected COC concentrations as follows: benzene (929 ug/l), toluene (10,300 ug/l), ethylbenzene (684 ug/l), MTBE (243 ug/l) and naphthalene (922 ug/l). Following review of the IGWA report, the SCDHEC requested a Tier I Assessment in correspondence dated February 7, 2011.

Field activities for the Tier I Assessment were commenced on February 24 and 25, 2011 with the completion of soil borings SB-1 through SB-9. Laboratory analysis of soil samples for BTEX, MTBE and PAH yielded elevated concentrations of benzene and naphthalene above RBSL in soil borings SB-1 (10 ft), SB-2 (5 ft), SB-3 (8 ft) and 5 (6 ft) which were installed proximal to the existing UST basin (SB-1 and SB-2) and product pipeline/dispenser islands (SB-3 and SB-5). Monitoring wells MW-2, MW-3 and MW-4 were completed on February 25, 2011 and were subsequently sampled on March 5, 2011. Laboratory analysis of the groundwater samples yielded concentrations of

benzene as follows: MW-1 (1,760 ug/l), MW-2 (1,650 ug/l), MW-3 (9.93 ug/l) and MW-4 (1,830 ug/l). Additionally, concentrations of MTBE were also detected in wells MW-2 (3,420 ug/l) and MW-4 (3,100 ug/l). Naphthalene by EPA method 8260 was detected in wells MW-1 (4,070J ug/l), MW-2 (462J ug/l) and MW-4 (598 ug/l). Also, elevated concentrations of toluene were detected in wells MW-1 (16,400 ug/l) and MW-2 (3,230 ug/l) and ethylbenzene in wells MW-1 (1,270 ug/l) and MW-4 (1,270 ug/l). A Tier I Assessment Report was submitted to SCDHEC on April 8, 2011.

Subsequent to review of the Tier I Assessment Report, the Technical Project Manager and Section Manager, as applicable, expressed concern regarding the depth of the screened interval of each monitoring well in relation to the measured groundwater levels due to the fact that none of the monitoring wells were bracketing the water table of the site surficial aquifer. The contention of Enviro-Test Services, Inc. was that during soil boring and monitoring well installations no saturated sediments were encountered until the 35 to 40-ft depth interval of drilling at each well location; therefore, the monitoring wells were installed at depths somewhat deeper than preferable. Also, during drilling activities for installation of monitoring well MW-4, where elevated COC's were later detected in the March 5, 2011 groundwater sample, no petroleum hydrocarbon odors or elevated PID readings were noted to be present in apparent vadose soils; however, upon encountering saturated soils at approximately 35 feet, strong odors and elevated PID readings were readily apparent. Consequently, the Technical Project Manager decided that an additional monitoring well (MW-5) should be installed at a shallower, bracketing depth to determine the availability of groundwater for sample collection in what appeared to be unsaturated, vadose soils. Accordingly, on May 27, 2011 monitoring well MW-5 was installed to a depth of 20 feet, with a 10-ft screen at a location adjacent to the north corner of the existing convenience store building. The infiltration of groundwater was noted to be exceedingly slow; as such, groundwater was allowed to seep into the well casing for several days. On June 3, 2011, the depth to groundwater was measured at 13.80 feet and free product (gasoline) of a degraded appearance was measured at 13.68 feet (a free product thickness of 0.12 feet). Again, on June 20, 2011, depth to the groundwater was measured at 14.05 feet and free product at 13.75 feet (a free product thickness of 0.30 feet). These findings were submitted to the SCDHEC Technical Project Manager on June 20, 2011.

In correspondence dated July 13, 2011, the SCDHEC UST Management Division requested a Tier II Assessment Plan and Cost Agreement for the Broad River Amoco (BP). On behalf of Mr. Fredrick N. Cecchini, a Tier II Assessment Plan and Cost Agreement were submitted on July 22, 2011. Subsequently, in correspondence entitled "QAPP Contractor Addendum Directive for Tier II" (dated January 20, 2012), the SCDHEC UST Management Section requested submittal of this QAPP Contractor Addendum. In conversation with the Technical Project Manager on February 9, 2012, the Project QA Manager was informed that the July 22, 2011 Tier II Assessment Plan remains valid for the purpose of defining the horizontal and vertical extent of contaminant migration at the subject site; however, a revised Cost Agreement, compatible with the SCDHEC document entitled "SUPERB Account Allowable Costs" (dated July 1, 2012) was specifically requested. As such, the July 22, 2012 Tier II Assessment Plan is included I this QAPP Contractor Addendum as Attachment A, as is the revised Cost Agreement.

Please answer the following: Does this project fall under UST or Brownfields area?

This project falls under the UST area of SCDHEC.

A6 Project/Task Description

1. ***Summarize what is known about the work to be done. This can be a short sentence indicating what the Scope of this project is (see Master QAPP Section A6).***

Completion of a Tier II Assessment in order to delineate the horizontal and vertical extent of petroleum hydrocarbon contaminants at the Broad River Amoco (BP).

2. ***The work will begin within*** 14 days ***after cost approval and Tier II Assessment sampling should be complete within*** 120 days ***of initiation.***

3. ***Are there are time or resource constraints? Include those factors that may interfere with the tentative schedule.***

As indicated in the Tier II Assessment Plan included in Attachment A of this QAPP Contractor Addendum, groundwater field screening will include installation of temporary monitoring wells constructed of 1-inch diameter PVC well screen and casing. The temporary monitoring wells are to be installed in two separate stratified depth zones as follows: Zone 1: terminal depth of approximately 20 feet for field screening of interstitial groundwater, and Zone 2: terminal depth of approximately 40 feet for field screening of groundwater of saturated soils of the site surficial aquifer. The seepage of groundwater into the Zone 1 temporary monitoring wells is expected to be very slow and may require 24 to 48 hours before adequate quantities of groundwater have accumulated for sample collection.

Additionally, permission to access adjacent and/or down-gradient private or public property will most likely be required for groundwater field screening and subsequent permanent monitoring well installation. Also, various subsurface utilities, overhead electrical lines and building structures may inhibit physical access and/or maneuverability for drilling equipment.

A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs)

See attached Figures 1 and 2.

The subject site is located in northwest Richland County in Columbia, South Carolina and is situated on the southwest side of Broad River Road, a five-lane local thoroughfare. The site is comprised of approximately 0.85 acres and is currently owned and operated as a petroleum retail facility, convenience store and restaurant (Broad River BP). Currently, the property is improved with a store building of 2,000 square feet. The store building is located toward the rear (southwest) area of the property. Fronting the store building are three product dispensers covered by a canopy. An underground storage tank (UST) basin is located proximal (north) to the dispenser islands. An automobile water and vacuum servicing unit is located adjacent to the northwest property boundary, Dothan Road. The surface of the property is paved primarily with asphalt except over the area of the UST basin and proximal to the dispenser islands where concrete is present. Nearly the entire property is developed on apparent fill material. The property slopes moderately from Broad River Road southwest toward the curbed edge of the asphalt pavement behind the store building. The curbed edge directs rainfall runoff toward a drainage culvert near the west corner of the property and ultimately to a subsurface municipal storm water sewer system beneath Dothan Road. The west corner is the lowest area of the subject property. Just beyond the curbed edge of the asphalt pavement, a chain link fence is situated at the top of an earthen embankment which slopes steeply toward the southwest property line, located parallel to the foot of the embankment.

The subject property is bounded by Broad River Road to the northeast and beyond Broad River Road, a property currently occupied by the South Carolina Law Enforcement Division (SCLED). The adjacent property to the southeast is apparently commercially utilized (Nail and Beauty Salon). The adjacent property to the southwest is commercially utilized as a nursery school and day care (Play Pal Day Care). The Play Pal Day Care facility encompasses two properties fronting Dothan Road. The subject property is bounded to the northwest by Dothan Road and a commercially utilized property beyond (MDC Associates, an apparent mechanical engineering firm). The commercial usage of the subject property and adjacent properties is expected to remain the same in the future.

A8 Training and Certificates

Required training and licenses:

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Site Rehabilitation Contractor – Field Manager	Terry L. Teate Enviro-Test Services, Inc.	SCDHEC Certification	1995	Class I and II	14
SC Certified Well Driller	Terry L. Teate Enviro-Test Services, Inc.	SC LLR Certification Criteria	1995	Class A	1242
QA Project Manager	James D. Kotti	SC LLR Certification Criteria	1990	Registered Professional Geologist	888
Lab Director, Access	Ashley B. Amick	BS – Biology	05-1991	SCDHEC Certified Lab	32575001
Lab Director, GCAL	Scott Bailey	BS – Environmental Health	12-1991	SCDHEC Certified Lab	73006001

Table 3A Required Training and Licenses

Terry L. Teate of Enviro-Test Services, Inc. is responsible to ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location: Enviro-Test Services 1621 Lake Murray Blvd. Columbia, SC 29212.

It is understood that training records will be produced if requested by SC DHEC.

The Following Laboratory(ies) will be used for this Project:

Commercial Lab(s)

Full Name of the Laboratory: **Access Analytical, Inc.**
Name of Lab Director: **Ashley B. Amick**
SC DHEC Certification Number: **32575001**
Parameters this Lab will analyze for this project: **N/A (field parameters if required)**

Full Name of the Laboratory: **GCAL (NOTE: partner / sub lab for Access)**
Name of Lab Director: **Scott Bailey**
SC DHEC Certification Number: **73006001**

Parameters this Lab will analyze for this project: VOC's, SVOC's, EDB, Metals, Wet Chem,, etc.

Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's SOPs as part of this QAPP.

A9 Documents and Records

Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)

__x__US Mail ____Courier _x___Hand delivered

Other (please specify):_____

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Project Field Notes including GW levels, GW sampling data, slug test data, OVA data, maps, communication logs, etc.	ETS Field Personnel	Hardcopy	ETS file library, Hard copy storage for a Minimum of 3 years.	After 3 years the project data may be digitally scanned and transferred to CD. CDs will be archived in ETS file library to be stored indefinitely.
Boring Logs	ETS Field Personnel	Hardcopy	ETS file library. Hard copy storage for a Minimum of 3 years	After 3 years the project data may be digitally scanned and transferred to CD. CDs will be archived in ETS file library to be stored indefinitely..
SCDHEC Completion Report 1903	ETS Terry Teate	Hardcopy	ETS file library. Hard copy storage for a Minimum of 3 years	After 3 years the project data may be digitally scanned and transferred to CD. CDs will be archived in ETS file library to be stored indefinitely.
Chain of Custody	ETS Terry Teate	Hardcopy	ETS file library. Hard copy storage for a Minimum of 3 years	After 3 years the project data may be digitally scanned and transferred to CD. CDs will be archived in ETS file library to be stored indefinitely.
Lab Reports	GCAL/ Access	Both	Onsite, 5 years minimum	Electronically stored indefinitely
Lab QC Report	GCAL/ Access	Both	Onsite, 5 years minimum	Electronically stored indefinitely
Tier II Assessment Reports	ETS Personnel	Both	ETS file library. Hard copy storage for a Minimum of 3 years	After 3 years the project data may be digitally scanned and transferred to CD. CDs will be archived in ETS file library to be stored indefinitely.

Table 4A Record Identification, Storage, and Disposal

Section B Measurement/Data Acquisition

B1 Sampling Process/Experimental Design

NOTE: The Tier II Assessment will commence within 14 days of approval of the QAPP Contractor Addendum and is projected to be completed within 120 days (or 17 weeks) of commencement. The date of QAPP approval is unknown, as are the dates of implementation and completion of assessment task components. Also unknown are the assessment component tasks that will be approved or disapproved. Provided below are idealized time estimations for sequential completion of the Tier II Assessment task components based on an arbitrarily selected date of commencement (April 2, 2012). The estimations are based on the assumption that the Tier II Assessment Plan included in Attachment A will be approved as proposed.

Item	Start Date	End Date	Comments
Groundwater Field Screening - Zone 1 Week 1	April 2, 2012	April 8, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 20 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening - Zone 1 Week 2	April 9, 2012	April 15, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 20 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening - Zone 1 Week 3	April 16, 2012	April 22, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 20 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening - Zone 2 Week 4	April 23, 2012	April 29, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 40 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening - Zone 2 Week 5	April 30, 2012	May 6, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 40 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening - Zone 2 Week 6	May 7, 2012	May 13, 2012	Ten (10) 1-inch diameter, PVC well screen and casing points will be installed to 40 feet each. Sufficient time will be allowed for groundwater infiltration into each well. A groundwater sample will be collected for analysis by Gas Chromatograph – Mass Spectrometer. Review of GC data. Plan formulation.
Groundwater Field Screening – Vertical Plume Delineation Week 7	May 14, 2012	May 20, 2012	Following groundwater field screening for the delineation of horizontal COC distribution, an indication of vertical COC distribution will be performed as follows: at three locations along the estimated center line of the horizontal COC plume

Item	Start Date	End Date	Comments
			(COC source or sources, plume mid-point and plume leading edge) a cluster of temporary monitoring wells will be installed. At each cluster, groundwater samples will be collected at projected depths of 45, 50 and 55 BLS feet with the installation of 1-inch PVC well screen and riser pipe.
Installation of Monitoring Wells Week 8	May 21, 2012	May 27, 2012	Eight (8) permanent monitoring wells will be installed. Monitoring wells installed within Zone 1 will be designed to bracket interstitial groundwater with a terminal depth of approximately 20 feet each. Monitoring wells installed into saturated soils of Zone 2 will be installed to a terminal depth of approximately 40 feet each. All wells will be constructed on 2-inch diameter PVC well screen and casing.
Installation of Monitoring Wells Week 9	May 28, 2012	June 3, 2012	Eight (8) permanent monitoring wells will be installed. Monitoring wells installed within Zone 1 will be designed to bracket interstitial groundwater with a terminal depth of approximately 20 feet each. Monitoring wells installed into saturated soils of Zone 2 will be installed to a terminal depth of approximately 40 feet each. All wells will be constructed on 2-inch diameter PVC well screen and casing.
Installation of Monitoring Wells Week 10	June 4, 2012	June 10, 2012	Eight (8) permanent monitoring wells will be installed. Monitoring wells installed within Zone 1 will be designed to bracket interstitial groundwater with a terminal depth of approximately 20 feet each. Monitoring wells installed into saturated soils of Zone 2 will be installed to a terminal depth of approximately 40 feet each. All wells will be constructed on 2-inch diameter PVC well screen and casing.
Installation of Deep Monitoring Wells Week 11	June 11, 2012	June 17, 2012	Two (2) deep wells will be installed to a projected terminal depth of approximately 60 feet each. The deep wells will be installed as "telescoping wells" with 6-inch diameter PVC surface casing installed to 50 to 55 feet and 2-inch diameter, PVC well screen and casing to 60 feet. The length of screen for the deep well will be 5 feet.
Groundwater Sample Collection Week 12	June 18, 2012	June 24, 2012	Prior to groundwater sample collection, all newly installed wells will be developed by evacuation of at least three well volumes of groundwater. All existing wells found not to be bracketing interstitial groundwater will be purged prior to sample collection. Wells with measurable free product thicknesses will not be sampled unless otherwise advised by the Technical Project Manager.
Laboratory Analysis of Groundwater Samples Weeks 13 and 14	June 25, 2012	July 8, 2012	Laboratory analysis will be performed by Access Analytical, Inc. and GCAL, a partner and subcontracted laboratory to Access Analytical, Inc.
Aquifer Testing Week 13 or 14	June 25, 2012	July 8, 2012	A day will be scheduled on which aquifer testing will be performed on two monitoring wells, one installed in Zone 1 of interstitial groundwater and one installed in Zone 2 saturated soils.
Comprehensive Survey	June 25, 2012	July 8, 2012	A comprehensive survey will be performed and certified by a SC Registered Land Surveyor. The

Item	Start Date	End Date	Comments
Week 13 or 14			survey will provide a scale base map and elevations for the monitoring well network.
Tier II Report Preparation Weeks 15, 16 and 17.	July 9, 2012	July 30, 2012	A Tier II Assessment report will be prepared and submitted to the Technical Project Manager no later than July 30, 2012.

Table 5A Sampling Activities

B2 Sampling Methods

Please note: The contractor must follow sampling protocols as given in the UST QAPP.

***Estimate* the number of samples of each matrix that are expected to be collected:**

Soil	0
Ground Water from monitoring wells	31
From Drinking/Irrigation water wells	0
From surface water features	0
Trip Blank	1
Field Blank	2
Duplicates	2
Total number of Water samples	36

The samples will be (check as many as apply): ____Homogenized ____Split

If any of the above are circled please indicate how will it be done and the equipment needed.

N/A

Will Sampling Equipment have to be cleaned and decontaminated or is everything disposable?

All sampling equipment is disposable with the exception of the ORS Oil/Water Interface Probe, the YSI Dissolved Oxygen (DO) Meter and the Hanna pH/Conductivity Meter.

Drilling tools, including solid stem auger, hollow stem auger, drill rod for mud rotary, direct push (Geoprobe™) drill rod and stainless-steel retractable well screen, are instrumental for soil and groundwater sample collection and for monitoring well installation. Obviously, these items are non-disposable.

If sampling equipment must be cleaned please give a detailed description of how this is done and the disposal of by-products from the cleaning and decontamination.

The ORS Oil/Water Interface Probe, the YSI DO Meter and the Hanna ph/Conductivity Meter will be cleaned and decontaminated between each use. Decontamination procedures will consist of: 1) donning a new pair of nitrile gloves, 2) washing of each unit with a soap (Alconox™) solution, 3) rinsing with distilled water, 4) rinsing with Isopropanol and 5) a final rinsing with distilled water. Disposable items and used decontamination fluids and materials will be containerized pending proper disposal.

All drilling tools and associated equipment as applicable (including solid stem auger, hollow stem auger, drill rod for mud rotary, Geoprobe™ direct push drill rod and stainless-steel retractable well screens, wrenches, hammers, shovels, mud pans, etc.) will be decontaminated by method of high pressure steam cleaning prior to mobilization to the site. Additionally, all drilling rods and associated equipment as applicable will be decontaminated (high pressure steam cleaning) between each soil boring and/or well installation. Decontamination will proceed as follows: 1) a decontamination pad will be established at a secure area reasonably proximal to drilling locations, 2) the drilling rods and tools as applicable will be decontaminated by steam cleaning under high pressure, 3) decontamination fluids and soil cuttings as applicable will be containerized pending proper disposal.

Identify any equipment and support facilities needed. This may include such things as Fed-ex to ship the samples, a Geoprobe, field analysis done by another contractor (who must be certified), and electricity to run sampling equipment.

Equipment:
Geoprobe Drill Rig 7720DT with associated drill rod and equipment as applicable
Jet Track 860 Drill Rig with associated drill rod and equipment as applicable

Support Facilities:
Laboratory: Access Analytical, Inc., 7478 Carlisle Street, Irmo, SC 29063
Laboratory: GCAL , 7979 GSRI Road, Baton Rouge, LA 70820
Surveyor: W.J. Webb, P.L.S., 10141 Dunbarton Blvd., Barnwell, SC 29812
Purge Water and Soil Cuttings Contractor: Crandall Corporation, 100 Rich Lex Drive, Lexington, SC 29072

Address the actions to be taken when problems occur in the field, and the person responsible for taking corrective action and how the corrective action will be documented.

Failure	Response	Documentation	Individual Responsible
Off-Site Property Access	Notify Technical Project Manager; participate in further negotiations.	Telephone and/or e-mail correspondence to SCDHEC placed in project file.	Field Manager Terry Teate
Drill Rig Malfunction	Make repairs in field or obtain replacement drilling equipment; Notify Technical Project Manager of any impending delays in project schedule.	Make note of malfunction in Project Field Notes; place in Project File.	SC Certified Well Driller: Terry Teate
Destroyed or Lost Monitoring Wells	Notify Technical Project Manager	Document in field log and written report, if necessary.	Field Manager Terry Teate

Hitting a utility line during drilling.	Halt drilling immediately. Notify appropriate authorities; change drilling location.	Document in field log and written report, if necessary.	Field Manager Terry Teate
Drilling Refusal	Contact Technical Project Manager on permissibility of completing soil boring or monitoring well at shallower depth; discuss feasibility of installation of a deep well.	Document in field log and written report, if necessary.	SC Certified Well Driller: Terry Teate
Groundwater encountered at a shallower depth than expected (this possibility is enhanced at areas of lower surface elevation, often at down-gradient locations)	If deemed prudent, contact Technical Project Manager on permissibility of completing soil boring or monitoring well at shallower depth.	Document in field log and written report, if necessary.	SC Certified Well Driller: Terry Teate
Malfunction of ORS Oil/Water Interface Probe	Notify field manager of equipment failure. Clean indicator and/or change batteries in the field. If problem persists, use back-up oil/water interface probe.	Document in field log and written report, if necessary.	Field Manager Terry Teate Field Staff Rick Dowell

Table 6A Field Corrective Action

B3 Sample Handling and Custody

1. ***How will the samples get from the Site to the Lab to ensure holding requirements are met?***

   Samples will be hand delivered to Access Analytical, Inc. in Irmo, South Carolina. Once samples are received from client by Access they are temp checked for compliance using a NIST traceable thermometer and the temperature is recorded on the COC. Samples are then kept on ice until they are shipped out (normally samples are shipped on the same day they are received by Access). Samples are shipped according to the established SOP that Access has for environmental sample shipment. This SOP addresses temperature control issues and specifies how samples are to be packed so that they remain between 0-6 degrees C while in transit to the receiving lab (GCAL).

2. ***How will the contactors cool the samples and keep the samples cool?***

   Samples will be packed in natural ice immediately after collection and surrounded by ice at all times until delivery to the laboratory. If samples are to be stored, they will be kept in a temperature controlled refrigerator at 4 degrees C.

3. ***How will the lab determine the temperature of the samples upon receipt? Will they be using a temperature blank?***

   Temperatures are checked with a NIST traceable thermometer. Sample temperatures are checked by Access staff when samples are received and checked again at the receiving laboratory (GCAL) once they arrive. Yes, temperature blanks are normally utilized.

4. ***Where will the samples be stored in the Lab once they are received?***

Once samples arrive at the receiving lab (GCAL) they are logged in and subsequently moved to dedicated, temperature controlled coolers within the lab until ready for analysis.

5. ***Describe the chain of custody procedure and attach a copy of each chain of custody that will be used. If a Chain of Custody SOP exists from the Lab and the Contractor is willing to adhere to it, then this may be attached.***

Enviro-Test Services, Inc. (ETS) field personnel will complete a Chain of Custody (including signature, time and date) as a part of each sampling event. Upon delivery of the samples to Access Analytical, Inc., the Chain of Custody will be signed with time and date noted by Access personnel who are physically receiving the samples. A copy of the laboratory chain of custody is attached.

It is the policy of Access Analytical to maintain a Continuous Chain of Custody. A continuous chain of custody sets protocols for keeping an unbroken, or continuous, chain of custody. A complete chain of custody is maintained by Access / GCAL. Each sample(s) when submitted is accompanied by a Chain of Custody form. These forms contain pertinent information about the sample(s) including specific analytical requests, sampling notes, sample condition, customer name and address. Additionally, information concerning the site name, field identification marks, date and time of collection, sampler signature, and preservation data is recorded.

Upon receipt signature and subsequent login of samples at the receiving laboratory facility (GCAL) all COCs are scanned into the LIMS system and associated with the individual project they represent. The COC is then included along with the final report when it is sent to the client. Original copies of the COC document can be returned to the client via postal mail upon request.

B4 Analytical Methods

1. Identify the SOPs which will be used to analyze the samples, the method which the SOP references and the equipment or instrumentation that is needed:

Parameter	SOP ID*	Method Referenced	Equipment	Comments
VOC's (BTEX/Napth/MTBE/DCA.)	GCMSV-003 r22	8260B	GC/MS	
Oxygenates	GCMSV-004 r1	8260B	GC/MS	
EDB	GC-034 r6	8011	GC	
Lead	MET-013 r18	6010C	ICP	

Table 7A Analytical SOPs and Referenced Methods

- **This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

Abbreviation	Lab Identification of this SOP	Full Name of the SOP
GCMSV-003	Method 8260B GCMSV-003 r22	STANDARD OPERATING PROCEDURE FOR THE ANALYSIS OF VOLATILE MASS SPEC SAMPLES BY METHOD 8260B
GCMSV-004	Oxygenates GCMSV-004 r1	STANDARD OPERATING PROCEDURE FOR THE ANALYSIS OF OXYGENATES BY METHOD 8260B
GC-034	Method 8011 GC-034 r6	STANDARD OPERATING PROCEDURE FOR METHOD 8011
ICP Met-010	ICP Met-010 r18	STANDARD OPERATING PROCEDURE FOR ANALYSIS OF METALS BY ICP

Table 8A SOP Abbreviation Key

2. *Identify procedures to follow when failures occur, identify the individual responsible for corrective action and appropriate documentation:*

Failure	Response	Documented Where?	Individual Responsible
Various sample matrix or related failures at laboratory	Corrective Action Initiated (see section 4.7 of lab or QAPP for detailed info)	Non-Conformance / Corrective Action Form kept at lab in controlled logbook	Laboratory QC/QA Manager
Surrogate Failure on Organics Analysis	Corrective Action Initiated, Samples are re-extracted and/or analyzed if surrogate recoveries outside of control limits. Data reported with qualifiers if necessary.	Non-Conformance / Corrective Action Form kept at lab in controlled logbook, LIMS	Analyst, Laboratory QC/QA Manager
Sample Containers Broken During Transit or at Lab	Client Notified via phone or email	Sample Receiving Checklist Form, LIMS	Sample Login Staff, Laboratory Project Manager, Analyst
Holding Time Exceeded	Client Notified via phone or email	Sample Receiving Checklist Form, LIMS	Sample Login Staff, Laboratory Project Manager, Analyst
Positive Hits in Method Blank	Corrective Action Initiated, Samples are re-extracted and/or analyzed if MB has hits above the RL's for compounds being analyzed.	Non-Conformance / Corrective Action Form kept at lab in controlled logbook, LIMS	Analyst, Laboratory QC/QA Manager

Table 9A Corrective Action Procedures

3. *Identify sample disposal procedures.*

Analysis	Matrix	Schedule for disposal	Method for disposal	Comments
All	Soil, chemical materials	60 days after analysis the sample custodian will stage completed samples for disposal. The sample custodian will scan all the samples segregated for disposal as "STD" (sent to disposal) using the Horizon	55-gallon open top steel drum located in the Satellite Accumulation Area. Labeled according to the characteristics of the waste and the waste stream. Waste streams are determined by analysis of the	Waste disposal is provided by various DOT certified vendors who come to the facility and label, placard, and manifest the drums according to 49 CFR Part 173 before transporting to

		LIMS system.	waste and through process knowledge. When the drum is full it is moved to the Central Accumulation Area for disposal.	their facility.
All	Water	60 days after analysis the sample custodian will stage completed samples for disposal. The sample custodian will scan all the samples segregated for disposal as "STD" (sent to disposal) using the Horizon LIMS system.	55-gallon tight head poly drum located in the Satellite Accumulation Area. Labeled according to the characteristics and waste stream. Waste streams are determined by analysis of the waste and through process knowledge. When the drum is full it is moved to the Central Accumulation Area for disposal.	Waste disposal is provided by various DOT certified vendors who come to the facility and label, placard, and manifest the drums according to 49 CFR Part 173 before transporting to their facility.

Table 10A Sample Disposal

4. ***Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).***

B5 Quality Control Requirements:

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP.

B6 Field Instrument and Equipment Testing, Inspection and Maintenance

1. ***Identify all field and laboratory equipment needing periodic maintenance, the schedule for this, and the person responsible. Not the availability and location of spare parts.***

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
Thermo Environmental PID Detector	580B	Lamp Cleaning and Battery Charging	Prior to starting project	Calibration Gas 250 ppm of Isobutene ETS Columbia, SC	Field Manager Terry Teate
Hanna pH/Conductivity Meter	87936	Clean with de-ionized water and isopropyl alcohol	Before and after each use	Replace / battery	Field Manager Terry Teate
YSI DO Meter	06A2805	Clean with de-ionized water, replace membrane and electrolyte solution as necessary	Prior to each use	Replace / battery	Field Manager Terry Teate
ORS Oil/Water Interface Probe	06-1466	Indicator Probe Cleaning	Daily	Replace probe/battery	Field Manager Terry Teate

Table 11A Instrument and Equipment Maintenance

2. ***Identify the testing criteria for each lab or field instrument that is used to ensure the equipment is performing properly. Indicate how deficiencies, if found, will be resolved, re-***

inspections performed, and effectiveness of corrective action determined and documented. Give the person responsible for this.

Instrument/Equipment & Serial Number	Type of Inspection	Requirement	Individual Responsible	Resolution of Deficiencies
FIELD EQUIPMENT	-	-	-	-
Thermo Environmental Photo-Ionization Detector – 590B	Lamp Cleaning	Inspect for obstructions in probe and polish PID lamp.	Field Manager Terry Teate	Clean/replace PiID Lamp.
Hanna pH/Conductivity Meter - 87936	Visual	Clean with de-ionized water and isopropyl alcohol; calibration	Field Manager Terry Teate	Clean and repair as necessary to achieve QAQC objectives
YSI DO Meter 06A2805	Visual	Replace membrane and electrolyte solution as necessary; calibration	Field Manager Terry Teate	Clean and repair as necessary to achieve QAQC objectives
ORS Oil/Water Interface Probe 06-1466	Press test button and observe for audible tone and visual light indicator.	Inspect probe sensor for dirt or contact between sensors	Field Manager Terry Teate	Check Batteries
LABORATORY EQUIPMENT	-	-	-	-
HP or Agilent GC/MS for VOC's S/N: Various	Daily calibration checks	Calibrates within acceptable range for initial calibration and passes ongoing daily calibration standard & batch QC analysis checks	Analyst / Laboratory department supervisor	Repair and /or recalibrate as needed. Samples may be re-analyzed if instrument fails QC checks.
Agilent GC for EDB via 8011 S/N: Various	Daily calibration checks	Calibrates within acceptable range for initial calibration and passes ongoing daily calibration standard & batch QC analysis checks	Analyst / Laboratory department supervisor	Repair and /or recalibrate as needed. Samples may be re-analyzed if instrument fails QC checks.
ICP for Lead S/N: Various	Daily calibration checks	Calibrates within acceptable range for initial calibration and passes ongoing daily calibration standard & batch QC analysis checks	Analyst / Laboratory department supervisor	Repair and /or recalibrate as needed. Samples may be re-analyzed if instrument fails QC checks.

Table 12A Instrument and Equipment Inspection

B7 Instrument Calibration and Frequency

1. Identify equipment, tools, and instruments for field or lab work that should be calibrated and the frequency.
2. Describe how the calibrations should be performed and documented, indicating test criteria and standards or certified equipment.
3. Identify how deficiencies should be resolved and documented. Identify the person responsible for corrective action.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
Thermo Environmental Photo-Ionization Detector (PID)	Zero calibration and Span gas calibration	Prior to use	Verify span gas against 250 ppm of isobutylene	Raise or lower span gas output to match span gas concentration	Field Manager - Terry Teate	Thermo Environmental Volatile Organic Compound Detector Calibration Procedures
Hanna pH/Conductivity Meter	pH and EC/TDS calibration solutions	Prior to use	Dependent upon specific calibration solution used	Re-calibrate (use back-up meter if calibration efforts are unsuccessful)	Field Manager - Terry Teate	Hanna, Inc. Users Guide
YSI DO Meter 06A2805	Moisten sponge in calibration sleeve with de-ionized water; commence calibration mode.	Prior to use	Dependent on accurate barometric pressure readings; calibrate barometric reading.	Replace membrane and electrolyte solution as necessary; re-calibrate	Field Manager - Terry Teate	YSI DO Meter Owners Manual
OSR Interface Probe	Calibrate against an invar surveyor's chain or steel tape	Prior to use	Within 0.01 foot per 10 feet length.	Replace interface probe.	Field Manager - Terry Teate	See Master QAPP
HP or Agilent GC/MS for VOC's	Once a BFB Tune and initial calibration meet criteria then a BFB Tune and continuing calibration verification (CCV) is performed every 12hrs.	CCV performed every 12 hours	Calibrates within Acceptable Range (See SOP for specific info)	If the CCV fails criteria a new initial calibration is performed. Also, see section 4.7 of lab QAP for detailed corrective action procedures.	Laboratory Department Supervisor / Analyst	Method 8260B GCMSV-003 r22
Agilent GC for EDB via 8011	Once an initial calibration meets criteria then a CCV is performed at the beginning of analysis and every 10 samples.	Daily, at beginning of analysis and then every 10 samples.	Calibrates within Acceptable Range (See SOP for specific info)	If the CCV fails criteria a new initial calibration is performed. Also, see section 4.7 of lab QAP for detailed corrective action procedures.	Laboratory Department Supervisor/ Analyst	Method 8011 – GC 034 r6
ICP for Lead	One point plus a zero performed daily and meet criteria CCV	CCV performed at beginning, after every 10 samples and at closing	Calibrates within acceptable range	If the CCV fails criteria, it can be reanalyzed once prior to a new calibration being performed	Laboratory Department Supervisor/ Analyst	MET-010 r18

Table 13A Instrument Calibration Criteria and Corrective Action

*** This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B8 Inspection/Acceptance Requirements for Supplies and Consumables

1. Identify critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials.
2. Identify the individual(s) responsible for this.

Item	Vendor	Acceptance criteria	Handling/Storage Conditions	Person responsible for inspection and tracking.
Disposable Bailer	Eon Products	New Material	Stored in clean supply room located at ETS office	Field Manager Terry Teate
Nitrile Gloves	Eon Products	New material	Stored in clean supply room located at ETS office	Field Manager Terry Teate
String	Various	Sufficient strength for lifting a water-filled disposable bailer repeatedly	Stored in clean supply room located at ETS office; in the field string is stored in a plastic bag	Field Manager Terry Teate
Sample Containers - ETS	Access Analytical, Inc.	Laboratory prepared and provided to ETS via Access Analytical, Inc.	Kept in supplied storage containers; individually sealed	Field Manager Terry Teate
Sample Containers – Access Analytical	Daniels Scientific	All bottles purchased are lot certified contaminant free environmental sample containers	Stored in controlled lab / warehouse space	Lab Manager / Bottle prep technician at Access Analytical Facility
PID Calibration Gas	Air Products	Canister of 250 ppm factory verified Isobutylene calibration gas	Store away from heat in padded protective case	Field Manager Terry Teate
55-gallon steel open-head drums	Dependable Drum Company	New or reconditioned. Drums with holes or cracks will not be accepted	Storage at ETS office until transportation to site. At site, drums will be staged in a safe location. Drums will be moved w/ the drill rig.	Field Manager Terry Teate
Non-hazardous waste labels (vinyl)	Granger	New material	Store in clean supply room located at ETS office	Field Manager Terry Teate
Laboratory Calibration Standards (Access/GCAL)	Fisher Scientific	All standards purchased are certified standards of guaranteed purity / known concentrations.	Stored at laboratory facility. Standards are stored based on the storage requirements of the individual solution.	Analyst, Laboratory Manager, Department Supervisors, Laboratory QC Manager
Laboratory Chemicals / Solutions (Access/GCAL)	Fisher Scientific, VWR, Restek,	Certificates of analysis, in-house laboratory verifications	Chemicals stored at lab under conditions appropriate for each solution.	Analyst, Laboratory Manager, Department Supervisors

Table 14A List of Consumables and Acceptance Criteria

B9 Data Acquisition Requirements (Non-Direct Measurements)

1. Identify data sources, for example, computer databases or literature files, or models that should be accessed or used.
2. Describe the intended use of this information and the rationale for their selection, i.e., its relevance to project.
3. Indicate the acceptance criteria for these data sources and/or models.

Data Source	Used for	Justification for use in this project	Comments
Richland County GIS	Identifying adjacent property owners, property boundaries, subsurface municipal utilities, etc.	Facilitate access to adjacent properties, history of usage and/or ownership of the subject property and adjacent properties.	This website also provides detailed topographic maps and information regarding storm-water runoff.
Phase II Subsurface Investigation Report, Broad River BP, Partner Engineering and Science, Inc., El Segundo, California, December, 2010	Preliminary information concerning soil quality and groundwater occurrence	The laboratory analytical results from the Phase II subsurface investigation were reported to the SCDHEC as an apparent release (January 4, 2011).	A copy of the report was provided to ETS by Mr. Fredrick N. Cecchini.

Table 15A Non-Direct Measurements

4. Identify key resources/support facilities needed.
   Not applicable to this scope of work.

B10 Data Management

1. Describe the data management scheme from field to final use and storage.

As generated by the Environmental Rehabilitation Contractor (Enviro-Test Services, Inc. - ETS) in completing Tier II Assessment component tasks, field notes and logs will be stored in hardback bound field books and/or on 8 ½ x 11" field data sheets. Field data sheets are signed by staff upon completion of daily work. Copies of field notes and driller 1903 forms are provided on a daily basis and placed in the project file. Field boring logs are kept on a backed-up digital library.

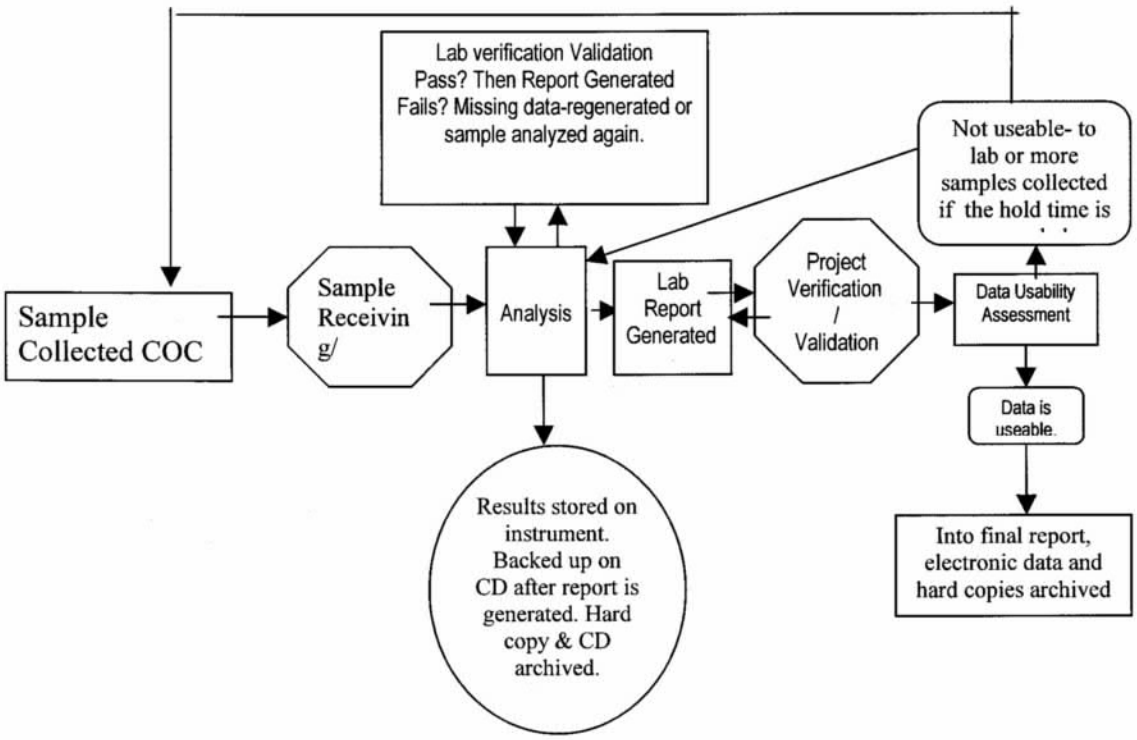


Figure 5: Laboratory Data Management Scheme (Source: Sample QAPP, South Carolina Department of Health and Environmental Control, March 21, 2001)

2. How does the lab and field staff ensure that no unauthorized changes are made to the chain of custody, sampling notebooks, laboratory notebooks and computer records?

   Copies of field notes and boring logs are reviewed by the Field Manager and placed in the project file. Additionally, field notes/logs are scanned, password secured, and placed into the digital project file. Original data sheets will also be kept by the field staff in field notebooks/folders for a minimum of three years.

   All data is recorded in bound books and/or by instrument printout. If data is recorded by hand, it must be done in ink. It is inappropriate to have pencils, erasers, or correction fluid at the bench. Data is kept either as a hardcopy, electronically, or both. All data must be protected by the use of audit trails, passwords, and controlled logbooks. If changes or corrections are necessary, it must be performed in a way that maintains the integrity of the data. Changes must be initialed and dated and corrections made using a single line strikeout. If the record does not allow space to clearly show the change, write it in the comments or at the bottom of the page. If electronic files must be changed, the file must be renamed so original information is not lost. If an entire batch of data must be reprocessed all files must be renamed. Reasons for doing so must be written in the comments and/or fully documented using a correction form. At no time shall data be obliterated for any reasons.

3. How does the lab ensure that there are no errors in samples records including times when sample information is compiled, data calculated and/or transmitted.

   All data reported includes three levels of data review including calculations used to generate the reported analytical results. This review is performed by the analyst performing the test, the supervisor, and report generation manager or designee. Data reduction includes all activities that convert instrument/computer responses into reportable results. Manually entered information is reviewed for accuracy in the LIMS and in the signed copy of the client report.

4. How will the data be archived once the report is produced? How can it be retrieved? (This applies to both electronic and hard copies).

   Hard copies of final reports are contained in the specific folder in ETS's file library. Additionally, each report is converted to digital format and stored in its applicable digital folder. Hard copy storage will be for a minimum of three years. Digital storage will be indefinite. Digital data is backed-up on a weekly basis on a four month rolling schedule. For security purposes current week data is stored at an off-site location.

   The laboratory will retain all records related to sample analysis including raw test data, calculations, derived data, calibrations and copies of test reports including chain of custodies. These records are archived in accordance with regulatory requirements for a minimum of ten years or as required by specific client contracts. Software/hardware permitting the access of electronic data must be maintained. The copy of client reports is stored in a room requiring key-card access. All reports must be signed out using the archived reports logbook. Client reports and chain of custodies are also scanned for electronic storage. Written and printed data records (bench sheets, logbooks, electronic printouts, etc.) are scanned before being boxed and placed in storage. Electronic data is stored on a dedicated server, which is backed-up daily. The safety officer keeps safety and disposal information. Archived data is stored on-site until capacity is met. The oldest archived data is then moved to a secure storage facility. The storage and on-site facility are monitored and protected from fire and theft. Electronic data storage is free from magnetic sources. It is the goal of the lab to have redundant copies (hard and electronic) to prevent loss of records due to being misplaced or environmental deterioration or catastrophe.

Section C Assessment and Oversight

C1 Assessment and Response Actions

1. *The Contractor is supposed to observe field personnel daily during sampling activities to ensure samples are collected and handled properly and report problems to DHEC within 24 hours. . Please state who is responsible for doing this and what observations will be made. Will this person have the authority to stop work if severe problems are seen?*

   -RESPONSE:

   Internal field audits will be performed on a daily basis by Terry Teate of Enviro-Test Services Inc. If any significant problems or deviations from the QAPP are noted, work may be stopped to resolve the issues. Terry Teate will have the authority to stop work, if necessary. The SCDHEC Technical Project Manager will be notified of the issues within 24 hours of any such occurrence.

2. *The SCDHEC UST QAPP states that the Lab will receive an Offsite Technical System Audit. For this project, what assessments will be done on the Commercial Lab(s) that are being used—other than their certification audit?*

   -RESPONSE:

   I. **Access Analytical is a DHEC certified lab for field parameters and participates in annual PT studies provided by Wibby Environmental. Access does not hold other certifications as it is not required for this work.**

   II. **GCAL is certified by DHEC and numerous other states. In addition to the applicable SCDHEC certifications GCAL also participates in the following:**

   - Louisiana Environmental Laboratory Accreditation Program – This assessment is conducted every two years. During that assessment the lab is assessed to the TNI Standards and the Louisiana Department of Environmental Qualities certification regulations. Theses assessment is based on the ISO 17025 requirements and ISO 17011 requirements as found in the TNI standards.

   - DOD certification – This assessment is scheduled every two years and is completed by ACLASS. The assessment is based on the DOD QSM requirements.

   - The lab perform 2 PT studies every year.

   - California ELAP – requires an assessment every two years and is conducted by the state's assessors. The assessment is to verify compliance with the requirements of the state of California.

- Arizona – requires an assessment every year and is conducted by the state's assessment team. The assessment is to verify compliance with the requirements of the state of Arizona.

- North Carolina – at the time of application standard operating procedures, quality assurance project plan, and PT results are submitted for review. Assessments are conducted every two years.

- Client Assessments – GCAL's clients can and do require assessment using a third party assessor such as Environmental Standards. The contracted assessment team verifies that GCAL is meeting the requirements of the client's contract and is compliant with EPA requirements and compliant with state regulations.

When or how often are these done?

- REPONSE: Answer to this question is included in the above response.

Who will the results be given to and who has the ability to stop work if problems are severe?

- RESPONSE: The results of the audits are reviewed by the associated regulating bodies. Any of these organizations have the right to cease work being done which falls under their program area if sufficient deficiencies are found.

C2 Reports to Management

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

Section D Data Validation and Usability

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

ATTACHMENT A

Tier II Assessment Plan and Assessment Component Cost Agreement

D H E C
PROMOTE PROTECT PROSPER

Tier II Assessment Plan
Underground Storage Tank Program

UST Permit #: 11946 County: Richland Facility Name: Broad River Amoco (BP)

Facility Address: 4335 Broad River Road City: Columbia State: SC Zipcode: 29210-4009

Responsible Party: Mr. Fredrick N. Cecchini Address: 4335 Broad River Road

City: Columbia State: SC Zipcode: 29210-4009

No. USTs: Six USTs Removed? (date: MM/DD/YYYY) Replaced? (date: MM/DD/YYYY)

Current use of facility/property:

The subject property is currently occupied by the Broad River BP and is used as a petroleum retail facility, convenience store and restaurant. The property is currently improved with one single story building with an asphalt paved parking area, a canopy covering the dispenser islands and a UST basin containing six USTs that were installed in 1989. Two USTs were removed in 1989 prior to installation of the current UST system.

Current property owner name: Mr. Fredrick N. Cecchini Address: 4335 Broad River Road

City: Columbia State: SC Zipcode: 29210-4009

Field Screening Methodology

Specify the field screening methodology to be used. The use of field screening methods to optimize the number and location of permanent wells is required.

Free product was detected in monitoring well MW-5, installed to 20 ft to monitor interstitial groundwater occurring in unsaturated soils (well screen 10 - 20 feet). The interstitial groundwater accumulated in well MW-5 to ~13.5 ft after several days. During Tier I well installation, saturated soils were encountered at 35 to 40 ft. As such, groundwater field screening will be performed to delineate the horizontal extent of COC migration of Zone 1 (interstitial groundwater) and Zone 2 (the underlying saturated soils) with the installation of temporary monitoring wells constructed of 1-inch PVC well screen and riser pipe. For field screening of the interstitial groundwater (Zone 1), 30 wells installed to a depth of 20 feet each are projected (totaling 600 ft). These wells will be sampled 2 or 3 days after installation to allow sufficient time for interstitial groundwater to accumulate. For the saturated zone (Zone 2), 30 wells installed to a depth of 40 feet each are projected (totaling 1,200 ft). From each temporary monitoring well, a groundwater sample will be collected for analysis for COC by Gas Chromatograph (Method 602) for BTEX and MTBE. Groundwater field screening methodology for a vertical indication of COC distribution is discussed below under the heading of Additional Comments.

Permanent Monitoring Wells (estimate number and total completed depth)

of shallow wells: 24 Total depth: 720 feet (12 wells to 20 ft and 12 wells to 40 ft)

# of deep wells: 2 Total depth: 120 feet (2 wells to 60 feet)

Comments, if warranted:

The Zone 1 wells will be designed to bracket accumulated interstitial groundwater. The Zone 2 wells will not be designed to bracket groundwater of the underlying saturated soils. Background groundwater quality will be evaluated for Zones 1 and 2 during Groundwater Field Screening followed by the installation of permanent monitoring wells. The Tier I assessment indicated a groundwater flow direction to the northeast based on groundwater elevations from wells MW-1 through MW-4 which were installed in

Analyses

List the analytical parameters (e.g., BTEX, MTBE) and estimated number.

Groundwater samples collected from the projected 26 monitoring wells and existing monitoring wells MW-1 through MW-4 (totaling 30 wells) will each be analyzed for BTEX/MTBE/Naphthalene/1,2-DCA (Method 8260 B), EDB (Method 8011), total lead and the Eight (8) South Carolina Oxygenates. Well MW-5 (Zone 1) was previously found to contain free product (gasoline) and accordingly a groundwater sample will not be collected for analysis unless otherwise directed by the SCDHEC. Similarly, any other well exhibiting free product will not be sampled for laboratory analysis.

Additionally, if possible, a soil sample will be collected from saturated soils during installation of a monitoring well designated to provide background groundwater quality of the site surficial aquifer. This soil sample will be analyzed for Total Organic Carbon.

Implementation Schedule *(Use MM/DD/YYYY format - Example 01/23/2004)*

Start up date: 08/01/2011 *(MM/DD/YYYY)* Completion date: 10/31/2011 *(MM/DD/YYYY)*

Report submittal date: 11/21/2011 *(MM/DD/YYYY)*

UST Permit #: 11946 Facility Name: Broad River Amoco (BP)

Site Maps

1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.

2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:

North arrow	Legend with facility name and address, UST Permit number, date, and a bar scale
Location of property lines	Streets or highways (indicate names and numbers)
Location of buildings	Identification of located buildings
Paved areas on or adjacent to site	Location of all present and former ASTs and USTs
Previous soil sampling locations	Underground and above ground utilities on or adjacent to site
Previous monitoring well locations	Location of any other potential receptor

Aquifer Characterization

Pump test: ☐ Slug tests: ☑ (check one and provide explanation for choice)

Two (2) slug tests are proposed (two separate Zone 2 wells). Bail down testing by manual methods is proposed.

Small Volume Disposal Type and Method

Soil:

An estimated 12 drums of soil are to be disposed of at a facility permitted in South Carolina to receive such materials.

Purge water:

An estimated 6 drums of purged/development groundwater are to be disposed of at a facility permitted in South Carolina to receive such materials.

Additional comments:

The Zone 1 wells will be designed to bracket accumulated interstitial groundwater. The Zone 2 wells will not be designed to bracket groundwater of the underlying saturated soils. Background groundwater quality will be evaluated for Zones 1 and 2 during Groundwater Field Screening followed by the installation of permanent monitoring wells. The Tier I assessment indicated a groundwater flow direction to the northeast based on groundwater elevations from wells MW-1 through MW-4 which were installed in the saturated sediments of Zone 2. Groundwater of Zone 2 apparently occurs under semi-confined or confined conditions. The interstitial groundwater of the overlying unsaturated sediments (Zone 1) may occur under unconfined conditions; therefore, the groundwater flow direction for Zone 1 may differ from that of Zone 2. A deep well is projected for installation proximal to the Tier 1 worst case well MW-1 (Zone 2), although free product was subsequently found at well MW-5 (Zone 1). A second deep well is projected for installation at a down-gradient location based on the results of Groundwater Field Screening for vertical COC distribution (see paragraph below).

Field Screening Methodology continued: Following groundwater field screening for the delineation of horizontal COC distribution, an indication of vertical COC distribution will be performed as follows: at three locations along the estimated center line of the horizontal COC plume (COC source or sources, plume mid-point and plume leading edge) a cluster of temporary monitoring wells will be installed. At each cluster, discrete samples will be collected at projected depths of 45, 50 and 55 BLS feet (or until refusal) utilizing direct push drilling technology with a retractable stainless steel well screen, if feasible (installation of 1-inch PVC well screen and riser pipe if non-feasible). The total estimated drilling feet for evaluation of the vertical COC distribution is therefore 450 feet.

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

July 1, 2011

ASSESSMENT COMPONENT COST AGREEMENT
SOUTH CAROLINA
Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account

Facility Name: Broad River Road Amoco (BP)

UST Permit #: 11946 **Cost Agreement #:**

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. Plan*				
B. Tax Map		x	$50.00	$0.00
C. Tier II or Comp. Plan /QAPP Appendix B	1	x	$525.00	$525.00
2. Receptor Survey *		x	$500.00	$0.00
3. Survey (500 x 500 feet)				
A. Comprehensive Survey	1	x	$1,000.00	$1,000.00
B. Subsurface Geophysical Survey				
1. < 10 meters below grade		x	$2,750.00	$0.00
2. > 10 meters below grade		x	$3,250.00	$0.00
C. Geophysical UST or Drum Survey		x	$1,125.00	$0.00
4. Mob/Demob (Each)				
A. Equipment	3	x	$575.00	$1,725.00
B. Personnel	8	x	$290.00	$2,320.00
C. Adverse Terrain Vehicle to install wells		x	$575.00	$0.00
5. Soil Borings (hand auger)* (Feet)		feet x	$14.00	$0.00
6. Soil Borings (drilled) & Field Screening *				
Rate includes collection of water sample or soil sample, and lab or other analyses				
A. Standard	2,250	feet x	$17.00	$38,250.00
C. Fractured Rock		feet x	$27.50	$0.00
7. Soil Leachability Model (Each)		each x	$200.00	$0.00
8. Abandonment* (per foot)				
A. 2" diameter or less	2,250	feet x	$5.00	$11,250.00
B. Greater than 2" to 6" diameter		feet x	$5.50	$0.00
C. Dug/Bored well (up to 6 foot diameter)		feet x	$18.00	$0.00
9. Well Installation* (per foot)				
A. Water Table (hand augered)		feet x	$20.00	$0.00
B. Water Table (drill rig)	720	feet x	$38.00	$27,360.00
C. Telescoping/ Pit Cased	120	feet x	$58.00	$6,960.00
D. Rock Drilling		feet x	$58.00	$0.00
E. 2" Rock Coring		feet x	$45.00	$0.00
G. Rock Multi-sampling ports/screens		feet x	$47.20	$0.00
H. Recovery Well (4 inch diameter)		each x	$45.00	$0.00
I. Pushed Pre-packed screen (1.25 diameter)		each x	$18.50	$0.00
J. Rotosonic (2 inch diameter)		each x	$45.00	$0.00
10. Groundwater Sample Collection / Gauge Depth to Water or Product (Each)				
A. Groundwater Purge	31	wells x	$55.00	$1,705.00
B. Air or Vapors		samples x	$90.00	$0.00
C. Water Supply		samples x	$30.00	$0.00
D. Groundwater No Purge or Duplicate		samples x	$35.00	$0.00
E. Gauge Well only		per well x	$20.00	$0.00
F. Sample Below Product		wells x	$50.00	$0.00
G. Pasive Diffusion Bag		each x	$40.00	$0.00
H. Field Blank		each x	$5.00	$0.00

11. Laboratory Analyses-Groundwater (Each Sample)					
A1. BTEX+Naphth.+ Oxyg's+ 1,2 DCA + Ethanol	36	samples x	$100.00		$3,600.00
AA. Lead, Filtered		samples x	$46.00		$0.00
B1. Rush EPA Method 8260B (All of item A.)		samples x	$143.00		$0.00
C1. Trimethal, Butyl, and Isopropyl Benzenes		samples x	$40.00		$0.00
D. PAH's		samples x	$120.00		$0.00
E. Lead, Unfiltered	36	samples x	$20.00		$720.00
F. EDB by EPA 8011	36	samples x	$55.00		$1,980.00
FF. EDB by EPA Method 8011 Rush		samples x	$75.00		$0.00
G. 8 RCRA Metals		samples x	$140.00		$0.00
H. TPH (9070)		samples x	$55.00		$0.00
I. pH		samples x	$10.00		$0.00
J. BOD		samples x	$40.00		$0.00
P1. Ethanol		samples x	$21.50		$0.00
11. Analyses-Soil (Each Sample)					
Q. BTEX + Naphth.		samples x	$100.00		$0.00
R. PAH's		samples x	$120.00		$0.00
S. 8 RCRA Metals		samples x	$150.00		$0.00
T. Oil & Grease (9071)		samples x	$60.00		$0.00
U. TPH-DRO (3550B/8015B)		samples x	$65.00		$0.00
V. TPH- GRO (5030B/8015B)		samples x	$65.00		$0.00
W. Grain size/hydrometer		samples x	$99.00		$0.00
X. Total Organic Carbon	1	samples x	$35.00		$35.00
11. Analyses-Air (Each Sample)					
Y. BTEX + Naphthalene		samples x	$247.50		$0.00
11. Analyses-Free Phase Product (Each Sample)					
Z. Hydrocarbon Fuel Identification		samples x	$620.00		$0.00
12. Aquifer Characterization*					
A. Pumping Test		hours x	$120.00		$0.00
B. Slug Test*	2	tests x	$150.00		$300.00
C. Fractured Rock		tests x	$500.00		$0.00
13. Free Product Recovery Rate Test* (Each)		tests x	$120.00		$0.00
14. Fate/Transport Modeling					
A. Mathematical Model		each x	$300.00		$0.00
B. Computer Model	1	each x	$500.00		$500.00
15. Risk Evaluation					
A. Tier I Risk Evaluation		x	$300.00		$0.00
B. Tier II Risk Evaluation	1	x	$500.00		$500.00
16. Subsequent Survey*		x	$300.00		$0.00
17. Disposal* (gallons or tons)					
A. Wastewater	330	gallons x	$0.80		$264.00
B1. Free Product	10	gallons x	$0.85		$8.50
C. Soil Treatment/Disposal	4	tons x	$72.50		$290.00
D. Drilling fluids	110	gallons x	$0.80		$88.00
18. Miscellaneous (attach receipts)					
		x			$0.00
		x			$0.00
		x			$0.00
20. Tier I Assessment (Use DHEC 3665 form)		x			$0.00
21. IGWA (Use DHEC 3666 form)		x			$0.00
22. Corrective Action (Use DHEC 3667 form)		x			$0.00

23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A. 8-hour Event*		each x	$3,000.00		$0.00
B. AFVR per-hour Continuance		per hour x	$204.00		$0.00
C. Off-gas treatment per-hour Continuance		per hour x	$35.00		$0.00
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A. New GAC System Installation*		each x	$2,500.00		$0.00
B1. Refurbished GAC Sys. Install*		each x	$1,180.00		$0.00
C. Filter replacement/removal*		each x	$450.00		$0.00
D1. GAC System removal, cleaning, & refurbishment*		each x	$720.00		$0.00
E. GAC System housing		each x	$450.00		$0.00
F. In-line particulate filter		each x	$150.00		$0.00
G. Additional piping & fittings		feet x	$4.00		$0.00
25. **Well Repair**					
A. Additional Copies of the Report Delivered		each x	$32.50		$0.00
B. Repair 2x2 MW pad		each x	$100.00		$0.00
C. Repair 4x4 MW pad		each x	$150.00		$0.00
D. Repair well vault		each x	$225.00		$0.00
F. Replace well cover bolts		each x	$10.00		$0.00
G. Replace locking well cap & lock		each x	$15.00		$0.00
H. Replace/Repair stick-up		each x	$137.50		$0.00
I. Convert Flush-mount to Stick-up		each x	$175.00		$0.00
J. Convert Stick-up to Flush-mount		each x	$125.00		$0.00
K. Replace missing/illegible well ID plate		each x	$22.50		$0.00
Report Prep & Project Management	15%	x	$99,380.50		$14,907.08
TOTAL					$114,287.58

*The appropriate mobilization cost can be added to complete these tasks, as necessary

ATTACHMENT B

STANDARD OPERATING PROCEDURES (SOP)

ETS SOP

TEMPORARY MONITORING WELL

INSTALLATION PROCEDURES

Type II Temporary Monitoring Well

By definition in R.61-71 South Carolina Well Standards, Type II wells use a natural filter pack in unconsolidated aquifers. The temporary monitoring wells are constructed of 1-inch diameter, Schedule 40 Polyvinyl Chloride (PVC) casing and well screen with flush-threaded joints in a 2-inch diameter bore hole (minimum). The well screen is generally 10 feet in length with 0.010-inch slot openings. Type II Monitoring Wells are to be installed and abandoned in accordance to R.61-71 South Carolina Well Standards, Section H: Monitoring Wells.

General

Type II wells are installed in unconsolidated soils with no artificial filter pack. Temporary monitoring wells are to be abandoned within 5 days of installation. As applicable, temporary monitoring wells are to be secured at ground surface if left overnight, as follows: 1) in areas of vehicular or pedestrian traffic, the wells are completed at subsurface level (3 to 4 inches below land surface) and capped with a !-inch PVC slip well cap or equivalent, 2) the annular space at the top of casing is to be filled with a impermeable material (i.e. wetted bentonite), 3) a wooden plug or suitable equivalent will then be emplaced flush with land surface at the top of the bore hole.

ETS SOP

MONITORING WELL INSTALLATION PROCEDURES

Type III Monitoring Well

Type III groundwater monitoring wells are constructed of 2-inch diameter, Schedule 40 Polyvinyl Chloride (PVC) casing and well screen with flush-threaded joints in a 4-inch diameter bore hole (minimum). The well screen is generally 10 feet in length with 0.010-inch slot openings. With prior approval from the SCDHEC, well screens will sometimes be longer than 10 feet in length (15 to 20 feet in length as applicable and/or permissible) depending on subsurface formations and/or groundwater occurrence as encountered during drilling procedures. Type III Monitoring Wells are to be installed in accordance to R.61-71 South Carolina Well Standards, Section H: Monitoring Wells.

General

In Type III wells a washed sand filter pack is emplaced around the outside of the pipe from the bottom of the well casing to at least 2 feet above the top of well screen. The sand filter pack is used to stabilize the formation and yield less turbid water.

An approximate 2-ft thick (minimum) bentonite seal is installed on top of the sand filter pack. The well annulus is then grouted to the surface with neat cement/bentonite grout mixture. A lockable well cap and a steel bolted manhole cover are secured over each well in a 2-ft x 2-ft concrete pad.

ETS SOP

DEEP MONITORING WELL INSTALLATION PROCEDURES

Type III Deep Monitoring Well

A deep monitoring well will be designed as a "telescoping" well to monitor groundwater at the bottom of the surficial aquifer or at the upper zones of the underlying aquifer, as applicable to any given hydrogeologic regime. Initially, 6-inch diameter, schedule 40 Polyvinyl Chloride (PVC) pit or surface casing of sufficient length to isolate groundwater infiltration at the targeted depth is installed. The surface casing is grouted in place and the grout is allowed to cure. Within the 6-inch surface casing and into the underlying geologic formation, a 4-inch diameter (minimum) bore hole is advanced 5 to 10 feet deeper than the bottom of the surface casing. The deep monitoring well is constructed of 2-inch diameter, Schedule 40 Polyvinyl Chloride (PVC) casing and well screen with flush-threaded joints. The well screen is 5 feet in length with 0.010-inch slot openings. In general, the Type III Deep Monitoring Wells are to be installed in accordance to R.61-71 South Carolina Well Standards, Section H: Monitoring Wells.

General

In Type III wells a washed sand filter pack is emplaced around the outside of the pipe from the bottom of the well casing to at least 2 feet above the top of well screen. The sand filter pack is used to stabilize the formation and yield less turbid water.

A bentonite seal is installed on top of the sand filter pack. The bentonite seal will be of sufficient height to extend 2 feet (minimum) into the bottom of the surface casing annulus. The remaining annulus will be grouted to the surface with neat cement/bentonite grout mixture. A lockable well cap and a steel bolted manhole cover are secured over each well in a 2-ft x 2-ft concrete pad.

ATTACHMENT C

Access Analytical, Inc. - Chain of Custody

FIGURES

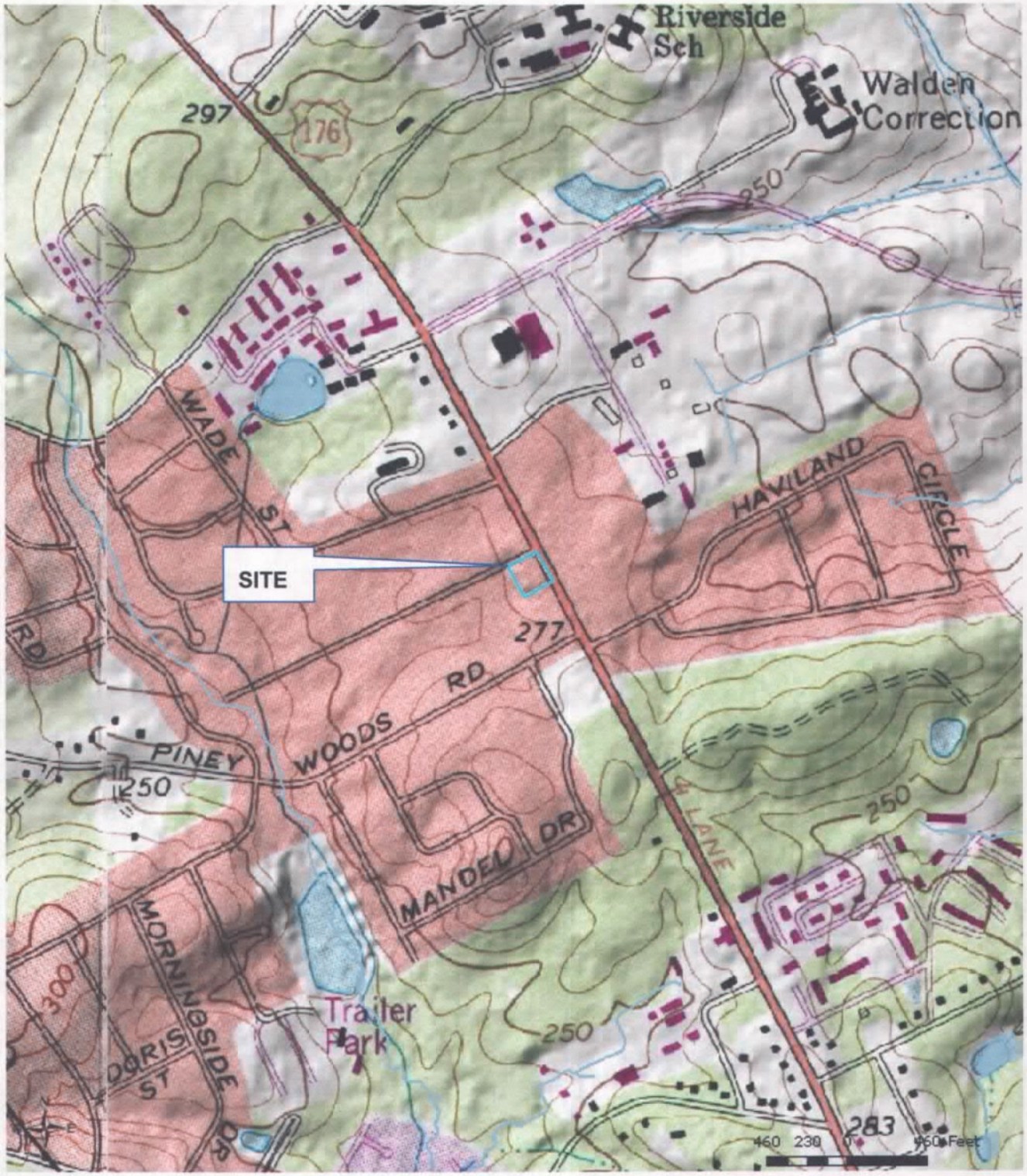
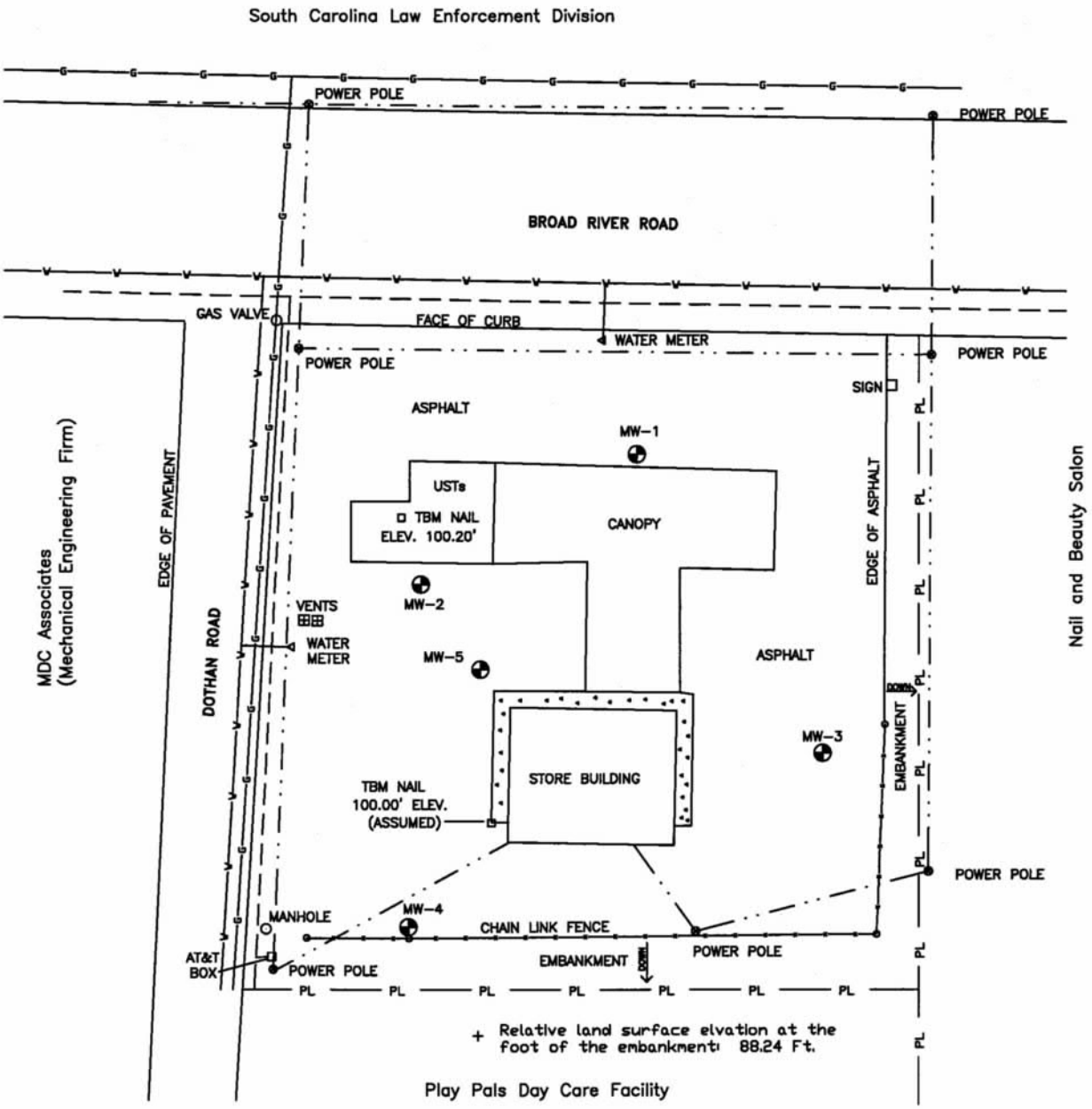


FIGURE 1: USGS Topographic Map	Source: Richland County GIS System **N↑**
Enviro-Test Services, Inc.	**Site Name:** Broad River Amoco (BP) 4335 Broad River Road Columbia, SC 29210 **Project Number:** SCDHEC # 11946



		TOC ELEVATION
TOC = TOP OF CASING	MW-1	100.59
TBM = TEMPORARY BENCH MARK	MW-2	99.94
UST = UNDERGROUND STORAGE TANK	MW-3	99.91
	MW-4	95.85

- Monitoring Well
- Water Line
- Gas Line
- Overhead Power Line
- Communication Line
- Property Line (Approximate)

0 50 100

1 INCH = 50 FEET

FIGURE 2: Site Base Map

Enviro-Test Services, Inc.	Broad River Amoco (BP)
DWG BY: JDK	4335 Broad River Road
DWG DATE: 3/29/11	Columbia, SC, Richland County
	SCDHEC ID #11946

dhec

UST Carolyn APR 12 2019 PROGRAM

UST 150 Rich DOCKET

State Lead Option
Property Access Agreement for Site Rehabilitation

Only complete this form if: You are the legal owner of the property **OR** are the designated authorized representative for the legal owner of the property.

I certify that I am the legal owner of the property identified below or serve as the authorized representative for the legal owner of the property. I authorize the South Carolina Department of Health and Environmental Control (DHEC), or a contractor selected by DHEC, to enter this property at reasonable times only to conduct assessment and corrective action activities, as required. The contractor will be designated as the contractor for the UST owner or operator for only the required environmental site rehabilitation activities. I understand that the Agency will notify me of all activities that are necessary prior to their initiation and will promptly provide to me a summary of the data upon request.

UST Permit # 11946		
Facility Name: Broad River Road		
Facility Address: 4335 Broad River Road, Columbia, SC 29210		
Facility Phone Number:		
Is facility within city limits? (check yes/no)	■ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:	Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?	■ **Yes**	☐ **No**
*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:		
Name:	**Phone Number:**	
Were USTs previously removed from the ground at this facility?	☐ **Yes**	☒ **No**
*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):		
Name:	**Phone Number:**	
Is the facility currently leased to someone?	☒ **Yes**	☐ **No**
*If yes, notify them of the pending work scope, and please provide their name/contact number:		
Name: Bhavik Patel	**Phone Number:** 803 / 741 / 4832	

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of Property Owner (Print):	Broad River C-Store LLC	
Signature of Property Owner or authorized representative:		**Date** 4 / 11 / 2019
Affiliation (if applicable)		
Signature of Witness		**Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:** 8031477 / 7575
Email Address:	Pallavk@aol.com	

UST Carolyn M APR 19 2019 PROGRAM

UST 15 dec DOCKETING

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State Lead Option Permission Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of the existing or former underground storage tanks located identified below and for the release reported the date listed below or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (DHEC) to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select a corrective action contractor, on my behalf, after bid solicitation results are received. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. I understand that DHEC or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report.

UST Permit #	11946	**Release Report Date:**	1/4/2011
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			
Is facility within city limits? (check yes/no)		☑ **Yes**	☐ **No**
Name of nearest intersecting street/road/highway:		Broad River Road and Dothan Road	
Does public water/sewer utility service this facility?		☑ **Yes**	☐ **No**

*If no, please provide a contact name/number that can assist in the location of private water and septic tank lines:

Name:	**Phone Number:**

Were USTs previously removed from the ground at this facility?	☐ **Yes**	☐ **No**

*If yes, please provide the name/contact number of a person that can assist in the location of the former UST(s):

Name:	**Phone Number:**

Is the facility currently leased to someone?	☐ **Yes**	☐ **No**

*If yes, notify them of the pending work scope, and please provide their name/contact number:

Name:	**Phone Number:**

***Please note that if vehicles or other mobile structures are parked over the location of the existing or former USTs, they should be moved prior to DHEC's contractor mobilizes to the facility.**

Name of UST owner/former owner or authorized representative (Print):	Frederick Cecchini	
Signature of UST owner/former owner or authorized representative:	F. N. Cecchini	4-10-19 **Date**
Affiliation (if applicable)		
Signature of Witness	Terry L. Seate	4-10-19 **Date**

Contact Info

Phone Numbers:	**Home:** 803-238-2143	**Cell:**
Email Address:		

UST
Carolyn M
APR 18 2019
PROGRAM

PERMISSION FORM

UNDERGROUND STORAGE TANK OWNER

UST Permit # 11946

If you are the owner of the former or existing underground storage tanks or are designated as their authorized representative, but do not own the property, please complete this form.

I, Fredrick Cecchini certify that I am the legal owner of the underground storage tank(s) located at the facility identified below or serve as the authorized representative for the UST owner for the release reported on January 4,2011 I grant permission to the South Carolina Agency of Health and Environmental Control (Agency) to secure on my behalf services of a contractor to conduct assessment and corrective action activities, as required. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that Agency will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Underground Storage Tank Management Division in writing.

Name of Facility Broad River Amoco Phone # 238-2143

UST
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DOCKETING

Street Address of Facility 4335 Broad River Rd.

Town, City, District, Suburb Columbia, South Carolina 29212

Name of nearest intersecting street, road, highway, alley

Dothan Road

Is this facility within the city limits? (yes or no) Yes

Does a public water or sewer utility service this facility? (yes or no) Yes, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines Palmetto Utilities,
phone number 803-699-2422

Were underground storage tanks previously removed from the ground at this facility? (yes or no) yes
If yes, please provide the name of a person we can contact that can assist in the location of the former underground storage tank excavation Fredrick Cecchini
Phone number 803-238-2143

Is the property currently leased or rented to someone? (yes or no) Sold. If yes, please provide their name Kenny Patel and phone number 803-497-1868
and let them know about the pending assessment activities. If vehicles or other mobile structures are parked over the former or existing underground storage tanks, they should be moved before the Agency's contractor gets to the site.

NAME of UST owner (Please Print): (Previous Owner) Fredrick Cecchini

Phone Number (home) 803-238-2143 (work) 803-238-2143

X Signature of UST Owner: F. Cecchini 4-10-19

Witness: Terry L. Seate 4-10-19

Re: ACA Options paperwork

Moores, Carolyn T.

Tue 4/23/2019 11:24 AM

Sent Items

To pallavr@aol.com <pallavr@aol.com>;

Mr. Desai,

I have received your reply, and will mail the unused paperwork back to you.

Thank you,

Carolyn Moores

From: PALLAV DESAI <pallavr@aol.com>
Sent: Tuesday, April 16, 2019 4:55:22 PM
To: Moores, Carolyn T.
Subject: Re: ACA Options paperwork

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***
State lead option

On Apr 16, 2019, at 3:59 PM, Moores, Carolyn T. <mooresct@dhec.sc.gov> wrote:

> Mr. Desai,
>
> Thank you for sending in the Corrective Action Options paperwork. I need to clarify if you intend to choose the State Lead Option or the Owner/Operator Lead Option. You signed and sent the paperwork for both options.
>
> Please let us know your choice, and I can return the other form back to you.
>
> Thank You,
>
> Carolyn Moores
> Hydrogeologist
> Corrective Action & Quality Assurance
> UST Management Division
> Bureau of Land & Waste Management
>
> 2600 Bull Street
> Columbia SC 29201-1708
> Office: (803) 898-2622
> Fax: (803) 898-0673

dhec
Healthy People. Healthy Communities.

MR PALLAV DESAI
BROAD RIVER C STORE LLC
41 CROMWELL COURT
IRMO SC 29063

APR 2 5 2019

UST 154 DOCKETING

Re: **Corrective Action Options Forms**
Broad River Amoco, 4335 Broad River Road, Columbia, SC
UST Permit # 11946
Release reported November 16, 2018
ACA Forms received April 12, 2019
Richland County

Dear Mr. Desai:

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (DHEC) has received the referenced forms.

Per our email exchanges on April 16, 2019, I am returning the extra form to you, since you clarified your choice of State Lead Option for the ACA.

On all correspondence or inquiries regarding this project, please reference UST Permit #11946.

Sincerely,

Carolyn T Moores

Carolyn Moores, Hydrogeologist
Corrective Action & Quality Assurance Section
UST Management Division
Bureau of Land and Waste Management

enc: extra Active Corrective Action Options form

UST PROGRAM dhec
Caitlyn APR 12 2019

Owner/Operator Lead Form for Active Corrective Action

Only complete this form if: You are the legal owner of the existing or former underground storage tanks, **OR** are the legal owner's designated authorized representative.

I certify that I am the legal owner of record for the underground storage tanks identified below for the release date reported below or serve as the authorized representative for the owner. I wish for DHEC to post the technical specifications package for the active corrective action on the DHEC website and solicit bids from DHEC certified contractors to conduct the work by publishing a notice in the South Carolina Business Opportunities and to select my own corrective action contractor after bid solicitation results are received. **I understand the lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost. I understand if the selected contractor is not able to complete the required activities, I will be required to find another certified contractor to complete the required activities. Except for the limitations specified in the solicitation, the reasonable or SUPERB-allowable cost is the maximum amount the SUPERB Account will pay for the active corrective action.**

UST Permit #	11946	**Release Report Date:**	11/16/2018
Facility Name:		Broad River Road	
Facility Address:		4335 Broad River Road, Columbia, SC 29210	
Facility Phone Number:			

Name of UST owner/former owner or authorized representative (Print):	Broad River C-Store LLC	
Signature of UST owner/former owner or authorized representative:	(Paul Desai)	4/11/2019 **Date**
Affiliation (if applicable)		
Signature of Witness	Priya Desai	4/11/2019 **Date**

Contact Info

Phone Numbers:	**Home:**	**Cell:**	803 477 7525
Email Address:	pallavk@aol.com		

DHEC 3989 (01/2019)

Scanned
Verified

UNDERGROUND STORAGE TANK MANAGEMENT DIVISION
BUREAU OF LAND AND WASTE MANAGEMENT

2600 Bull Street
Columbia, SC 29201
Telephone (803) 898-2544
Fax (803) 898-0673

MEMORANDUM

To: Beverly McLeod, Manager
Enforcement Section

Date: May 3, 2019

Re: Enforcement Referral

Type: Technical (Tier II Report)

UST Permit #: 11946

Facility Name: Broad River Amoco

Owner/Operator: (when the release is reported)	Name	Mr. Paul Desai
	Address	41 Cromwell Court, Irmo, SC 29063
	Phone #	803-477-7575

Regulatory Citation: Subpart F, Section 280.65 Investigation for soil and ground-water cleanup of the South Carolina Underground Storage Tank Regulations, R. 61-92

Requested Action/Information: The Tier II Assessment Report for the release reported on November 16, 2018 was due March 1, 2019. The assessment is to be conducted with O/O's money.

Additional Comments: Original Tier II Assessment Report due date was extended until April 5, 2019 on request. Certified letter sent on April 8, 2019 confirming second extension request due date of April 30, 2019. Report has not been received to date.

Are there any Tank Ownership Issues? : ___Yes ___No If yes please explain.
_____

Are there any other persons being dealt with other than the tank owner? ___Yes ___No

If yes please list name and relationship_____

Referred By: Jeffrey E Mendenhall Date: 5/6/19

Section Manager's Approval: Ashleigh Thrash Date: 5/9/19

Division Director's Approval: Debra K Thoma Date: 5/9/19

Enc: Certified Letter dated April 8, 2019

cc: Contractor Certification File
Technical File

UST PROGRAM
DOCKETING # 156

dhec
Healthy People. Healthy Communities.

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®

OFFICIAL USE

Certified Mail Fee 9214 8969 0099 9790 1414 8278 22
$

Extra Services & Fees (check box, add fee as appropriate)
- ☐ Return Receipt (hardcopy) $
- ☐ Return Receipt (electronic) $3.50
- ☐ Certified Mail Restricted Delivery $
- ☐ Adult Signature Required $1.60
- ☐ Adult Signature Restricted Delivery $

Postage $0.00
$

Total Postage and Fees
$

Electronic Return Receipt Requested

Postmark Here

Sent To: Mr. Paul Desai
Broad River C Store LLC
Street, Apt. No., or PO Box No.: 41 Cromwell Court
City, State, Zip+4: Irmo, SC 29063

5/14/2019 2:17:48 PM

PS Form 3800, April 2015 See Reverse for Instructions

First Class and Certified Mail
Article No 9214 8969 0099 9790 1414 8278 22

May 14, 2019

Mr. Paul Desai
Broad River C Store LLC
41 Cromwell Court
Irmo, South Carolina 29063

RE: Broad River Amoco, 4335 Broad River Road, Columbia, SC
Release #2, Reported November 16, 2018
UST Permit 11946

Dear Mr. Desai:

The following actions need to be taken in order to avoid further enforcement actions including the assessment of monetary penalties:

A. Submit the Tier II Assessment Report on or before **June 14, 2019**.

The above-referenced documentation should be mailed to:

SCDHEC/BLWM
Division of Compliance and Enforcement
Enforcement Section
Attn: Jane Mundell
2600 Bull Street
Columbia, SC 29201

This enforcement action will remain open and could subject you to a proposed consent order and a civil penalty until the requested actions are performed, reviewed, and deemed acceptable by the Department. **S.C. Code Ann. § 44-2-140 (B), as amended,** provides that the Department may assess a civil penalty not to exceed ten thousand dollars for each tank for each day of violation.

If you would like to schedule a meeting to discuss the violations, please contact me at (803) 898-0488. This correspondence is being sent to you by first-class mail and certified mail to better ensure delivery.

Respectfully,

Jane Mundell
Enforcement Section
Division of Compliance and Enforcement
Bureau of Land and Waste Management

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PROGRAM

May 7, 2019

RECEIVED
MAY 15 2019
SC Department of
Health & Environmental Control

ENVIRO-TEST SERVICES

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DOCKETING

Ms. Carolyn Moores, Hydrogeologist
Corrective Action Section
UST Program
Bureau of Land and Waste management

RE: April, 2019 Summary Report for Emergency Free Product Abatement
Broad River Amoco
Permit # 11946; CA # 59405
4335 Broad River Rd Columbia, SC
Richland County

Dear Ms. Moores,

Enviro-Test Services is continuing to remove Free Product and petroleum contaminated water at the Play Pals Day Care which is down gradient and 20 ft below the source, Broad River BP Gas Station. This was due to the second release incident of November 16, 2018.

A total of (7) Free Product Vacuum Recovery Events were performed through out the month of April. These Events produced 8,050 gallons of contaminated petroleum water and .5 gallon of free product.

These Task include vacuuming petroleum contact water from 5 Recovery wells in 2 Recovery trenches, and 2 open Pits, Storm drains and under the building of Play Pals Day Care. There is also maintenance of the open pits and barrier nets for safety protection.

The Absorbent booms that are replaced when they no longer absorb the free product. They are located against the fence between the BP station and the day care where the free product flows out of the embankment. The other Absorbent Booms are located in the ditch at the rear of the Day Care which leads to the storm drain that has one in it and there is another one in the ditch by the apartments.

Enviro-Test will continue Emergency Free Product Abatement until the Corrective Actions begin at the above facilities as directed.

Thank You, for Recognizing our commitment to continue working on this site.

Terry L. Teate
Project Manager
Enviro-Test Services Inc.

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 2374

2. Page 1 of

3. Generator's Name and Mailing Address
Broad River BP / Fred Cucchia
4335 Broad River Rd
Columbia, S.C

12-414.2-19

4. Generator's Phone ( )

5. Transporter 1 Company Name
ARM

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
TK Tank Services
425 Boulevard Rd
Sumter, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLEUM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLEUM CONTAMINATED WATER	1	TT	3746	Gal
c.				
d.				

GENERATOR

G. Additional Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
ARM ENVIRONMENTAL SERVICES, INC.
P.O. BOX 50285
COLUMBIA, SC 29250

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Broad River Rd BP - Fred Cucchia

Printed/Typed Name: Billy Pitteger Agent for | Signature: Billy Pitteger | Date: Month 4 Day 12 Year 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pitteger | Signature | Date: Month 4 Day 12 Year 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Casey Newman | Signature: Casey Newman | Date: Month 4 Day 12 Year 19

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NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. 2377

2. Page 1 of

3. Generator's Name and Mailing Address: Broad River Rd BP / Fred Cucchini, 4335 Broad River Rd., Columbia, S.C

4. Generator's Phone ( ): 12-414.2-KB

5. Transporter 1 Company Name: ARM

6. US EPA ID Number

A. State Transorter's ID

B. Transporter 1 Phone

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address: Hydrotime Env., 2420 Shop Rd, Columbia, S.C

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone

GENERATOR

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NON-HAZARDOUS PETROLUEM CONTAMINATED SOIL				
b. NON-HAZARDOUS PETROLUEM CONTAMINATED WATER	1	T	4304	Gal
c.				
d.				

G. Additonal Descriptions for Materials Listed Above: 1/2 gallon - fuel

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ARM ENVIRONMENTAL SERVICES, INC
P.O. BOX 50285
COLUMBIA, SC 29250

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: Billy Pitteger Agent for Broad River BP Fred Cucchini — Signature: Billy Pitteger — Date: Month 4 Day 22 Year 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Billy Pitteger — Signature: Billy Pitteger — Date: Month 4 Day 22 Year 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this maifest, except as noted in item 19.

Printed/Typed Name: DAVID HELMS — Signature — Date: Month 4 Day 22 Year 19

NON-HAZARDOUS WASTE

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Date Received 5-15-19

Permit Number 11946

Project Manager Ed Mendenhall

Name of Contractor CTSI

UST Certification Number _____

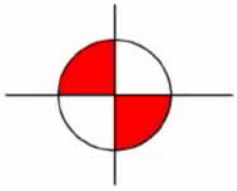
Docket Number 1584ech

Scanned _____

Tier II

C T S I

Carolina Technical Services, Inc.



Tier II Assessment Report

Broad River Amoco
4335 Broad River Rd.
Columbia, South Carolina
UST Site ID. No. 11946

CTSI Project No. 18-6580

prepared
for

Mr. Paul Desai
Broad River C Store LLC
41 Cromwell Ct.
Irmo, SC 29063

May 14, 2019

7130 Broad River Road - Suite A
Irmo, South Carolina 29063
Tel. 803-407-3336
Fax 803-749-1718

William Wood, Jr., P.G. No. 2116

BROAD RIVER AMOCO
TIER II ASSESSMENT
REPORT

4335 Broad River Road
Columbia, SC 29210
Richland County, South Carolina
UST Permit No. 11946

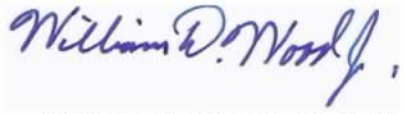
May 14, 2019

Prepared by

Carolina Technical Services, Inc.
P.O. Box 115
Irmo, South Carolina
29063

Certified UST Contractor No. 263

CTSI Project No. 18-6580



William D. Wood, Jr. P.G.
South Carolina Registration No. 2116

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Initial Groundwater Assessement Report, Enviro-Test Services, February 4, 2011
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Tier II Assessment Report, ARM Environmental Services, Inc., May 31, 2013
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1.0 Introduction

This Tier II Assessment Report has been prepared by Carolina Technical Services, Inc. (CTSI), Certified Contractor No. 263, in general accordance with the South Carolina Underground Storage Tank (UST) Quality Assurance Project Plan (QAPP). This Tier II Assessment addresses Release No. 2 at the site, reported November 16, 2018 to the South Carolina Department of Health and Environmental Control Underground Storage Tank Management Division, here after referred to as "the Department".

1.1 Facility Information and History

Broad River Amoco
4335 Broad River Rd.
Columbia, SC, 29210
UST Permit No. 11946
803-798-3051

Operator:

Bahvik Patel
4335 Broad River Rd.
Columbia, SC, 29210
803-781-4832

Land Owner:

Broad River C Store LLC
41 Cromwell Court
Irmo, SC 29063
Attn: Paul Desai
803-477-7575

The site is located along the southwestern side of Broad River Rd. (US Hwy 176), a five-lane thoroughfare in a residential/commercial/institutional area. Dothan Road (State Road S-40-929) abuts the northwestern property boundary. A property housing the Play Pals daycare center lies adjacent to the southwestern property boundary. An engineering firm is located across Dothan Road to the northwest. Across Broad River Rd. to the northeast are parking lots for the South Carolina Law Enforcement Division (SLED) facility. A former residential property, now housing a beauty salon, lies adjacent to the southeastern property boundary. Residential properties are located along Dothan Rd. further to the west and southwest of the site.

Figure 1 is a topographic map showing the site location. Figure 2A is a site plan. The site houses an active BP-branded petroleum retail/convenience store. Six permitted underground storage tanks (USTs) were located in the northern portion of the site at the time of Release No. 2. Two 3000 gallon regular unleaded gasoline USTs manifolded together, and one 1000 gallon kerosene UST located in the northern portion of the site were abandoned in February 2019 concurrent with this Tier II assessment. Two additional USTs at an undetermined location in the general vicinity of the current vacuum system area were reported as abandoned in 1989.

Historical information including aerial photographs and previous assessment reports indicate that the site was agricultural land until about 1959 when it was developed into a petroleum retail facility by B. O. Derrick. Associated Oils of South Carolina acquired the facility in 1988. During 1988 and 1989 the existing building(s) were razed and the current building and UST system constructed. These activities apparently included the placement of significant amounts of fill materials in the southwestern portion of the facility. Mr. Frederick N. Cecchini acquired the property in June 1997. Broad River C Store LLC acquired the property in July 2018.

Figure 2B contains an aerial photograph from 1971 showing the original building configuration, a 2018 aerial photograph showing the current building configuration, and a composite overlay of the two aerials showing the relationship of the original buildings to the current site layout. The composite photograph indicates that the original building was

located where the current dispenser island canopy is now located. Not shown on the photos is a building that was reportedly located in the western portion of the property.

Enviro-Test Services and ARM Environmental Services (ARM) have conducted previous assessment and remediation activities at the site in response to a release reported on January 4, 2011. The release was detected during a Phase II Site assessment performed during December 2010. No cause of the release was identified. Subsequently an Initial Groundwater Assessment (IGWA), and a Tier I assessment was conducted by Enviro-Test Services and a Tier II assessment was conducted by ARM. Corrective Action remedial activities to address the presence of free-phase petroleum product at the site were performed by Enviro-Test.

Release No. 2 was reported on November 16, 2018. The exact circumstances regarding the release are unclear, but the release is surmised to be related to a fuel delivery approximately one week prior to the release being detected. It has been suggested that an overfill may have occurred when a 3000 gallon UST was being filled. This UST in question was manifolded to another adjacent 3000 gallon UST. These USTs were reportedly to be under a Department delivery prohibition order. The release apparently involved a significant, but undetermined quantity of regular unleaded gasoline.

The release appears to have involved the migration of free phase petroleum product across the site to the boundary with the Play Pals daycare center. As noted in assessment reports related to Release No. 1, the construction of the Play Pals facility involved the excavation of clayey soils unsuitable for construction, along with construction of a subsurface drainage system to convey shallow groundwater and surface runoff away from the Play Pals property. The subsurface drainage system appears to be in the form of a French drain system.

Upon discovery of the release, Enviro-Test Services and ARM were called upon to provide emergency as well as interim abatement measures on the Play Pals property. The presence of free phase product resulted in relatively high organic vapor readings at the

Play Pals facility leading to the evacuation and temporary closure of the facility and response by Richland County emergency management and local fire department personnel. CTSI was contracted by Broad River C Store LLC, the current UST owner, to conduct assessment activities related to Release No. 2.

Under the guidance of the Department, discussions and meetings were held with Department personnel and representatives of CTSI, ARM, and Enviro-Test in order to determine a reasonable course of action for the parties. At that time it was agreed that ARM and Enviro-Test would address conditions on the Play Pals property while CTSI conducted assessment activities for Release No. 2. It was agreed at that time that CTSI's assessment activities would primarily by confined to the Broad River Amoco property, while ARM and Enviro-Test would conduct efforts to recover and abate the free phase product on the Play Pals property. Subsequently, ARM and Enviro-Test installed several recovery trenches and extraction points the Play Pals property that remain in use at the time of this report. Detailed discussion of actions on the Play Pals property is beyond the scope of this assessment and report.

1.2 Regional Geology and Hydrogeology

The site is located in the Piedmont Physiographic Province of South Carolina. The topography of the Piedmont Province is typified by gently rolling hills and a well-developed drainage system producing moderate relief. The soils of this region were formed by weathering of the underlying igneous and metamorphic rocks. The resulting residual formations are highly variable in composition and thickness with considerable variations in depth to bedrock over relatively short horizontal distances. The transition from residual soil to the underlying parent material may be gradual with a zone of very hard soil and partially weathered rock containing large boulders or lenses of hard rock existing above the bedrock. The local geology is mapped as being within the Carolina Terrane (Also known as the Slate Belt) of the Piedmont Province in an area of highly sheared rock known as the Modoc Fault Zone.

The site is located along the western side of a wide topographic ridge that separates the Broad and Saluda River drainage basins. Broad River Road generally follows the crest of this ridge in the vicinity of the site. The site itself slopes slightly towards the southwest. Based upon surface elevations of properties to the northwest and southeast of the site, fill has been placed on the site in varying thicknesses from several feet along Broad River Rd. to 10+/- feet along the southwestern property boundary. The areas across Broad River Rd. appear to be at similar elevations to the site. Properties to the northwest and southeast appear to be several feet lower than the site. The adjoining property to the southwest occupied by the Play Pals daycare is approximately 12 feet lower than the site, with the portion of the Play Pals property adjacent to the site appearing to have been cut into the natural slope to create a level area on the Play Pals property.

Stoop Creek lies approximately 1700 feet to the southwest and appears to receive stormwater runoff from the site and nearby vicinity.

2.0 Assessment Activities

Assessment activities were conducted on the Broad River Amoco site and nearby properties on Dothan and Broad River Roads.

2.1 Field Screening

Field screening was conducted during December 2018 and January 2019 by installing soil borings at a total of 42 locations across the site and on the adjacent Lowman parcel to the southeast. The purpose of the soil borings was to assist in the determination of the extent of impact from the release, identification of areas were free phase petroleum product was present, and in identification of potential preferential pathways for contaminant migration. The boring locations were selected based upon site characteristics and conditions, previous assessment data, and results collected during the field screening.

Field screening was performed using Geoprobe direct-push technology. Soil borings were advanced and soil samples were collected using 5-foot Geoprobe Macrocore

soil samplers. Soil samples were screened in the field using an organic vapor analyzer (OVA). After soil samples were collected, a temporary one-inch diameter PVC well was installed in each of the borings. Several borings, SB-9A, SB-10A, and SB-23A encountered obstructions at shallow depths and were abandoned with offset locations then selected for these borings.

2.2 Soil Sampling

Soil samples with the highest organic vapor readings were collected from above the apparent water table from the soil borings at 20 locations. These samples were submitted for laboratory analysis of Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) as an aid in determining the potential extent of free phase petroleum product impacted areas.

2.3 Monitoring and Recovery Well Installation

Sixteen 2-inch diameter PVC monitoring wells were installed during this investigation. Well screens were 10 feet long with 0.010-inch slots. Each of these wells was installed so as to allow for the well screen to intersect the water table at its current level. Wells were installed using 4.25-inch inside diameter hollow stem augers or 7-inch diameter solid flight augers. Total well depths ranged between 11 and 19 feet below ground surface (BGS). Wells were completed with concrete well pads and flush-mounted well vaults.

Four 4-inch diameter PVC recovery wells were installed in locations indicated to contain free-phase petroleum product. These wells were installed so that the well screen intersected the water table. The recovery wells were installed using 6.25-inch inside diameter hollow stem augers and were completed with 10 feet long well screens with 0.010-inch slots. Monitoring and recovery well locations were pre-approved by the Department's Project Manager.

Downhole equipment was decontaminated between well locations by the drillers using standard procedures. Waste generated during decontamination was containerized for subsequent disposal as described in Section 2.8.

Monitoring wells were developed using a submersible pump until relatively turbidity free water was obtained. Most wells purged dry during development procedures. Both monitoring well and soil boring locations and elevations we surveyed by a South Carolina registered land surveyor using the the same datum as that of the pre-existing wells so that all wells at the site are on a common datum. A copy of the site survey is included in Appendix A. Monitoring well locations are shown on Figure 2. Table 2 provides a summary of the monitoring well construction.

2.4 Groundwater Sampling

Groundwater samples were collected from each of the monitoring wells associated with both Release No. 1 and Release No. 2 at the Broad River Amoco site between April 1 and April 17, 2019. Samples were collected from a total of 54 wells. The groundwater samples were collected from the monitoring wells using either bailers, a peristaltic pump and polyethylene tubing, or a submersible 12-volt pump and polyethylene tubing. A comprehensive ground water elevation gauging event was performed on March 20, 2019 and included all pre-existing monitoring and recovery wells and all newly-installed temporary wells, monitoring wells, and recovery wells.

The groundwater samples were analyzed by a South Carolina-certified laboratory for the following constituents:

- Benzene, toluene, ethylbenzene, xylenes, naphthalene, MTBE
- EDB
- 1,2 DCA
- Lead

- 8 Oxygenates
- Polynuclear Aromatic Hydrocarbons (PAHs)

2.5 Aquifer Testing

Aquifer testing was conducted by performing slug tests in four shallow monitoring wells: MWR2-1, MWR2-10, MWR2-11, and MWR2-12. The tests were conducted as slug-out tests using a four foot long PVC bailer as the slug. Water level data were collected using an In Situ Hermit 1000C electronic datalogger and pressure transducer. Slug test data were analyzed by the Bouwer-Rice Method using Starpoint Superslug® software.

2.6 Free-Phase Product Recovery

Throughout the course of assessment activities, free-phase petroleum product was recovered from newly-installed recovery and monitoring wells, as well as pre-existing monitoring wells and recovery wells installed during activities related to Release No. 1. Product recovery was primarily through the use of a peristaltic pump. Recovered product was subsequently disposed as discussed in Section 2.8.

2.7 Organic Vapor Monitoring of Sanitary Sewers

At the Department's request selected sanitary sewer manholes and individual cleanout points along Dothan Road were screened for organic vapors between March 4 and March 25, 2019 using a Rae Systems Minirae 2000 photoionization detector (PID) equipped with a 10.6 eV ionizing bulb. Screening was generally conducted three times per day and three days per week.

2.8 Investigative Derived Waste Management

Investigative derived waste (IDW) was managed in accordance with applicable

standards. Soil drilling cuttings were contained in a large rolloff box and were disposed of by Waste Management at their landfill in Richland County. Well development, purge, and equipment decontamination water and recovered free-phase petroleum product were containerized in 55-gallon steel or poly drums and disposed of by T K Tank Services, Sumter, SC. Copies of disposal manifests are included in Appendix G.

3.0 Assessment Information

3.1 Site-Specific Geology

The site subsurface encountered during this assessment consisted of four primary zones in descending order:

- A fill zone containing variable materials and thickness in different areas of the site. These materials included sand/gravel mixes, highly weathered fine-grained rock borrow material, clayey sand borrow soils, soft fine-grained soils with organics, concrete and asphaltic debris, and miscellaneous debris.
- A relict topsoil/subsoil zone of dark brown and grayish brown silty sands that were not encountered at all locations.
- A zone of mottled, relatively hard and cohesive red, grey, orange, brown silty, clayey fine sands with minor amounts of fine to medium angular quartz gravel.
- A zone of primarily red and grey or brown and white silty clays to clayey silts which contained fine vertical foliation at most locations.

Based upon the variability of conditions at the site, four geologic cross-sections were constructed using data obtained from the soil boring and well installations activities. These cross-sections generally parallel the site property boundaries. Figure 6A shows the

locations of the geologic cross-sections. Figure 6B depicts the subsurface geologic cross-section at the northeastern boundary along Broad River Road. Figure 6C depicts the subsurface geologic cross-section along the southwestern boundary adjacent to the Play Pals property. Figure 6D depicts the subsurface geologic cross-section along the northwestern boundary with Dothan Road and Figure 6E depicts the subsurface geologic cross-section along the southeastern boundary with the adjacent Lowman property.

The cross-sections and associated boring and well logs show that the fill zone is on the order of several feet thick in the northeastern portion of the site and becomes progressively thicker towards the southwestern property boundary.

Soil boring/temporary well logs and associated Water Well Record Form 1903s are found in Appendix D. Monitoring and recovery well logs, well development logs, and associated Water Well Record Form 1903s are found in Appendix E.

Grain-size analyses were performed on two soil samples from the shallow well screened-interval zone. The sample collected from a depth of 14-16.5 feet bgs at the SB-3/ MWR2-2 location consisted of approximately 29 percent fine sand, 43 percent silt, and 28 percent clay. The sample collected from a depth of 15-17 feet bgs at the SB-30 (MW-14) location consisted of approximately 52 per cent sand, 34 percent silt, and 14 percent clay. Grain-size analyses data are contained in Appendix F.

3.2 Site-Specific Hydrogeology

Groundwater was generally encountered at depth of less than 10 feet bgs during well gauging activities. Some wells on the Play Pals property exhibited artesian conditions. One comprehensive gauging event that included all pre-existing and newly-installed monitoring wells, recovery wells and temporary wells was conducted on March 20, 2019 in order to collect data to construct groundwater contour maps. Additional gauging events limited to onsite temporary and permanent wells were performed at various times during assessment activities in order to assist in the determination of free phase petroleum product presence/absence.

The saturated zone has previously been divided into three zones, shallow, intermediate, and deep. For the purposes of groundwater contour development, only wells with screened intervals above a depth of 25 feet bgs were considered to monitor the shallow zone. Wells screened between 25 and 50 feet were considered to monitor the intermediate zone. There are only three wells in the deep zone and they are screened from 60-65 feet bgs. Recovery wells RW-1 through RW-12 were not used in the construction of the groundwater contour maps because their screened zones extend across the shallow and intermediate zones.

The shallow zone groundwater contours (Figure 5A) show groundwater flow in the shallow zone is generally to the west with several areas showing groundwater highs relative to the overall contours. The most prominent groundwater high in the shallow zone is in the area of the current UST pit. Groundwater elevations in the UST pit area are several feet higher than nearby wells. A small groundwater high is located in the southeastern portion of the site extending from near well MWR2-11 to the locations of temporary wells TW-32 and TW-33. Another small groundwater high is located near wells MW-14A and MW-14B. One well, MW-11A, exhibited aretesian conditions during the gauging event.

Intermediate zone groundwater contours (Figure 5B) show ground water flow in the intermediate zone is also towards the west and is at similar elevations to the shallow zone. Several wells, MW-11B and MW-18B, exhibited aretesian conditions during the gauging event.

Deep zone groundwater contours (Figure 5C) show ground water flow in the deep zone is also towards the west and the potentiometric surface is at similar elevations as those of the shallow and intermediate zones.

Analysis of the slug tests indicates an average hydraulic conductivity in the shallow water-bearing zone of 16.71 feet per year. Seepage velocity in the shallow zone was calculated to be 0.615 feet per year, using the average shallow zone hydraulic conductivity value, a hydraulic gradient of 0.0184 between wells MWR2-2 and MW-20A,

and a porosity of 0.50. Slug test data and seepage velocity calculations are included in Appendix E.

3.3 Soil Analytical Results

Various concentrations of TPH GRO and/or TPH DRO were detected in 19 of 20 soil samples collected from the soil borings. TPH was not detected in the sample from SB-6. Soil samples for analysis were originally planned to be collected from a sample from above the water table that exhibited the highest OVA result during field screening. However, due to their fined-grained nature and apparent clay content, many of the soil samples did not exhibit definitive latent moisture content indicators to allow for the determination of saturated conditions at the time of boring installation and sample collection. Therefore, approximately one half of the soil samples were collected from intervals below the water table as subsequent water level measurements in the temporary wells installed in the borings indicated.

Review of the TPH analytical data suggests that free phase petroleum product was not present in any of the analyzed soil samples. The Ohio EPA-DERR *Guidance for Assessing Petroleum Hydrocarbons in Soil* Table 6 indicates that detected TPH DRO and TPH GRO concentrations do not exceed residual soil concentration standards.

Soil sample analytical results are summarized on Table 1 and graphically depicted on Figure 3.

3.4 Groundwater Analytical Results

Groundwater analytical results indicate that the area of impact to groundwater in the shallow and intermediate zones from the site extends onto the Play Pals property to the southwest of the sitewith concentrations attenuating towards the southwest rather rapidly. Across Broad River Rd. to the northeast one well location, MW-9A/MW-9B had several COCs detected below Risk-Based Screening Levels (RBSLs). No COCs were detected in groundwater samples in either the shallow or the intermediate zones across Dothan Road to the northwest. No COCs were detected in groundwater samples on the Lowman

property to southeast except several low-level COCs detected below RBSLs in the sample from MW-11A. Groundwater samples from the deep zone wells DMW-1 and DMW-2 had low-level concentrations of MTBE above the RBSL of 40 micrograms per liter (µg/L) along with low-level detections of benzene below its RBSL of 5 µg/L.

No COCs were detected in any of the field blank or trip blank samples collected during the April 2019 sampling event. Duplicate sample results were consistent with the primary samples.

Monitoring well sample analytical results are summarized in Tables 3A, 3B, and 3C. Figures 4A, 4B, and 4C depict the spatial distribution of COCs in the shallow groundwater zone, Figures 4D, 4E, and 4F depict the spatial distribution of COCs in the intermediate groundwater zone, and Figure 4G depicts the spatial distribution of COCs in the deep groundwater zone at the site during the Tier II groundwater sampling event. Laboratory analytical data and field data sheets for the monitoring well samples are included in Appendix B.

3.5 Free-Phase Product Gauging and Recovery Results

Free-phase petroleum product was detected in several of the soil borings/temporary wells in several areas of the site. In the vicinity of the UST pit in the northern portion of the property, free product was detected in SB-11 and SB-8, installed in the UST pit and adjacent to the pit, respectively. Based on these detections, recovery wells RW-A and RW-B were installed and free product recovery initiated on December 17, 2018. Subsequently, recovery well RW-C was installed in the southern portion of the site near SB-17 where free product was detected and in the western corner of the site near SB-27. Free product recovery, as well as gauging events to determine the extent of free product occurrence were conducted with Department approval and continued until the end of April 2019.

Free product recovery was performed using a peristaltic pump and polyethylene tubing with recovered free product containerized in steel 55-gallons drums until proper

disposal by T K Tank Services of Sumter, SC.

Following initial relatively high rates of free product recovery from RW-B, the water table rose several feet in the vicinity of the UST pit after several significant precipitation events in late December 2018. After the water table rose in the UST pit area, free product thicknesses in RW-A and RW-B were minimal and have remained so as the water table remains elevated relative to early December 2018 levels.

Free product recovery from RW-C and adjacent MWR2-8, installed on January 21, 2019, has been significant. Between late January and late April 2019, on the order of about 10 gallons of free product per day was recovered from these wells about three days per week. Both of these wells encountered auger refusal at about a depth of 13 feet below ground surface and have contained only free product and no water since installation.

Preexisting recovery well RW-10 routinely produced up to about 1 gallon of free product during most recovery events. Other wells where free product recovery was conducted included RW-1, TMW-1, TMW-2, TMW-3, MW-5, SB-17, And MWR2-7. Approximately 375 gallons of free phase petroleum product was recovered during the Tier II assessment activities. Free product recovery data are summarized in Table 4 and field data sheets are included in Appendix L. A disposal manifest is contained in Appendix G.

3.6 Organic Vapor Monitoring Results

Organic vapor monitoring was conducted to determine the likelihood that significant concentrations petroleum product vapors were intruding into the sanitary sewer system located along Dothan Rd. The Department provided us with an aerial photograph supplied by the local sanitary sewerage company that depicted the locations of sewer line manholes and individual sewer tap cleanout locations along Dothan Rd. Figure 7 shows the locations of the monitoring points where organic vapor measurements were conducted. The monitoring program called for conducting organic vapor measurements in the first three manholes along Dothan Rd. to the southwest of the Broad River Amoco site. However, during the first week manholes 1, 2, and 4 were monitored because manhole 3 was

obscured by some debris and was not initially located. Subsequently, manholes 1, 2, and 3 were monitored. Several sewer cleanout pipes on individual properties between manhole locations were also monitored. A cleanout shown at 1218 Dothan on the aerial photograph may possibly be a valve rather than a cleanout. Manhole 1, located near the western corner of the site, is the most upstream point of the Dothan Rd. sewer system. The sewerage line from the Broad River Amoco and the engineering firm across Dothan Rd. to the northwest discharge directly into this manhole. Based on information provided by the Department, the interior walls and a pipe in the bottom of the manhole were sealed by the local utility during early 2019.

Organic vapor measurements were conducted by lowering a weighted polyethylene tube attached to the PID into the manhole or cleanout and allowing sufficient time for the flow at the instrument to stabilize to conditions at the sampling point before readings were recorded. The PID was calibrated daily to fresh air and checked for accuracy against a 100 parts per million (ppm) isobutylene calibration standard. Organic vapor measurements were generally conducted three times per day, morning, mid day, and later afternoon in order to allow for differences in sewage effluent at different times of the day.

Table 5 provides a summary of the organic vapor readings. The highest reading recorded was 164 ppm in manhole 1 early in the morning of March 15, 2019. The remaining two readings on March 15 were 25.3 ppm and 18.1 ppm. A reading of 100 ppm was exceeded once more at manhole 1 and twice at manhole 2. Each time a vapor reading exceeded 100 ppm both prior and subsequent readings were significantly lower than 100 ppm. These data suggest that elevated organic vapor readings are episodic in natural and more likely related to changes in sewage effluent characteristics rather than to infiltration of petroleum vapors into the sewer system.

4.0 Summary and Conclusions

The site geology consists of four primary zones. A fill zone of various materials, a relict topsoil/subsoil zone in portion of the site, a zone of mottled cohesive silty clayey fine

sand, and a zone of vertically foliated saprolitic clays and silts and very fine sands. Slug tests were conducted in wells located primarily in areas containing mostly native soils or in locations where fill material appeared to be of relatively low permeability. The results of the slug tests showed that these materials/locations had low hydraulic conductivity and appear to limit the migration of groundwater and free phase product. However, because free phase petroleum product appears to have migrated from the UST pit area to the Play Pals property in a short period of time, the presence of preferential pathways at the site appears likely. These pathways may be related to the types of fill material in certain areas, as well as unknown features such as septic systems, etc. related to the development of the site. Free phase product primarily is found in opposite corners of the site along the southwestern boundary, with no free product detected in the area at the rear of the store building. A direct connection of locations between the UST pit area and the area of free product at the RW-C location could not be identified during the assessment. This suggests the possible presence of a narrow preferential pathway from the UST pit area to the area of RW-C. Free phase product was detected in a wider zone in the northwestern portion of the site but does not extend across Dothan Rd.

Because free phase product recovery using a peristaltic pump has proved to be a low cost, highly-effective method of source reduction we recommend that product recovery by this method continue on a regular basis until a long term remedy for the site is in operation. Additionally, the interim measures being conducted by Enviro-Test appear to have been successful in limiting the extent of the release, especially free product migration. We recommend that those efforts also continue.

Limited pumping and/or vacuum extraction from recovery wells could potentially remove or concentrate areas of free product. However, any actions in this area have the potential for adverse effects, such as the creation of large smear zones of free product. Some of the preexisting recovery wells have long screened zones that have to potential to allow migration of COCs to lower depths in the saturated zone. Therefore, we recommend that if any pumping or vacuum extraction actions are taken that water table vertical drawndown be very limited.

The general extent of COCs in groundwater appears to be delineated, but several additional wells on the Play Pals property might better define the conditions there. No additional delineation appears warranted in other areas.

Tables

TABLE 1
Soil Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Sample ID	Date	GRO (ug/Kg)	DRO (ug/Kg)
SB-2 26-40"	12/3/2018	11000	8070
SB-2 6.5-9	12/3/2018	29900	8500
SB-2 19-23	12/3/2018	29300	3560 J
SB-3 11.5-14	12/3/2018	210000	96900
SB-4 6.5-9	12/3/2018	24200	12000
SB-5 17-22	12/4/2018	10800	32200
SB-5 12.5-15	12/4/2018	<466	2870 J
SB-6 11.5-14	12/4/2018	<505	<1580
SB-7 17-19	12/4/2018	361000	150000
SB-8 11.5-14	12/4/2018	293000	178000
SB-9 11.5-14	12/4/2018	307000	10400
SB-10B 11.5-15	12/5/2018	487000	309000
SB-12 9-11.5	12/5/2018	212000	231000
SB-13 7.5-10	12/5/2018	1310000	211000
SB-14 4-6.5	12/5/2018	1380000	96000
SB-14 9-11.5	12/5/2018	74300	424000
SB-15 6.5-9	12/5/2018	<452	3700 J
SB-16 15-20	12/5/2018	43300	6370
SB-18 7.5-10	12/6/2018	2060 J	1160000
SB-20 10-12.5	12/7/2018	<750	46000

TABLE 2
Potentiometic Data
March 20, 2019
Broad River Amoco, UST Site 11946
Columbia SC

Well Name	TOC Elevation	Screened Interval (ft.)	Depth to FP (ft.)	Depth to Water (ft.)	Corrected DTW	GW Elevation	Notes
MW-1	101.84	20.0-40.0		10.16		91.68	
MW-2	101.13	18.0-28.0	9.35	9.84	10.23	90.90	
MW-3	101.09	21.0-31.0		9.59		91.5	
MW-4	97.02	15.0-25.0		8.33		88.69	
MW-5	101.34	10.0-20.0	8.26	8.45	8.60	92.74	
MW-6A	101.84	15.5-25.5		10.19		91.65	
MW-6B	101.91	28.5-38.5		10.25		91.66	
MW-7A	100.04	14.0-24.0		8.1		91.94	
MW-8A	100.45	13.0-23.0		8.98		91.47	
MW-8B	100.37	27.5-37.5		8.7		91.67	
MW-9A	101.36	13.0-23.0		9.79		91.57	
MW-9B	101.38	21.5-31.5		9.73		91.65	
MW-10A	97.2	7.5-17.5		4.82		92.38	
MW-10B	97.34	29.0-39.0		5.71		91.63	
MW-11A	89.93	10.0-20.0					Artesian; At least 0.10 ft above casing
MW-11B	90.26	29.0-39.0					Artesian; At least 0.13 ft above casing
MW-12A	99.26	10.0-20.0		9		90.26	
MW-12B	99.35	26.5-36.5		10		89.35	
MW-13A	98.7	12.0-22.0		9.5		89.2	
MW-13B	98.69	23.5-33.5		12.48		86.21	
MW-14A	97.49	10.0-20.0		3.89		93.6	
MW-14B	97.45	28.5-38.5		9.31		88.14	
MW-15A	96.87	7.0-17.0		8.68		88.19	
MW-15B	96.82	30.0-40.0		9.29		87.53	
MW-16A*	94.72	8.0-18.0		11.98		82.74	
MW-16B*	94.62	27.0-37.0		9.14		85.48	
MW-17B	92.69	29.5-39.5		5.08		87.61	
MW-18A	88.2	3.0-13.0		0.94		87.26	
MW-18B	8.3	25.0-35.0					Artesian; At least 0.14 ft above casing
MW-19A	91.63	5.0-15.0		NM			
MW-19B	91.69	24.0-34.0		4.95		86.74	
MW-20A	88.67	5.0-15.0		1.44		87.23	
MW-20B	88.61	25.0-35.0		1.6		87.01	
MW-21A	87.16	2.0-12.0		0.73		86.43	
MW-21B	87.23	25.0-35.0		0.63		86.6	
MW-22A*	87.25	2.0-8.0		1.03		86.22	
MW-22B	87.4	25.0-35.0		1.01		86.39	
MWR2-1	101.01	8-18		6.53		94.48	
MWR2-2	101.32	8-18		8.66		92.66	
MWR2-3	101.47	9-19		9.79		91.68	
MWR2-4	100.31	8-18		8.09		92.22	
MWR2-5	100.24	5-15		6.73		93.51	
MWR2-6	98.41	5-15	7.25	7.43	7.57	90.84	
MWR2-7	96.39	5-15	5.85	5.91	5.96	90.43	
MWR2-8	99.86	2.5-12.5					All Free Product
MWR2-9	101.55	8-18		9.86		91.69	
MWR2-10	99.48	7-17		7.92		91.56	
MWR2-11	101.58	8-18		9.47		92.11	
MWR2-12	99.45	8-18		10.04		89.41	
MWR2-13	92.94	1-11		1.62		91.32	
MWR2-14	98.77	9-19		8.58		90.19	
MWR2-15	101.87	8-18		9.68		92.19	
MWR2-16	101.84	9-19		10.22		91.62	
DMW-1	101.16	60.0-65.0		10.13		91.03	
DMW-2	92.63	60.0-65.0		4.78		87.85	
DMW-3	87.41	60.0-65.0		0.91		86.5	

TABLE 2
Potentiometic Data
March 20, 2019
Broad River Amoco, UST Site 11946
Columbia SC

Well Name	TOC Elevation	Screened Interval (ft.)	Depth to FP (ft.)	Depth to Water (ft.)	Corrected DTW	GW Elevation	Notes
RW-1	101.21	20.0-40.0		8.55		92.66	
RW-2	100.96	20.0-40.0		9.84		91.12	
RW-3	101.44	21.0-41.0		9.28		92.16	
RW-4	100.83	20.5-40.5		9.66		91.17	
RW-5	101.62	18.5-38.5		9.5		92.12	
RW-6	101.19	5-30		9.78		91.41	
RW-7	97.32	10-40		8.26		89.06	
RW-8	98.57	2-32		8.46		90.11	
RW-9	101.38	10-40		9.89		91.49	
RW-10	101.66	10-40	9.09	9.46	9.76	91.90	
RW-11	101.92	10-40		10.23		91.69	
RW-12	101.49	9-39		9.65		91.84	
RW-A	100.73	4-14		6.19		94.54	
RW-B	101.26	4-14	6.89	6.91	6.93	94.33	
RW-C	99.66	3-13					All Free Product
RW-D	95.73	5-15	6.59	6.66	6.72	89.01	
TW-1	100.75	14-24		7.66		93.09	
TW-2	101.00	13-23		8.53		92.47	
TW-3	101.18	14-24		9.98		91.2	
TW-4	101.73	14-24		10.03		91.7	
TW-5	101.64	14-24		9.99		91.65	
TW-6	101.85	13-23		10.12		91.73	
TW-7	101.63	13-23		9.1		92.53	
TW-8	101.26					ABN	
TW-9	101.42	13-23				NM	
TW-10	101.82	10-20		9.25		92.57	
TW-11	100.73					ABN	
TW-12	98.34	13-23		7.01		91.33	
TW-13	100.20	10-20		7.12		93.08	
TW-14	101.41	9-19		9.85		91.56	
TW-15	99.24	14-24		8.93		90.31	
TW-16	99.29	12-22		8.62		90.67	
TW-17	99.59	10-20		9.73		89.86	
TW-18	101.52	10-20		9.84		91.68	
TW-19	97.2	9-19		7.13		90.07	
TW-20	98.18	10-20		8.69		89.49	
TW-21	98.3	10-20		8.79		89.51	
TW-22	100.42	10-20		5.93		94.49	
TW-23	100.3	9-19		8.2		92.1	
TW-24	100.65	9-19		7.71		92.94	
TW-25	97.16	6-16		6.31		90.85	
TW-26	96.2	6-16		6.8		89.4	
TW-27	95.73					ABN	
TW-29	97.14	6-16	5.9	5.96	6.01	91.13	
TW-30	100.82	9-19		11.93		88.89	
TW-31	100.7	15-25		12.64		88.06	
TW-32	97.82	0-10		4.28		93.54	
TW-33	96.85	0-10		3.3		93.55	
TW-34	96.36	0-10		4.26		92.1	
TW-35	95.55	0-10		3.55		92	
TW-36	95.05	0-10		3.47		91.58	
TW-37	93.76	0-10		2.35		91.41	
TW-38	93.75	0-5		2.43		91.32	
TW-39	94.08	0-5		3.1		90.98	
TW-40	92.43	0-10		1.79		90.64	
TW-41	91.84	0-10		1.89		89.95	
TW-42	92.3	0-8		3.32		88.98	
TMW-1**	101.37	UNK				NM	
TMW-2**	100.59	UNK		6.95		93.64	
TMW-3**	100.73	UNK		9.42		91.31	
TEW-1**	92.96	UNK				NM	
TEW-2**	91.24	UNK				NM	
TEW-3**	91.22	UNK				NM	

TABLE 3A
VOC Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method								
		8260B							8011	3005A
		Benzene	Toluene	Ethylbenzene	Xylene	Naphthalene	MTBE	1,2 DCA	EDB	Lead
MW-1	4/17/2019	2100	8900	2600	9800	600	62 J	<40	<0.019	28
MW-2	4/17/2019	12000	17000	1300	7000	350 J	15000	<80	0.12 P	<4.7
MW-3	4/11/2019	340	56	21 J	250	36	6.2 J	<2.0	<0.022	32
MW-4	4/17/2019	7200	720	3300	5200	930	5800	<40	<0.020	14
MW-5	4/17/2019	20000	38000	3300	17000	630 J	5900	<80	<0.019	9.4
MW-6A	4/10/2019	<0.40	0.52 J	<0.40	0.61 J	<0.40	<0.40	<0.40	<0.021	7.1 J
MW-6B	4/10/2019	<0.40	2.6 J	<0.40	2.8 J	<0.40	<0.40	<0.40	<0.019	<4.7
MW-7A	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<4.7
MW-8A	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-8B	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-9A	4/15/2019	2.0 J	13	2.8 J	24	1.5 J	1.7 J	<0.40	<0.020	<4.7
MW-9B	4/16/2019	<0.40	<0.40	<0.40	<0.45	<0.40	1.7 J	<0.40	<0.019	<4.7
MW-10A	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	14
Dup E	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	15
MW-10B	4/15/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Dyo F	4/15/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	5.7 J
MW-11A	4/11/2019	2.2 J	<0.40	<0.40	<0.45	0.47 J	0.77 J	<0.40	<0.021	<4.7
MW-11B	4/11/2019	<0.40	<0.40	<0.40	<0.45	<0.40	0.56 J	<0.40	<0.020	<4.7
MW-12A	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-12B	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Dup B	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<4.7
MW-13A	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-13B	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	4.7 J
MW-14A	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<4.7
Dup A	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-14B	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<4.7
MW-15A	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-15B	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.022	<4.7

TABLE 3A
VOC Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method								
		8260B							8011	3005A
		Benzene	Toluene	Ethylbenzene	Xylene	Naphthalene	MTBE	1,2 DCA	EDB	Lead
MW-16A*	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-16B*	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-17B	4/16/2019	62	0.51 J	0.74 J	11	6.0	270	2.0 J	<0.020	<4.7
MW-18A	4/17/2019	2700	5400	530	2400	65 J	96 J	<20	<0.020	18
MW-18B	4/16/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Dup G	4/16/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
MW-19B	4/15/2019	1.1 J	0.82 J	<0.40	<0.45	<0.40	1.1 J	<0.40	<0.021	86
MW-20A	4/15/2019	22	88	41	240	17	0.44 J	<0.40	<0.021	55
MW-20B	4/15/2019	<0.40	<0.40	<0.40	<0.45	<0.40	11	<0.40	<0.020	<4.7
MW-21A	4/16/2019	4.9 J	<0.40	<0.40	0.77 J	<0.40	<0.40	<0.40	<0.020	5.3
MW-21B	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	3.6 J	<0.40	<0.019	<4.7
Dup H	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	4.6 J	<0.40	<0.019	<4.7
MW-22A*	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.019	15
MW-22B	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	6.7	<0.40	<0.020	<4.7
MWR2-1	4/9/2019	16	0.76 J	4.3 J	3.9 J	<0.40	120	<0.40	<0.020	<4.7
MWR2-2	4/9/2019	3000	17000	830	11000	330 J	1200	<40	3.9	4.9 J
MWR2-3	4/9/2019	15	11	1.6 J	19	0.63 J	44	<0.40	<0.020	<4.7
MWR2-4	4/10/2019	6600	14000	1200	12000	490 J	8300	<40	0.42	<4.7
Dup C	4/10/2019	7300	16000	1400	13000	540	11000	<40	0.41	<4.7
MWR2-5	4/10/2019	9100	21000	1700	12000	600 J	2500	<80	<0.020	<4.7
MWR2-6	4/17/2019	9200	18000	1400	7400	160 J	180 J	<40	<0.020	<4.7
MWR2-7	4/17/2019	24000	40000	2600	14000	360 J	1100	<80	<0.020	<4.7
MWR2-8	Not Sampled - Only Free Product Present									
MWR2-9	4/10/2019	1.2 J	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	4.7 J
MWR2-10	4/11/2019	6700	7500	1500	8900	540	1200	<40	<0.020	<4.7
Dup D	4/11/2019	6900	7800	1500	9100	540	1300	<40	<0.020	<4.7

TABLE 3A
VOC Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method								
		8260B							8011	3005A
		Benzene	Toluene	Ethylbenzene	Xylene	Naphthalene	MTBE	1,2 DCA	EDB	Lead
MWR2-11	4/10/2019	2200	4400	180 J	2900	27 J	<20	<20	<0.020	<4.7
MWR2-12	4/17/2019	13000	33000	2400	13000	330 J	<80	<80	<0.020	<4.7
MWR2-13	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	37
MWR2-14	4/15/2019	550	640	700	3600	220	130	15 J	<0.020	<4.7
MWR2-15	4/10/2019	6600	11000	1500	8800	330 J	150 J	<40	<0.020	<4.7
MWR2-16	4/10/2019	1100	1900	220	1500	27 J	13 J	<4.0	<0.020	<4.7
DMW-1	4/1/2019	3.2 J	<0.40	<0.40	<0.45	<0.40	62	<0.40	<0.021	<4.7
DMW-2	4/1/2019	4.6 J	<0.40	<0.40	<0.45	<0.40	130	<0.40	<0.020	4.8 J
DMW-3	4/1/2019	<0.40	<0.40	<0.40	<0.45	<0.40	0.88 J	<0.40	<0.020	<4.7
Field Blank 1	4/1/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.022	<4.7
Field Blank 2	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 3	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 4	4/10/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 5	4/11/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 6	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 7	4/15/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.019	<4.7
Field Blank 8	4/16/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Field Blank 9	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<4.7
Trip Blank	4/1/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/4/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/9/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/10/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/11/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/12/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/15/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/16/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA
Trip Blank	4/17/2019	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	NA	NA

TABLE 3B
Oxygenates Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8260B							
		TAME	TBA	DIPE	ETBE	ETBA	Ethanol	TAA	TBF
MW-1	4/17/2019	<42	<800	<40	<40	<800	<5200	3200	<200
MW-2	4/17/2019	240 J	11000	<80	<80	<1600	680000	33000	<400
MW-3	4/11/2019	<2.1	<40	<2.0	<2.0	<40	<260	98 J	<10
MW-4	4/17/2019	150 J	4100	<40	<40	<800	<5200	3200	<200
MW-5	4/17/2019	200 J	2400 J	<80	<80	<1600	3000000	7200	<400
MW-6A	4/10/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-6B	4/10/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-7A	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-8A	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-8B	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-9A	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-9B	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-10A	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup E	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-10B	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup F	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-11A	4/11/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-11B	4/11/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-12A	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-12B	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup B	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-13A	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-13B	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-14A	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup A	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-14B	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-15A	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-15B	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0

TABLE 3B
Oxygenates Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8260B							
		TAME	TBA	DIPE	ETBE	ETBA	Ethanol	TAA	TBF
MW-16A*	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-16B*	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-17B	4/16/2019	0.95 J	1800	5.6	1.7	<8.0	<52	520	<2.0
MW-18A	4/17/2019	<21	<400	<20	<20	<400	<2600	530 J	<100
MW-18B	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup G	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-19B	4/15/2019	<0.42	13 J	<0.40	<0.40	<8.0	<52	20	<2.0
MW-20A	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-20B	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-21A	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-21B	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Dup H	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-22A*	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MW-22B	4/17/2019	<0.42	9.5 J	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MWR2-1	4/9/2019	1.5 J	72	2.2 J	0.72 J	<8.0	<52	430	<2.0
MWR2-2	4/9/2019	<42	<800	<40	<40	<800	<5200	2800	<200
MWR2-3	4/9/2019	<0.42	53	0.40 J	<0.40	<8.0	<52	290	<2.0
MWR2-4	4/10/2019	54 J	3200	<40	<40	<800	<5200	8300	<200
Dup C	4/10/2019	54 J	3200	<40	<40	<800	<5200	8300	<200
MWR2-5	4/10/2019	<84	<1600	<80	<80	<1600	<10000	3100 J	<400
MWR2-6	4/17/2019	<42	950 J	<40	<40	<800	<5200	2500	<200
MWR2-7	4/17/2019	<84	2200 J	<80	<80	<1600	<10000	6400	<400
MWR2-8	Not Sampled - Only Free Product Present								
MWR2-9	4/10/2019	<0.42	<8.0	0.63 J	<0.40	<8.0	<52	25	<2.0
MWR2-10	4/11/2019	<42	840 J	<40	<40	<800	<5200	3200	<200
Dup D	4/11/2019	<42	840 J	<40	<40	<800	<5200	3200	<200

TABLE 3B
Oxygenates Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8260B							
		TAME	TBA	DIPE	ETBE	ETBA	Ethanol	TAA	TBF
MWR2-11	4/10/2019	<21	<400	<20	<20	<400	<2600	1200	<100
MWR2-12	4/17/2019	<84	<1600	<80	<80	<1600	<10000	3600 J	<400
MWR2-13	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
MWR2-14	4/15/2019	<8.4	<160	<8.0	<8.0	<160	<1000	520	<40
MWR2-15	4/10/2019	<42	<800	<40	<40	<800	<5200	2600	<200
MWR2-16	4/10/2019	<4.2	<80	<4.0	<4.0	<80	<520	380	<20
DMW-1	4/1/2019	<0.42	12 J	<0.40	<0.40	<8.0	<52	52	<2.0
DMW-2	4/1/2019	<0.42	430	<0.40	<0.40	<8.0	<52	130	<2.0
DMW-3	4/1/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 1	4/1/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 2	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 3	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 4	4/10/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 5	4/11/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 6	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 7	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 8	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Field Blank 9	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/1/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/4/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/9/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/10/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/11/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/12/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/15/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/16/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0
Trip Blank	4/17/2019	<0.42	<8.0	<0.40	<0.40	<8.0	<52	<8.0	<2.0

TABLE 3C
PAH Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8270D															
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene
MW-1	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	370	<0.20	<0.20
MW-2	4/17/2019	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	300	<1.0	3.2 J
MW-3	4/11/2019	<0.20	<0.20	<0.20	0.44 J	0.29 J	0.41 J	0.24 J	0.22 J	0.31 J	<0.20	0.92	<0.20	0.20 J	23	0.95	0.61 J
MW-4	4/17/2019	<0.20	<0.20	0.68 J	0.33 J	<0.20	0.79 J	<0.20	<0.20	0.23 J	<0.20	0.40 J	0.81	<0.20	440	1.2	0.96
MW-5	4/17/2019	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	310	<10	<10
MW-6A	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.29 J	<0.20	<0.20
MW-6B	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.29 J	<0.20	<0.20
MW-7A	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-8A	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-8B	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-9A	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.55 J	<0.20	<0.20
MW-9B	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-10A	4/12/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup E	4/12/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-10B	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup F	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-11A	4/11/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.72 J	<0.20	<0.20
MW-11B	4/11/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.39 J	<0.20	<0.20
MW-12A	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-12B	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup B	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-13A	4/12/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-13B	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-14A	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup A	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-14B	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-15A	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-15B	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

TABLE 3C
PAH Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8270D															
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene
MW-16A*	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-16B*	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-17B	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	3.4	<0.20	<0.20
MW-18A	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	49	<0.20	<0.20
MW-18B	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup G	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-19B	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-20A	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	6.6	<0.20	<0.20
MW-20B	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-21A	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-21B	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dup H	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-22A*	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-22B	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MWR2-1	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MWR2-2	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	270	<0.20	<0.20
MWR2-3	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.54 J	<0.20	<0.20
MWR2-4	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.37 J	<0.20	370	0.23 J	<0.20
Dup C	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.30 J	<0.20	350	0.25 J	<0.20
MWR2-5	4/10/2019	<0.20	<0.20	<0.20	0.45 J	0.44 J	0.78 J	0.65 J	0.24 J	0.26 J	<0.20	0.62 J	<0.20	0.40 J	210	0.22 J	0.54 J
MWR2-6	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	55	<0.20	<0.20
MWR2-7	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.25 J	<0.20	<0.20	160	0.38 J	0.64 J
MWR2-8	Not Sampled - Only Free Product Present																
MWR2-9	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MWR2-10	4/11/2019	0.21 J	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.39 J	<0.20	320	0.27 J	<0.20
Dup D	4/11/2019	0.21 J	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.40 J	<0.20	340	0.25 J	<0.20

TABLE 3C
PAH Analytical Results
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Sampled	Method 8270D															
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene
MWR2-11	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17	<0.20	<0.20
MWR2-12	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	180	<0.20	<0.20
MWR2-13	4/12/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MWR2-14	4/16/2019	<0.20	<0.20	0.26 J	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.29 J	<0.20	170	0.35 J	0.54 J
MWR2-15	4/10/2019	0.29 J	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.33 J	<0.20	240	0.34 J	<0.20
MWR2-16	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	16	<0.20	<0.20
DMW-1	4/1/2019	<0.20	<0.20	<0.20	0.32 J	1.3	1.9	1.2	0.99	0.52 J	<0.20	0.80	<0.20	1.4	<0.20	<0.20	0.59 J
DMW-2	4/1/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.32 J	<0.20	<0.20
DMW-3	4/1/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 1	4/1/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 2	4/4/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 3	4/9/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 4	4/10/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 5	4/11/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 6	4/12/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 7	4/15/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 8	4/16/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Field Blank 9	4/17/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trip Blank	4/1/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/4/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/9/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/10/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/11/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/12/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/15/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/16/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/17/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Trip Blank	4/17/2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

TABLE 4
Free Product Recovery Data Summary
Broad River Amoco, Site 11946
Columbia SC

Date	Gallons Removed	Notes
12/17/2018	21	
12/18/2018	8.25	
12/19/2018	9.25	
12/22/2018	8.25	
12/29/2018	1.25	
12/31/2018	0	Gauge Only - Single Well
1/2/2019	0	Gauge Only
1/5/2019	0	Gauge Only
1/7/2019	0	Gauge Only
1/9/2019	0	Gauge Only
1/15/2019	0	Gauge Only
1/16/2019	0.75	
1/25/2019	20	
1/26/2019	10.5	
1/28/2019	11.5	
1/29/2019	8	
1/31/2019	9.75	
2/1/2019	6.75	
2/4/2019	9.75	
2/6/2019	8	
2/7/2019	0	Gauge Only
2/8/2019	10.25	
2/12/2019	10	
2/14/2019	8.5	
2/15/2019	7.25	
3/5/2019	13	
3/6/2019	8.5	
3/8/2019	9.75	
3/11/2019	11	
3/13/2019	10	
3/15/2019	10.5	
3/18/2019	10	
3/20/2019	8	
3/22/2019	9	
3/25/2019	8	
3/29/2019	9	
4/1/2019	9.75	
4/3/2019	6.5	
4/4/2019	4.5	
4/8/2019	11	
4/11/2019	7	
4/18/2019	9.5	
4/22/2019	7.5	
4/26/2019	10.25	

TABLE 5
Organic Vapor Measurements
Dothan Rd. Sanitary Sewer System
Broad River Amoco, Site 11946

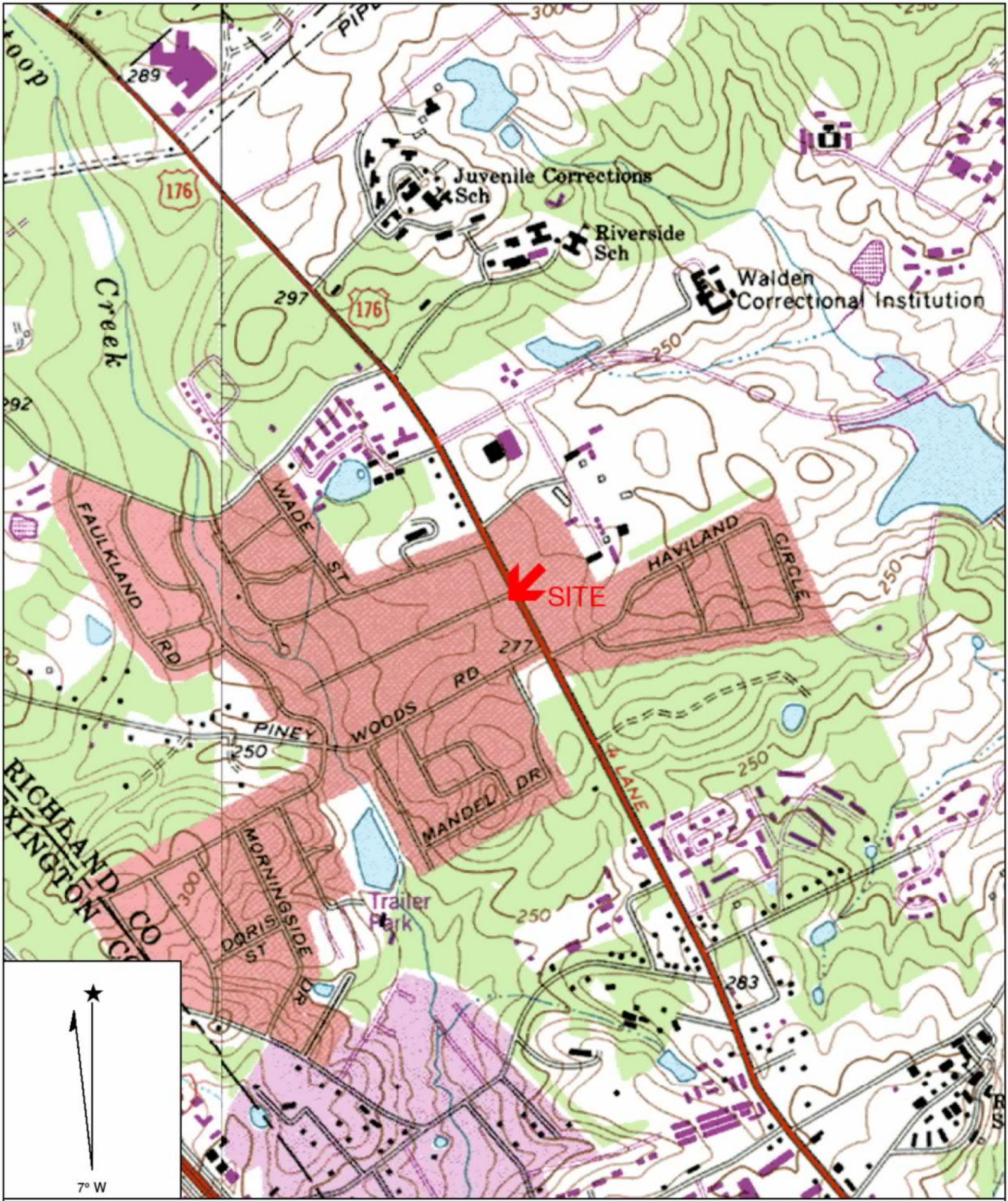
SMH-1			SMH-2			SMH-3			1208 Cleanout			1218 Cleanout			1230 Cleanout		
Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading
3/4/2019	1450	7.0	3/4/2019	1455	**72.1**	3/4/2019		NM	3/4/2019	1508	1.2	3/4/2019	1510	2.6	3/4/2019	1513	1.1
	1520	34.2		1530	**57.5**			NM		1544	0.8		1546	2.1		1548	0.7
3/5/2019	1105	19.8	3/5/2019	1110	17.5	3/5/2019		NM	3/5/2019	1129	2.1	3/5/2019	1132	2.6	3/5/2019	1134	2.1
	1329	33.7		1335	**118.0**			NM		1355	9.6		1357	7.0		1401	31.5
	1600	41.7		1607	28.9			NM		1623	13.4		1625	15.1		1629	11.4
3/6/2019	1024	7.0	3/6/2019	1029	19.3	3/6/2019		NM	3/6/2019	1045	4.9	3/6/2019	1047	2.2	3/6/2019	1050	2.2
	1328	32.0		1336	19.8			NM		1349	11.6		1351	3.8		1353	6.8
	1546	15.1		1551	12.7			NM		1604	12.2		1606	3.6		1609	3.1
3/8/2019	1042	17.7	3/8/2019	1046	20.5	3/8/2019		NM	3/8/2019	1104	17.7	3/8/2019	1107	3.0	3/8/2019	1110	**58.9**
	1325	24.9		1113	25.2		1335	12.2		1348	8.0		1350	4.9		1353	15.5
	1524	23.7		1330	17.0		1531	13.4		1545	4.9		1546	2.8		1549	7.7
				1528	20.0												
3/11/2019	853	36.8	3/11/2019	946	34.6	3/11/2019	950	14.2	3/11/2019	953	7.0	3/11/2019	955	6.3	3/11/2019	957	5.4
	1237	6.0		1241	24.9		1253	33.4		1251	44.6		1247	3.2		1243	27.2
	1522	2.3		1527	12.3		1536	15.5		1533	1.9		1531	2.7		1529	1.7
3/13/2019	920	13.8	3/13/2019	925	9.3	3/13/2019	935	4.7	3/13/2019	932	1.6	3/13/2019	930	1.9	3/13/2019	928	1.4
	1137	16.3		1141	20.7		1150	7.5		1147	2.7		1145	4.2		1143	40.0
	1533	10.8		1537	34.9		1552	16.0		1550	15.4		1545	4.1		1541	**59.9**
3/15/2019	856	**164**	3/15/2019	901	36.5	3/15/2019	915	15.4	3/15/2019	912	8.6	3/15/2019	910	8.2	3/15/2019	905	20.0
	1212	25.3		1218	19.3		1224	6.7		1222	4.7		1220	4.9		1216	7.6
	1555	18.1		1601	9.4		1609	7.1		1606	3.5		1603	4.6		1559	8.9
3/18/2019	951	61.2	3/18/2019	957	2.3	3/18/2019	1006	2	3/18/2019	1003	1.9	3/18/2019	1001	1.6	3/18/2019	959	1
	1228	**96.5**		1232	44.1		1245	**62.2**		1242	20.4		1239	4.1		1237	1
	1611	**70.3**		1615	**111**		1625	7.8		1623	15.2		1620	3.9		1618	13.5
3/19/2019	911	21.8	3/19/2019	915	2.9	3/19/2019	923	2.2	3/19/2019	921	1.3	3/19/2019	920	1.4	3/19/2019	918	1.4
	1426	2.0		1429	2.8		1437	17.7		1435	3.7		1433	5.0		1431	15.5
	1614	1.9		1617	10.2		1629	3.4		1624	2.2		1622	2.1		1619	2.9
3/22/2019	1126	21.2	3/22/2019	1130	14.0	3/22/2019	1138	2.8	3/22/2019	1136	1.9	3/22/2019	1134	2.8	3/22/2019	1132	3.5
	1322	**106.0**		1327	4.8		1338	2.5		1335	2.2		1333	2.3		1330	14.2
	1730	7.6		1733	5.0		1739	2.5		1738	2.0		1736	3.8		1735	2.1
3/25/2019	950	**62.5**	3/25/2019	954	7.3	3/25/2019	1003	2.8	3/25/2019	1001	2.4	3/25/2019	959	3.1	3/25/2019	956	7.5
	1150	**66.7**		1154	34.7		1205	6.2		1202	6.5		1200	4.2		1158	47.5
	1625	28.3		1629	12.5		1638	2.3		1635	3.7		1633	2.7		1631	11.1

SMH-4			1166 Cleanout			1178 Cleanout			1202 Cleanout		
Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading	Date	Time	OVA Reading
3/4/2019	1459	22.9	3/4/2019	1501	5.1	3/4/2019	1505	1.6	3/4/2019	1506	2.9
	1535	23.9		1538	5.0		1540	1.9		1543	1.6
3/5/2019	1115	10.9	3/5/2019	1120	3.4	3/5/2019	1124	2.8	3/5/2019	1126	3.1
	1341	26.5		1348	17.1		1350	12.0		1352	12.5
	1611	34.1		1614	26.2		1617	29.2		1620	14.5
3/6/2019	1033	4.2	3/6/2019	1038	1.9	3/6/2019	1041	2.4	3/6/2019	1043	5.8
	1340	14.9		1343	8.7		1345	4.2		1347	8.2
	1555	11.0		1558	6.8		1600	8.7		1602	4.1
3/8/2019	1050	18.0	3/8/2019	1053	5.1	3/8/2019	1057	15.4	3/8/2019	1101	3.0
	1339	10.0		1341	11.9		1343	17.6		1346	20.8
	1533	9.6		1535	8.8		1541	9.8		1543	9.1

SMH - sewer manhole, numbered east to west

Measurements conducted using MiniraE 2000, Calibrated daily

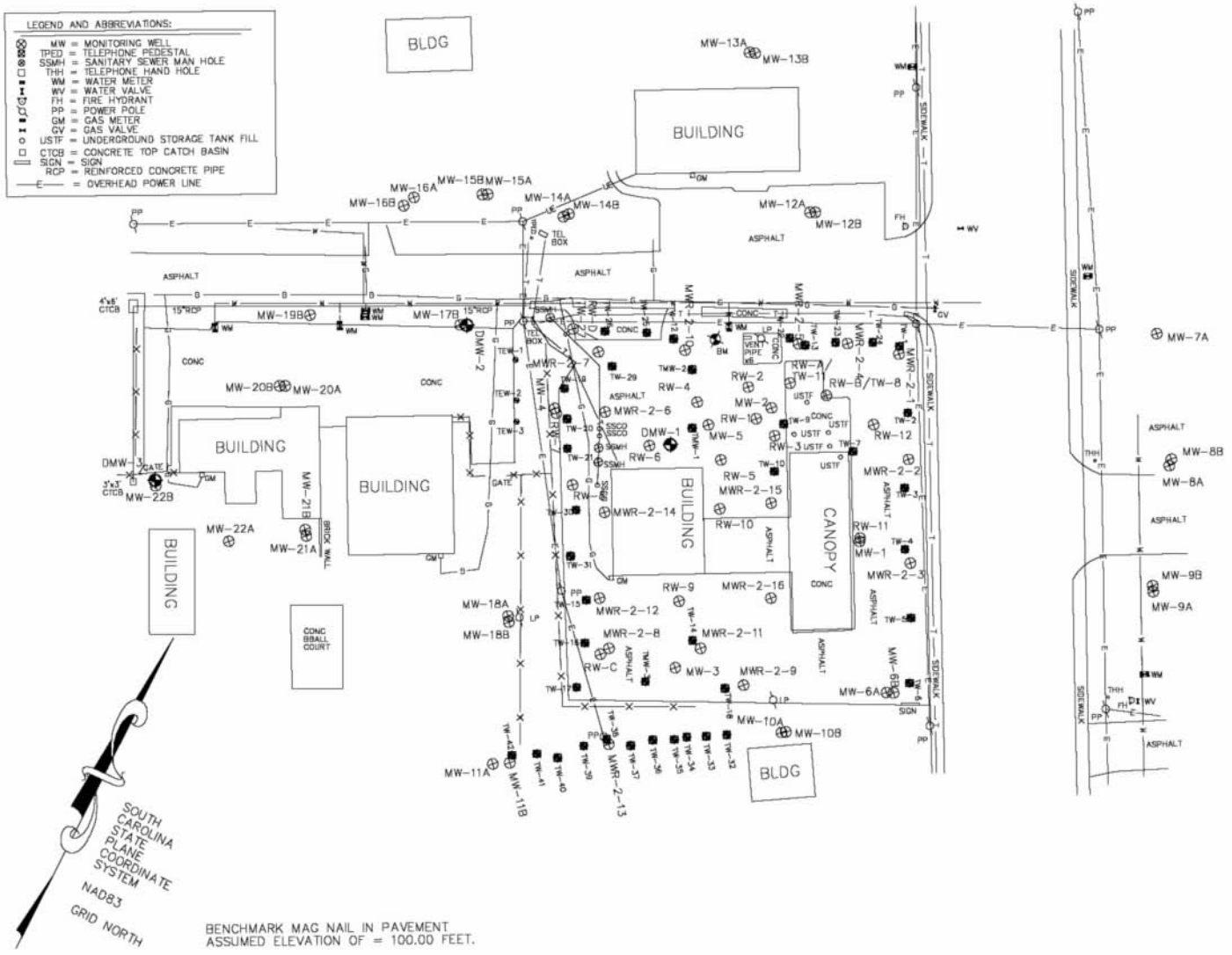
Figures



Name: COLUMBIA NORTH
Date: 5/8/2019
Scale: 1 inch equals 1000 feet

Location: 034° 03' 54.9" N 081° 07' 01.6" W
Caption: Figure 1
Broad River Amoco, Site 11946
CTSI Proj. No. 18-6580

Copyright (C) 1997, Maptech, Inc.



CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 4/19/19	SCALE:SEE GRAPHIC	Dwg: BASEMAP

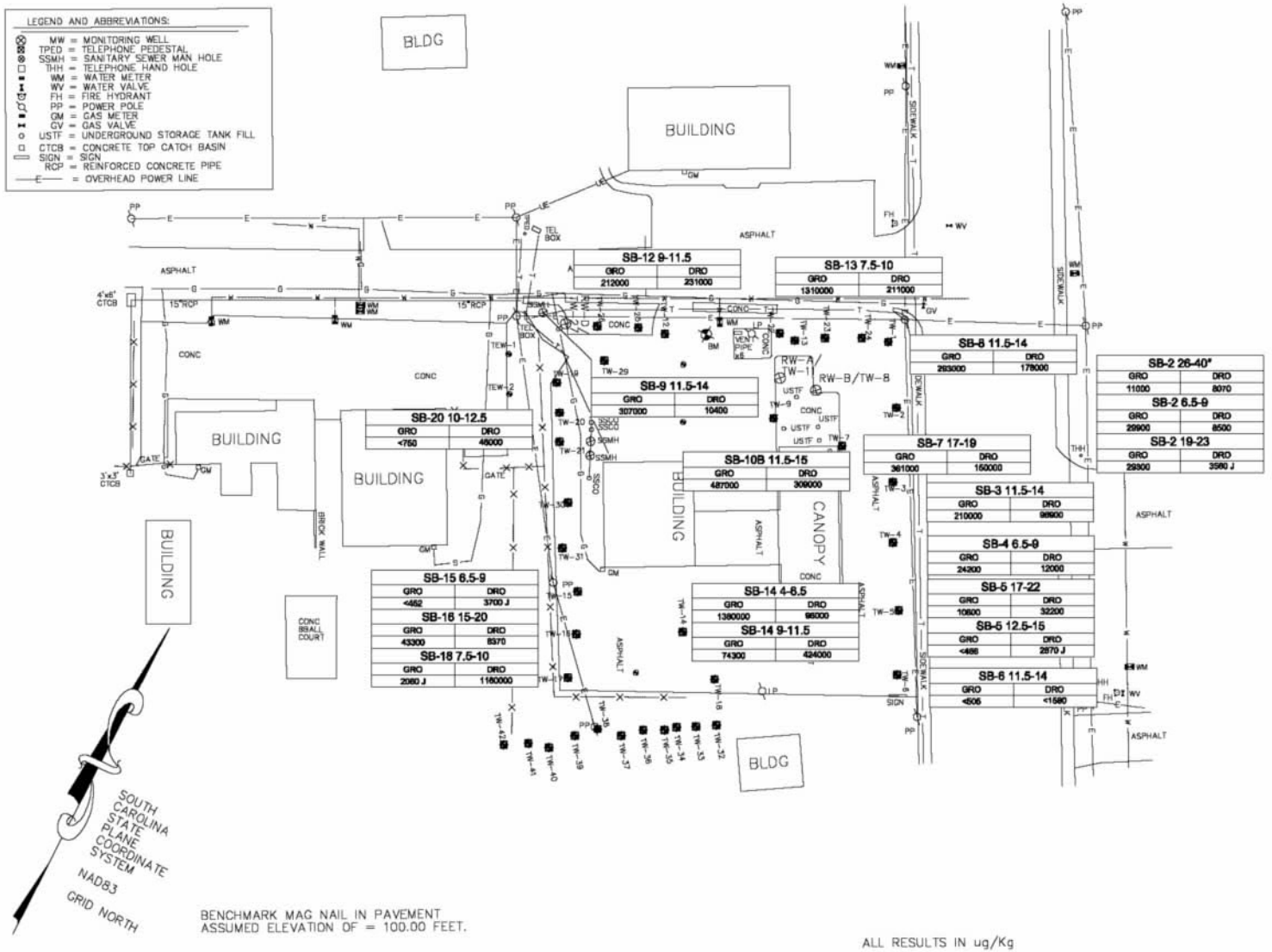
FIGURE 2A
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA

1971

2018

COMPARISON OVERLAY

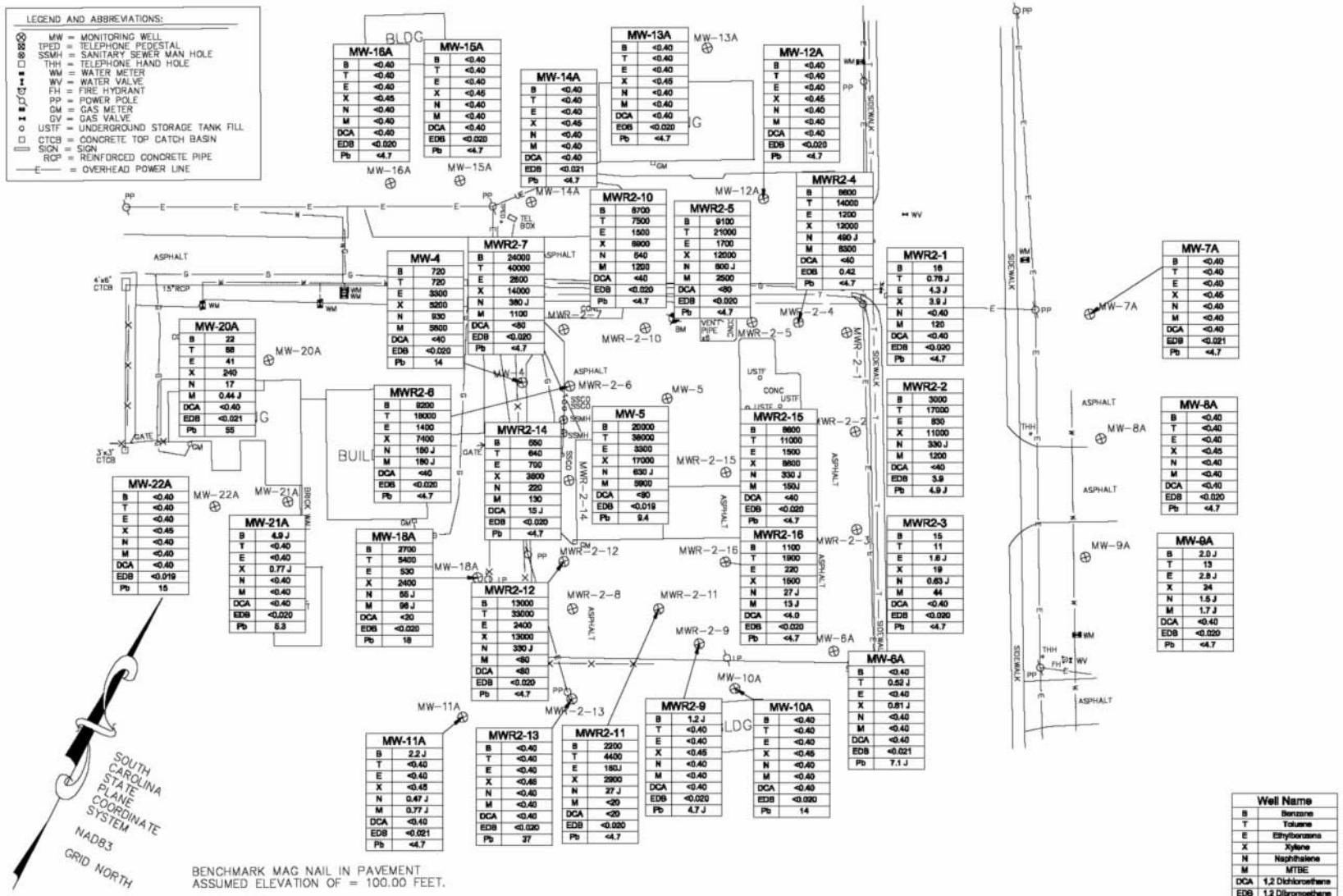
CTSI Geotechnical Engineering and Environmental Services IRMO, SOUTH CAROLINA			FIGURE 2B BROAD RIVER AMOCO HISTORICAL SITE AERIAL PHOTOGRAPHS UST ID#11946 CTSI PROJ. 18-6580 COLUMBIA, SC
Date: 5/13/19	SCALE:SEE GRAPHIC	Dwg: HIST PHOTO	



CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19	SCALE:SEE GRAPHIC	Dwg: SOIL COC

FIGURE 3
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



MW-16A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-15A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-13A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-12A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-14A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.021
Pb	<4.7

MW-4	
B	720
T	720
E	3300
X	5200
N	930
M	5600
DCA	<40
EDB	<0.020
Pb	14

MW-20A	
B	22
T	88
E	41
X	240
N	17
M	0.44 J
DCA	<0.40
EDB	<0.021
Pb	55

MW-22A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.019
Pb	15

MW-21A	
B	4.9 J
T	<0.40
E	<0.40
X	0.77 J
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	5.3

MW-18A	
B	2700
T	5400
E	530
X	2400
N	66 J
M	96 J
DCA	<20
EDB	<0.020
Pb	16

MW-5	
B	20000
T	38000
E	3300
X	17000
N	630 J
M	5900
DCA	<80
EDB	<0.019
Pb	9.4

MW-7A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.021
Pb	<4.7

MW-8A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-9A	
B	2.0 J
T	13
E	2.8 J
X	24
N	1.5 J
M	1.7 J
DCA	<0.40
EDB	<0.020
Pb	<4.7

MW-6A	
B	<0.40
T	0.52 J
E	<0.40
X	0.81 J
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.021
Pb	7.1 J

MW-10A	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	14

MW-11A	
B	2.2 J
T	<0.40
E	<0.40
X	<0.45
N	0.47 J
M	0.77 J
DCA	<0.40
EDB	<0.021
Pb	<4.7

MWR2-1	
B	16
T	0.76 J
E	4.3 J
X	3.9 J
N	<0.40
M	120
DCA	<0.40
EDB	<0.020
Pb	<4.7

MWR2-2	
B	3000
T	17000
E	850
X	11000
N	330 J
M	1200
DCA	<40
EDB	3.9
Pb	4.9 J

MWR2-3	
B	15
T	11
E	1.8 J
X	19
N	0.63 J
M	44
DCA	<0.40
EDB	<0.020
Pb	<4.7

MWR2-4	
B	8600
T	14000
E	1200
X	12000
N	490 J
M	8300
DCA	<40
EDB	0.42
Pb	<4.7

MWR2-5	
B	9100
T	21000
E	1700
X	12000
N	800 J
M	2500
DCA	<80
EDB	<0.020
Pb	<4.7

MWR2-6	
B	8200
T	18000
E	1400
X	7400
N	150 J
M	150 J
DCA	<40
EDB	<0.020
Pb	<4.7

MWR2-7	
B	24000
T	40000
E	2600
X	14000
N	380 J
M	1100
DCA	<80
EDB	<0.020
Pb	<4.7

MWR2-8	
B	550
T	640
E	700
X	3800
N	220
M	130
DCA	15 J
EDB	<0.020
Pb	<4.7

MWR2-9	
B	1.2 J
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	4.7 J

MWR2-10	
B	8700
T	7500
E	1500
X	8900
N	540
M	1200
DCA	<40
EDB	<0.020
Pb	<4.7

MWR2-11	
B	2200
T	4400
E	180J
X	2900
N	27 J
M	<20
DCA	<20
EDB	<0.020
Pb	<4.7

MWR2-12	
B	13000
T	33000
E	2400
X	13000
N	330 J
M	<80
DCA	<80
EDB	<0.020
Pb	<4.7

MWR2-13	
B	<0.40
T	<0.40
E	<0.40
X	<0.45
N	<0.40
M	<0.40
DCA	<0.40
EDB	<0.020
Pb	27

MWR2-14	
B	550
T	640
E	700
X	3800
N	220
M	130
DCA	15 J
EDB	<0.020
Pb	<4.7

MWR2-15	
B	8600
T	11000
E	1500
X	8600
N	330 J
M	150J
DCA	<40
EDB	<0.020
Pb	<4.7

MWR2-16	
B	1100
T	1900
E	220
X	1600
N	27 J
M	13 J
DCA	<4.0
EDB	<0.020
Pb	<4.7

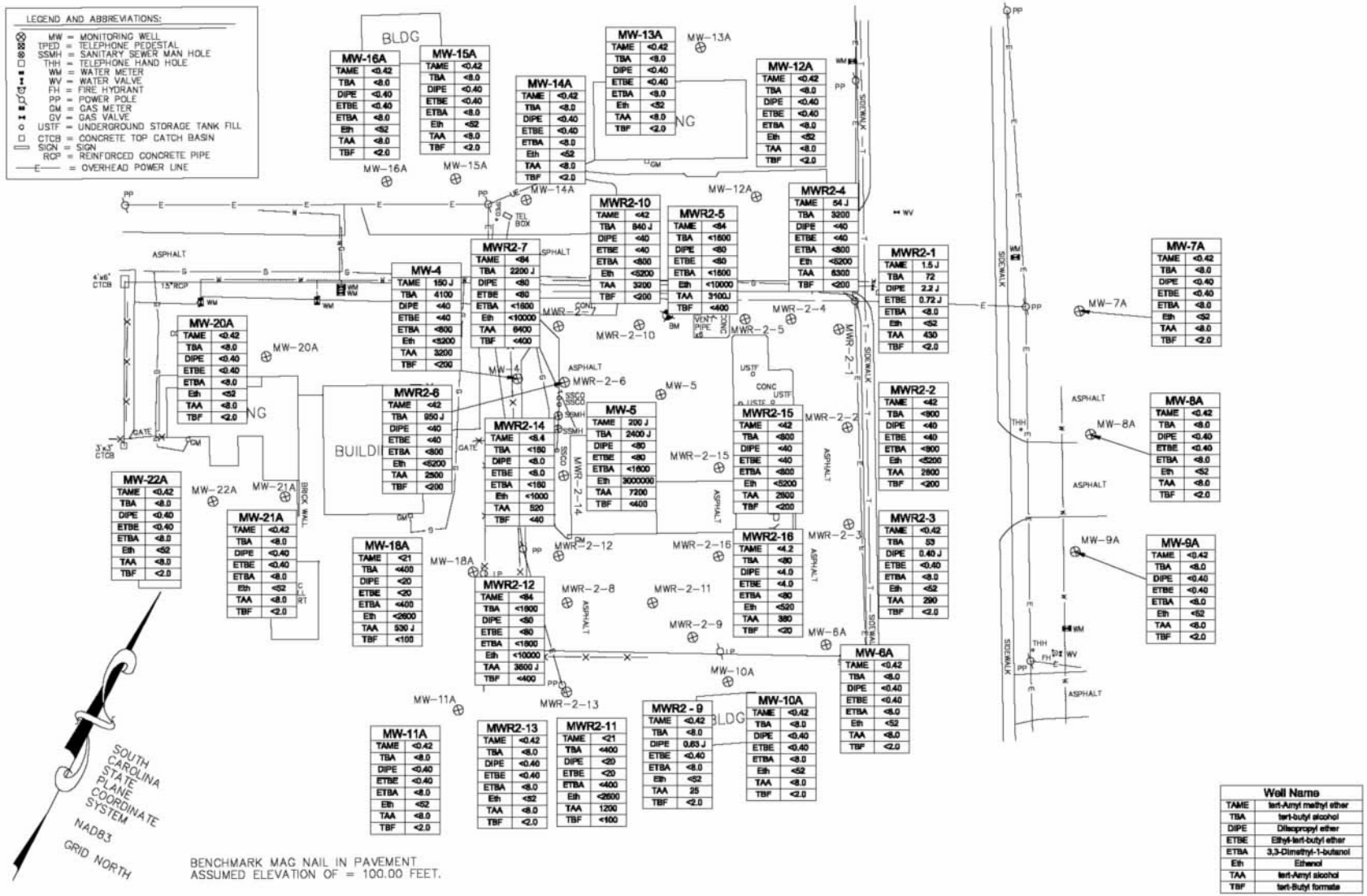
GRAPHIC SCALE

0 50 100 150

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/7/19 | SCALE:SEE GRAPHIC | Dwg: SHAL-BTEX

FIGURE 4A
BROAD RIVER AMOCO UST #11946
SHALLOW WELLS
GROUNDWATER CONTOUR MAP
CTSI PROJ. 18-6580
COLUMBIA SC



GROUNDWATER SAMPLED APRIL 2019

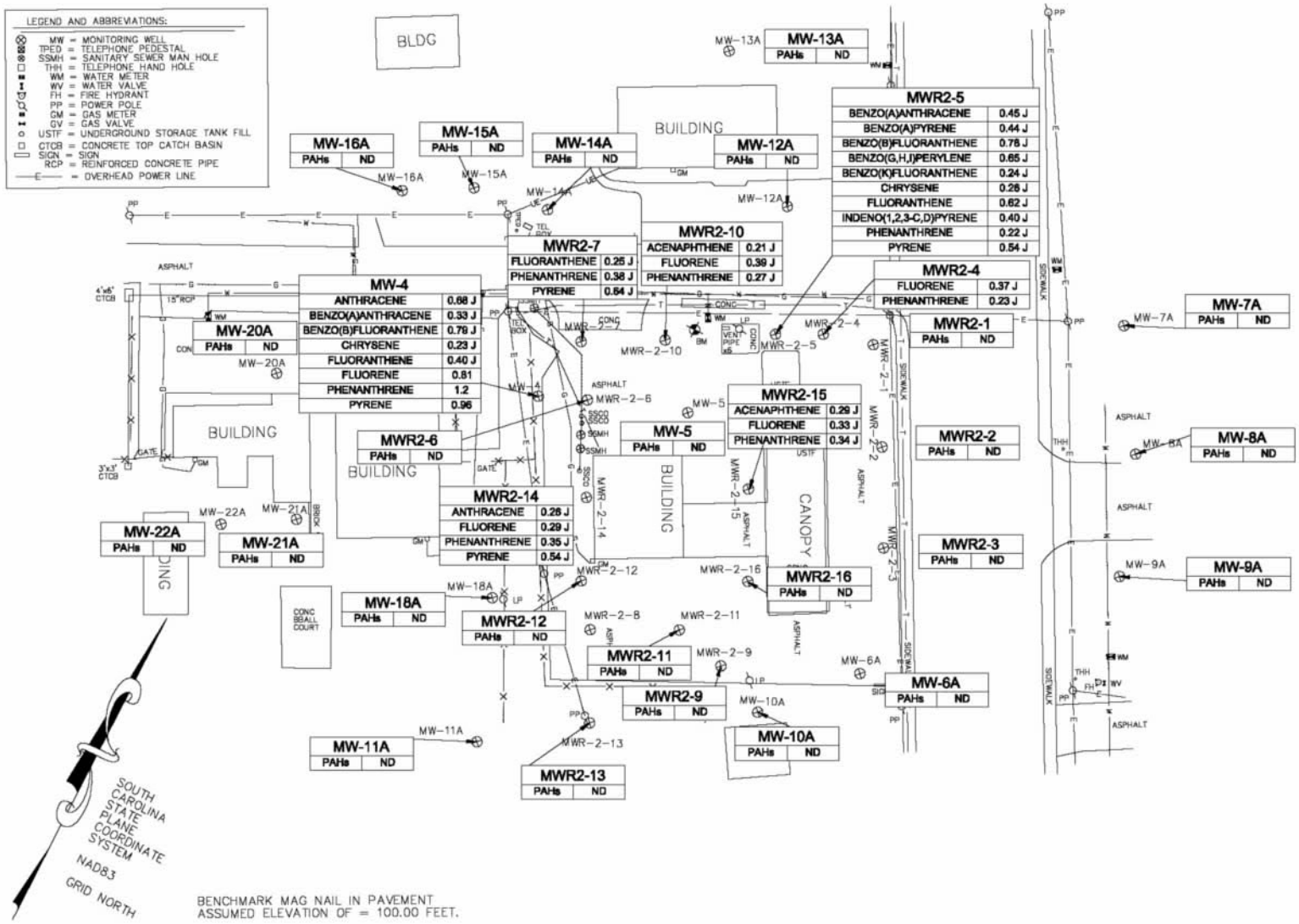
GRAPHIC SCALE

0 50 100 150

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/7/19 | SCALE:SEE GRAPHIC | Dwg: SHAL-OXY

FIGURE 4B
BROAD RIVER AMOCO UST #11946
SHALLOW WELLS
OXYGENATE ANALYTICAL MAP
CTSI PROJ. 18-6580
COLUMBIA SC

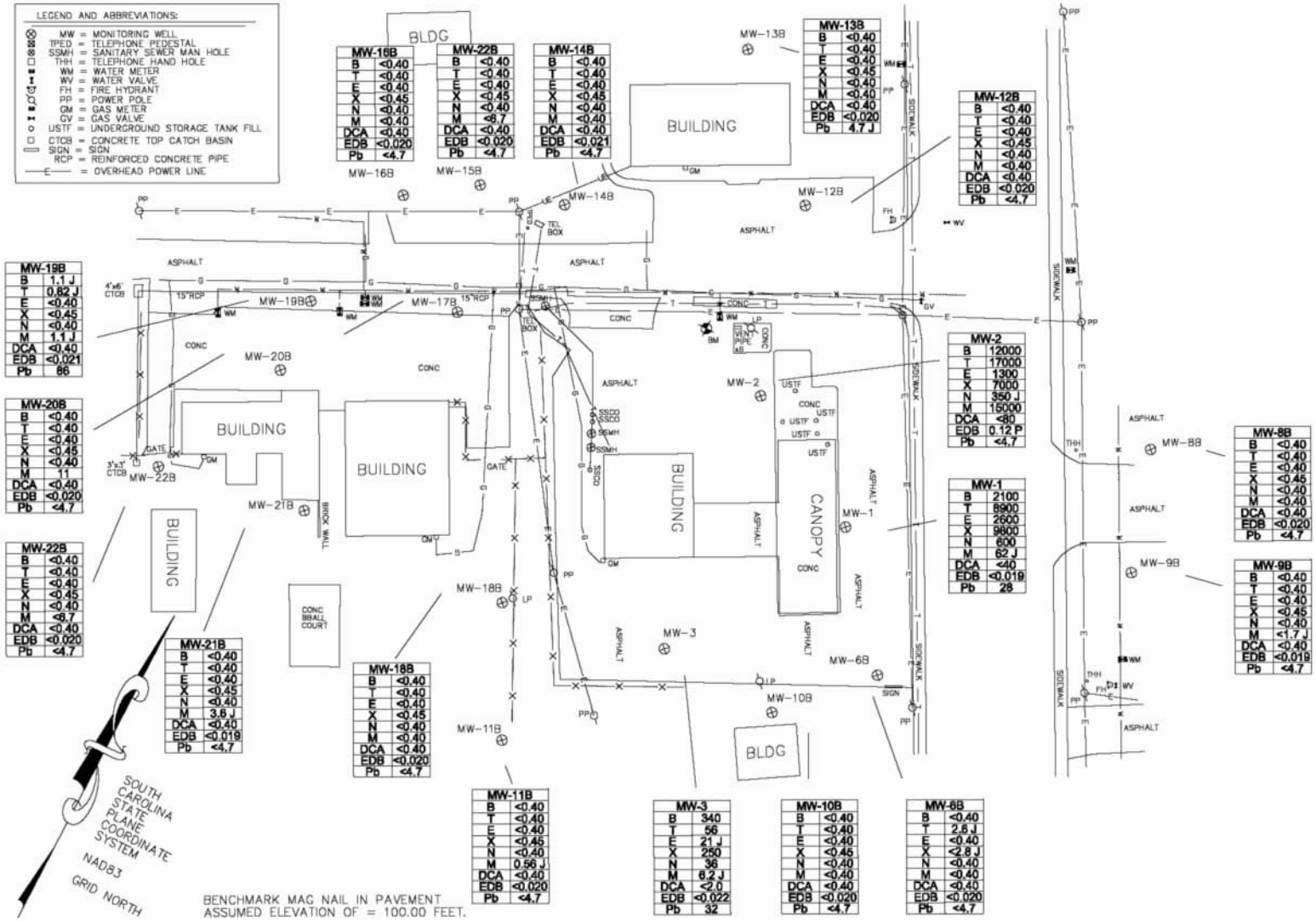


GROUNDWATER SAMPLED APRIL 2019

C T S I
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/13/19 | SCALE:SEE GRAPHIC | Dwg: SHAL-PAH

FIGURE 4C
BROAD RIVER AMOCO UST #11946
SHALLOW WELLS
PAH ANALYTICAL MAP
CTSI PROJ. 18-6580
COLUMBIA SC

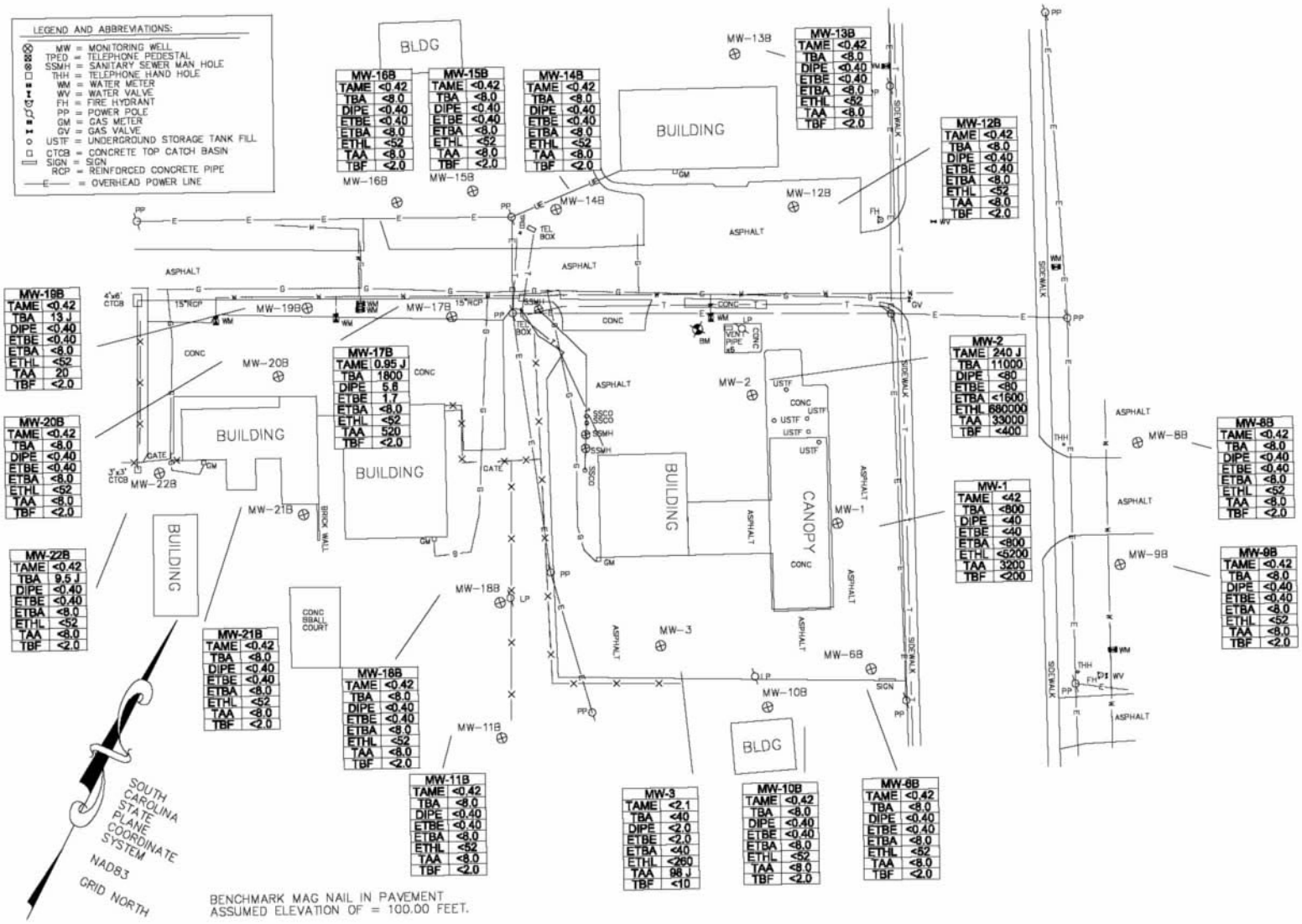


GROUNDWATER SAMPLED APRIL 2019

C T S I
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19 | SCALE:SEE GRAPHIC | Dwg: INTER-VOC

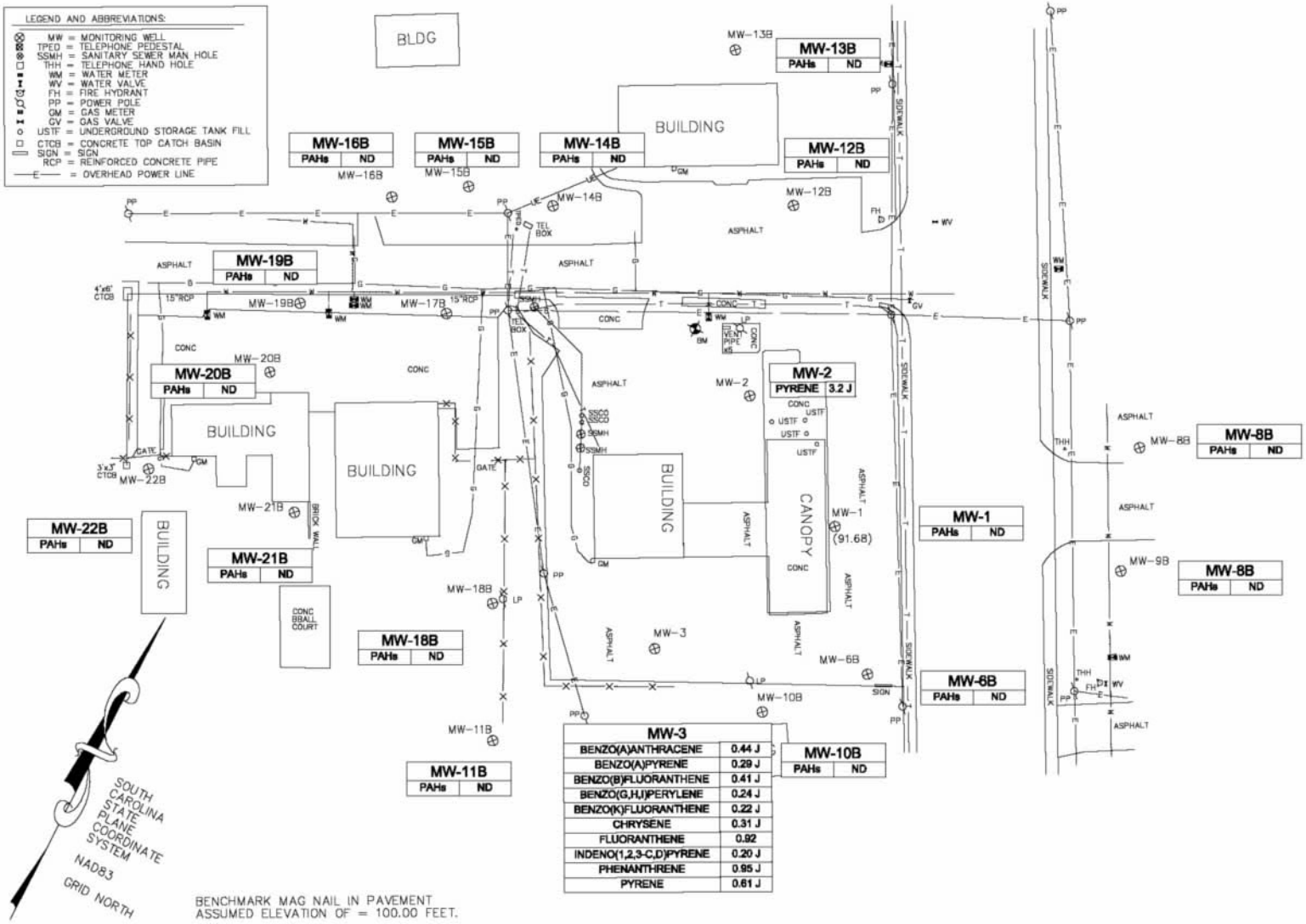
FIGURE 4D
BROAD RIVER AMOCO UST #11946
INTERMEDIATE WELLS
VOC ANALYTICAL MAP
CTSI PROJ. 18-6580
COLUMBIA SC



CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19 | SCALE:SEE GRAPHIC | Dwg: INTER-OXY

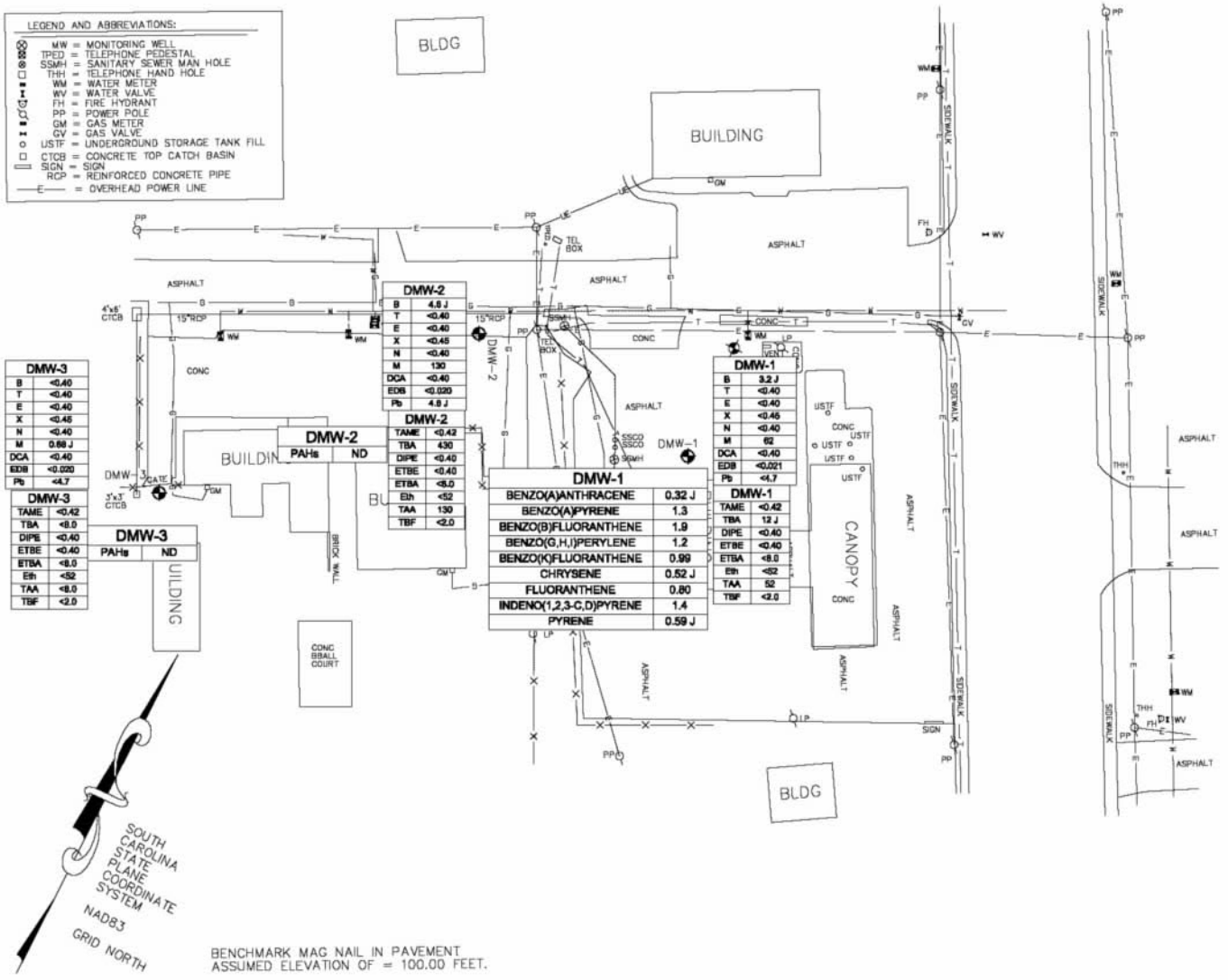
FIGURE 4E
BROAD RIVER AMOCO UST #11946
INTERMEDIATE WELLS
OXYGENATES MAP
CTSI PROJ. 18-6580
COLUMBIA SC



C T S I
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19 | SCALE:SEE GRAPHIC | Dwg: INTER-PAH

FIGURE 4F
BROAD RIVER AMOCO UST #11946
INTERMEDIATE WELLS
PAH ANALYTICAL MAP
CTSI PROJ. 18-6580
COLUMBIA SC

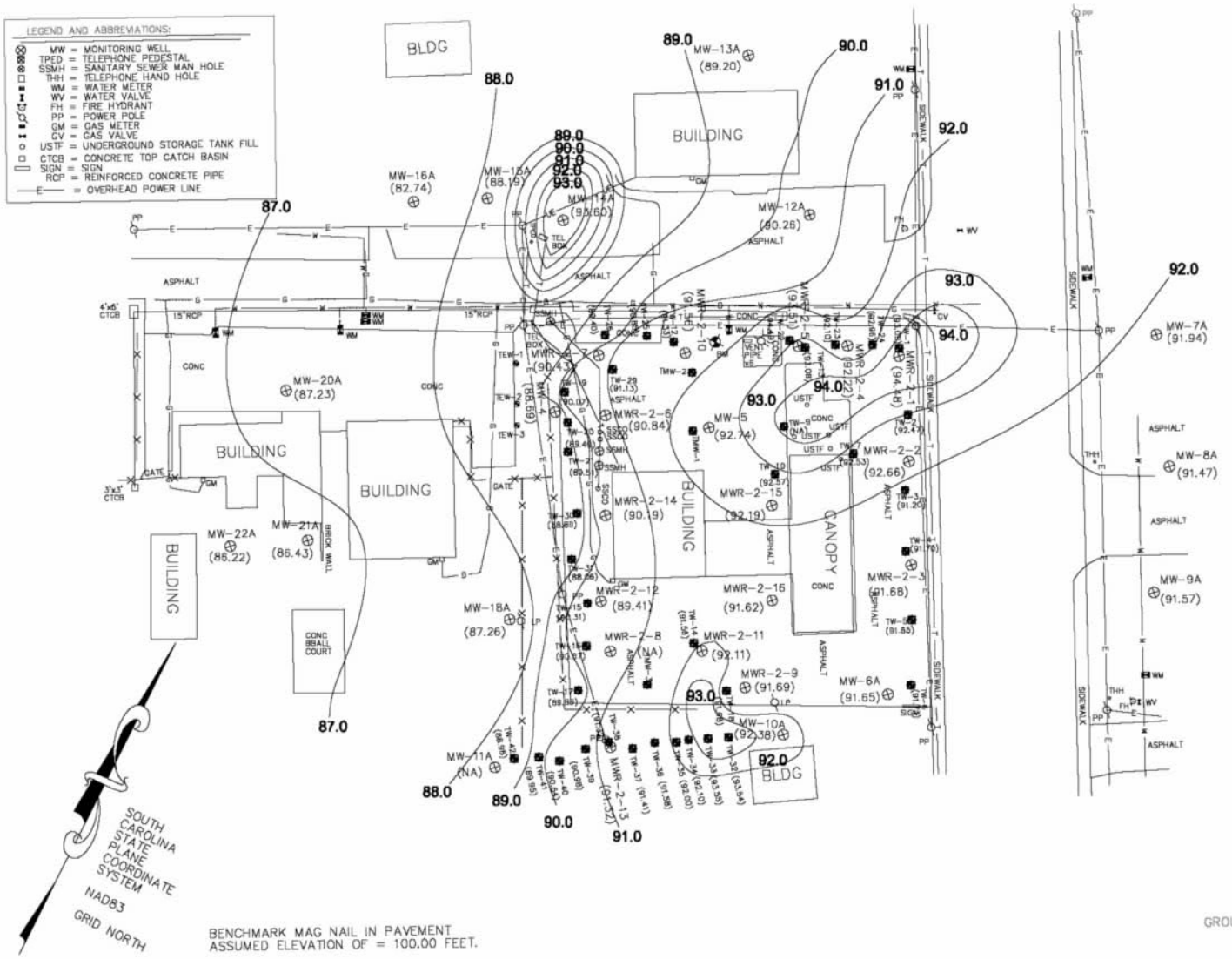


GROUNDWATER SAMPLED APRIL 2019

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/9/19 | SCALE:SEE GRAPHIC | Dwg: DEEP COC

FIGURE 4G
BROAD RIVER AMOCO
DEEP WELL ANALYTICAL MAP
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



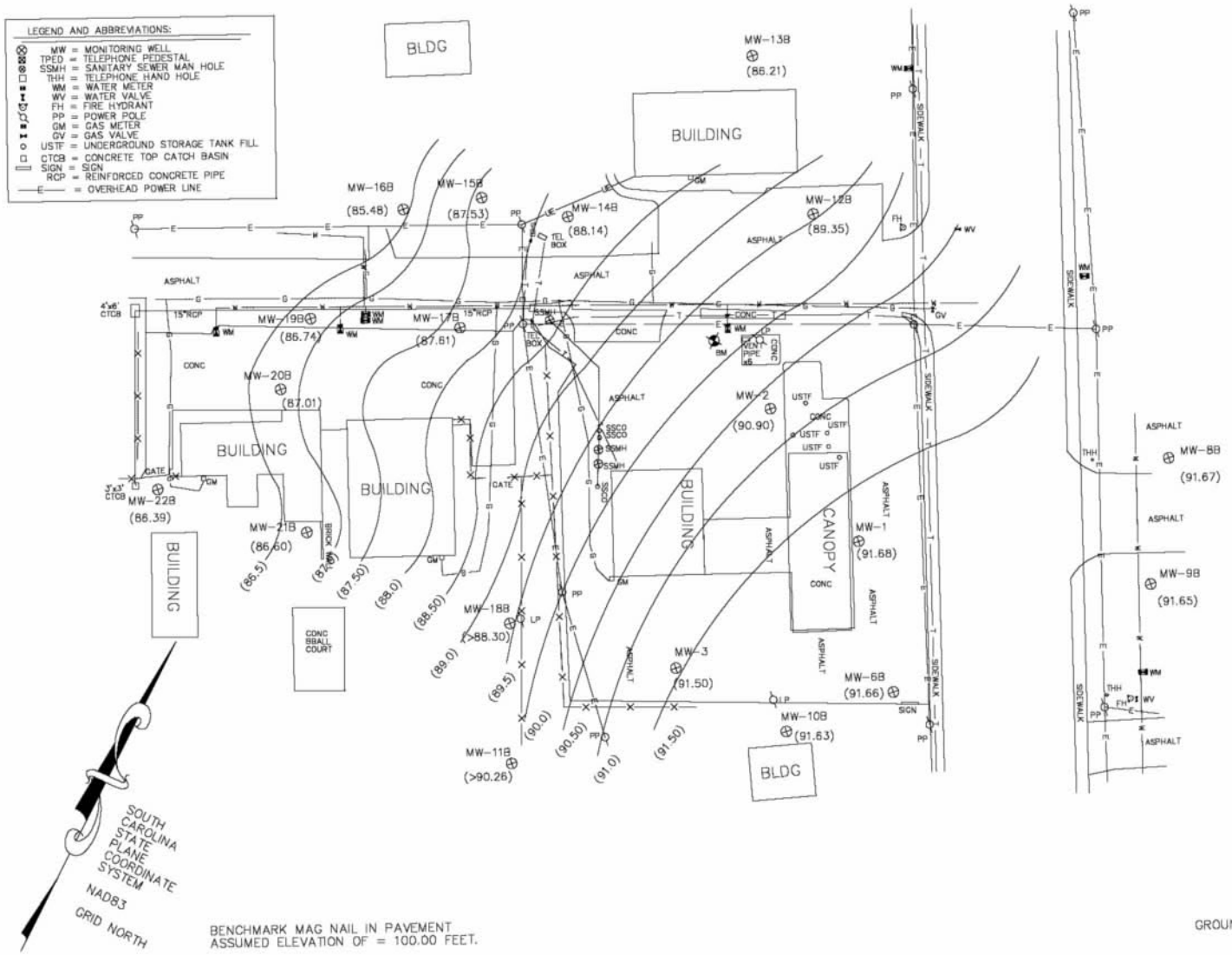
GROUNDWATER MEASUREMENTS CONDUCTED ON 03/20/2019

90.0----- -GROUNDWATER CONTOUR (FEET)

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19 | SCALE:SEE GRAPHIC | Dwg: SHAL-POT

FIGURE 5A
BROAD RIVER AMOCO UST #11946
SHALLOW WELLS
GROUNDWATER CONTOUR MAP
CTSI PROJ. 18-6580
COLUMBIA SC



BENCHMARK MAG NAIL IN PAVEMENT
ASSUMED ELEVATION OF = 100.00 FEET.

GROUNDWATER MEASUREMENTS CONDUCTED ON 03/20/2019

90.0----- -GROUNDWATER CONTOUR (FEET)

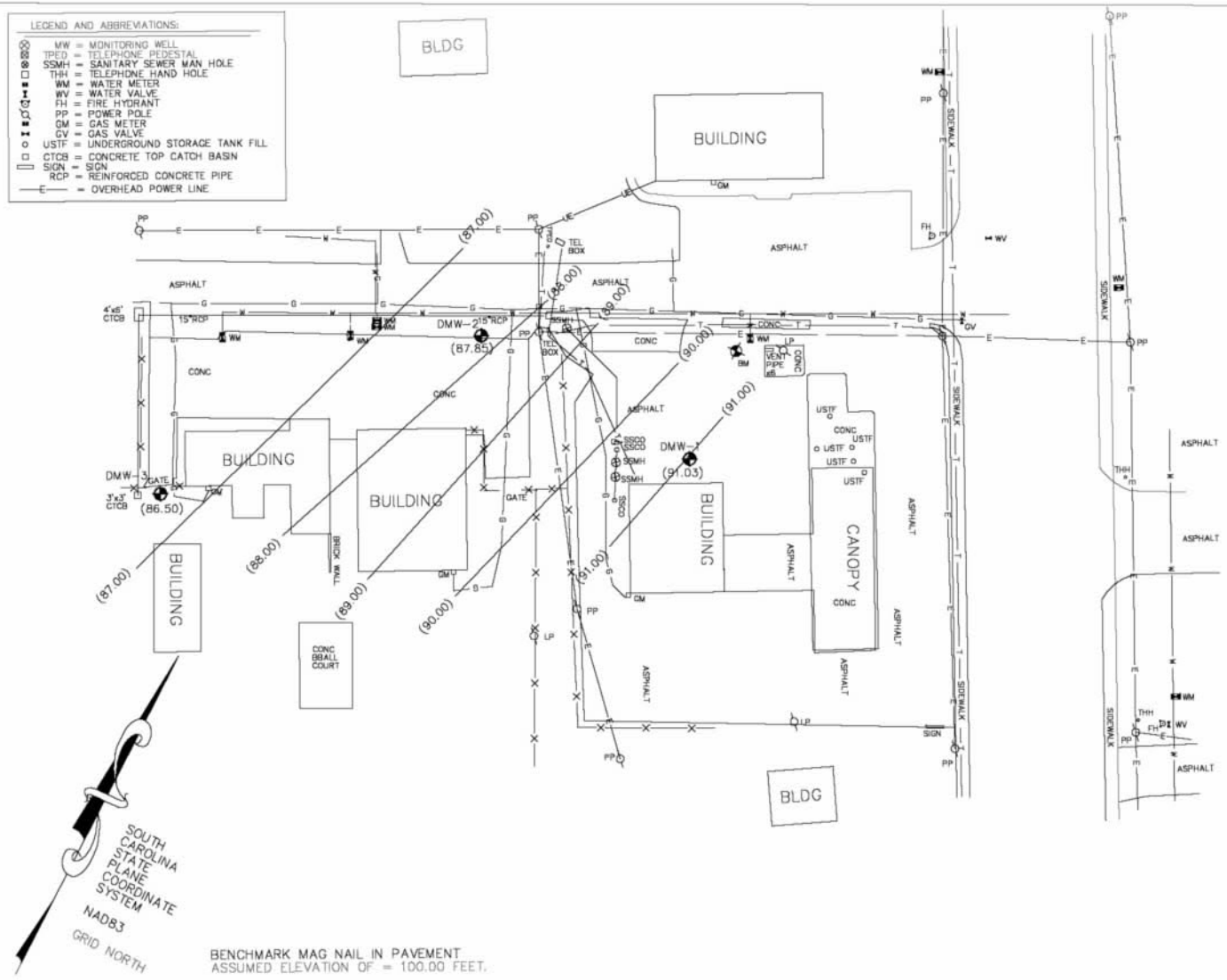
GRAPHIC SCALE

0 50 100 150

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19 | SCALE:SEE GRAPHIC | Dwg: INTER-POT

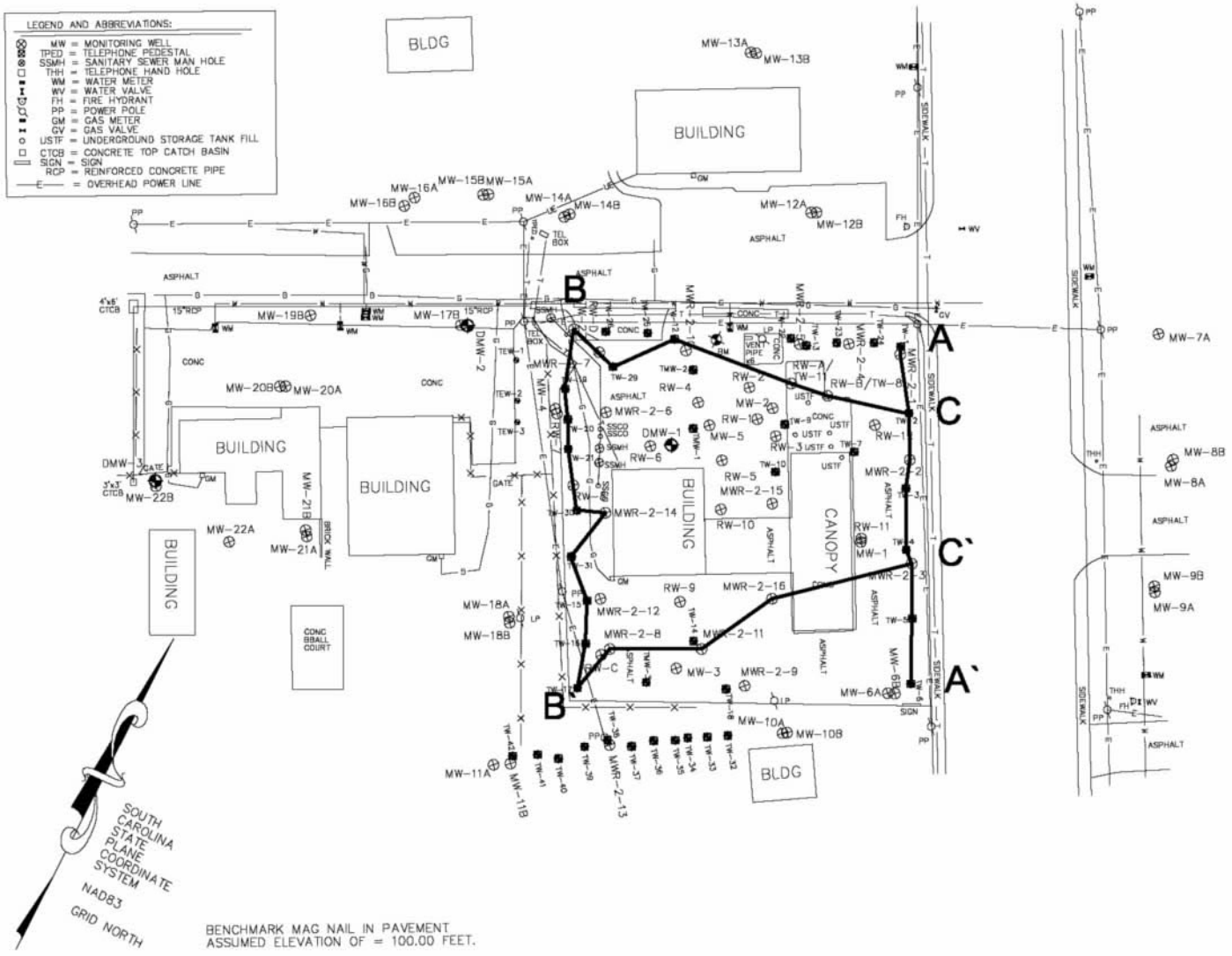
FIGURE 5B
BROAD RIVER AMOCO UST #11946
INTERMEDIATE WELLS
GROUNDWATER CONTOUR MAP
CTSI PROJ. 18-6580
COLUMBIA SC



CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/10/19	SCALE:SEE GRAPHIC	Dwg: DEEP-POT

FIGURE 5C
BROAD RIVER AMOCO UST #11946
DEEP WELL
GROUNDWATER CONTOUR MAP
CTSI PROJ. 18-6580
COLUMBIA SC



BENCHMARK MAG NAIL IN PAVEMENT
ASSUMED ELEVATION OF = 100.00 FEET.

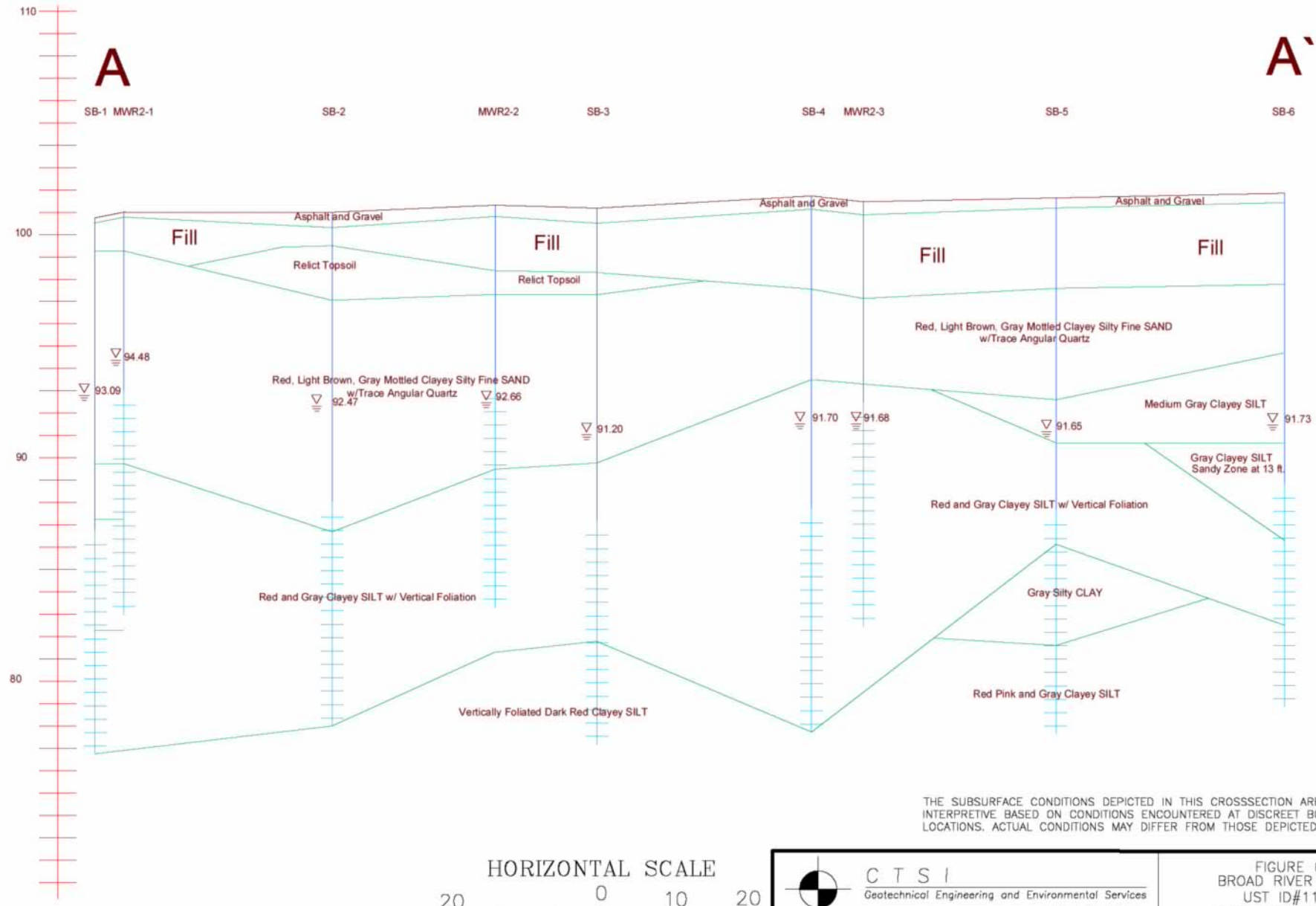
GRAPHIC SCALE

0 50 100 150

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/9/19	SCALE:SEE GRAPHIC	Dwg: XSECTION-SUM

FIGURE 6A
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



THE SUBSURFACE CONDITIONS DEPICTED IN THIS CROSSSECTION ARE INTERPRETIVE BASED ON CONDITIONS ENCOUNTERED AT DISCREET BORING LOCATIONS. ACTUAL CONDITIONS MAY DIFFER FROM THOSE DEPICTED HERE.

HORIZONTAL SCALE

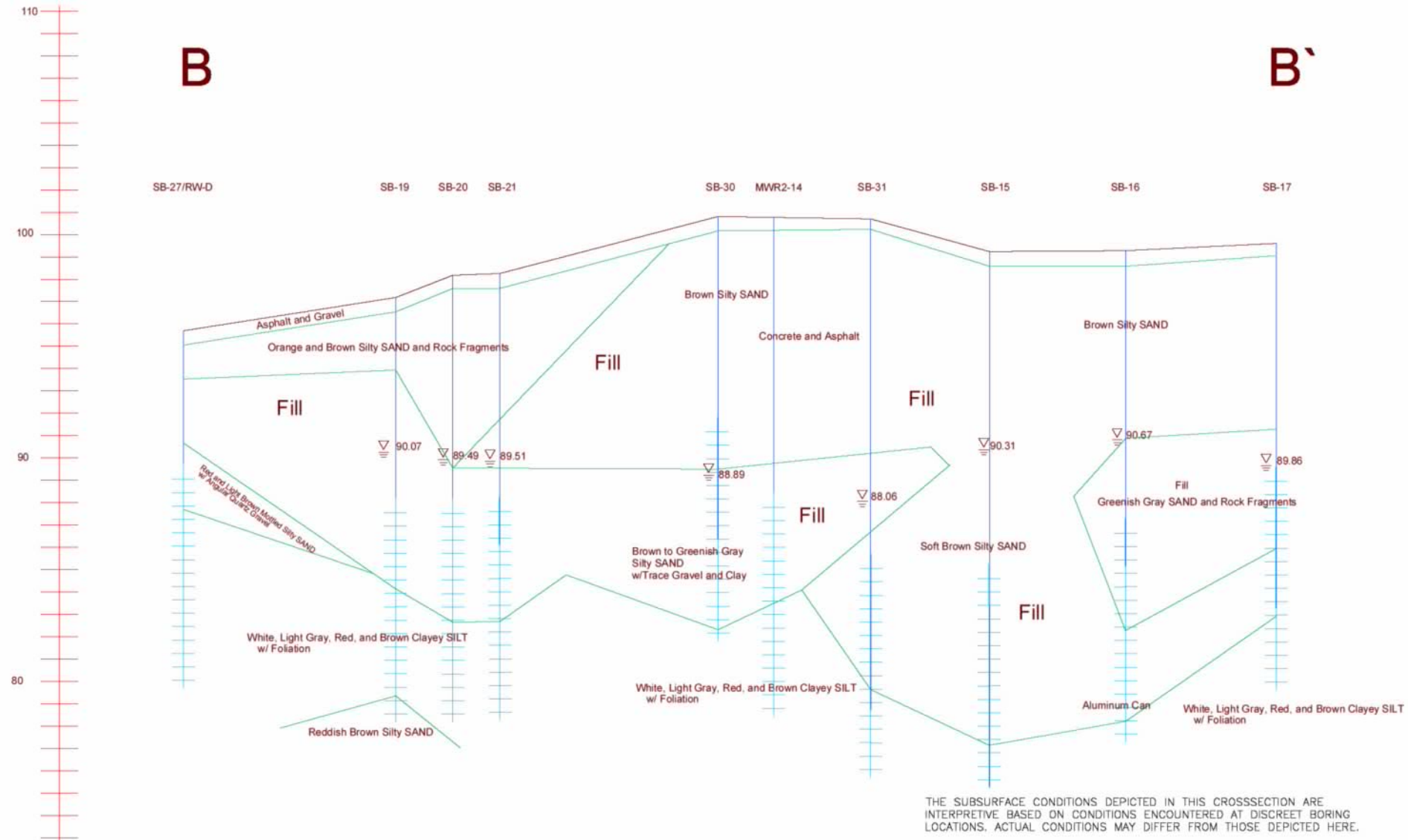
20 0 10 20

NOTE: VERTICAL SCALE IS EXAGGERATED X3

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/1/19 | SCALE:SEE GRAPHIC | Dwg: CROSSSECT. 1

FIGURE 6B
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



THE SUBSURFACE CONDITIONS DEPICTED IN THIS CROSSSECTION ARE INTERPRETIVE BASED ON CONDITIONS ENCOUNTERED AT DISCREET BORING LOCATIONS. ACTUAL CONDITIONS MAY DIFFER FROM THOSE DEPICTED HERE.

HORIZONTAL SCALE

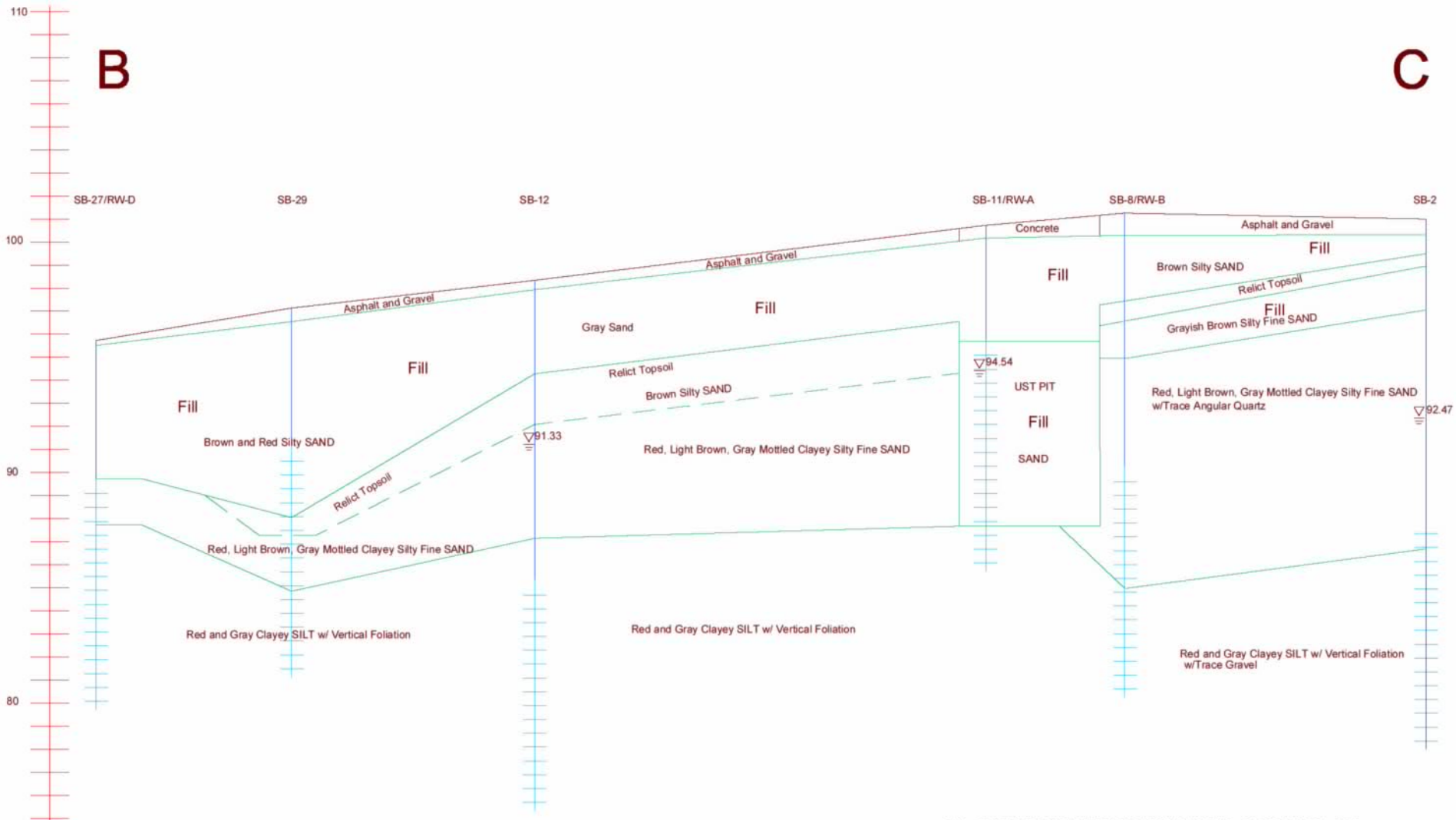
20 0 10 20

NOTE: VERTICAL SCALE IS EXAGGERATED X3

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/1/19 | SCALE:SEE GRAPHIC | Dwg: CROSSSECT. 2

FIGURE 6C
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



THE SUBSURFACE CONDITIONS DEPICTED IN THIS CROSSSECTION ARE INTERPRETIVE BASED ON CONDITIONS ENCOUNTERED AT DISCREET BORING LOCATIONS. ACTUAL CONDITIONS MAY DIFFER FROM THOSE DEPICTED HERE.

HORIZONTAL SCALE

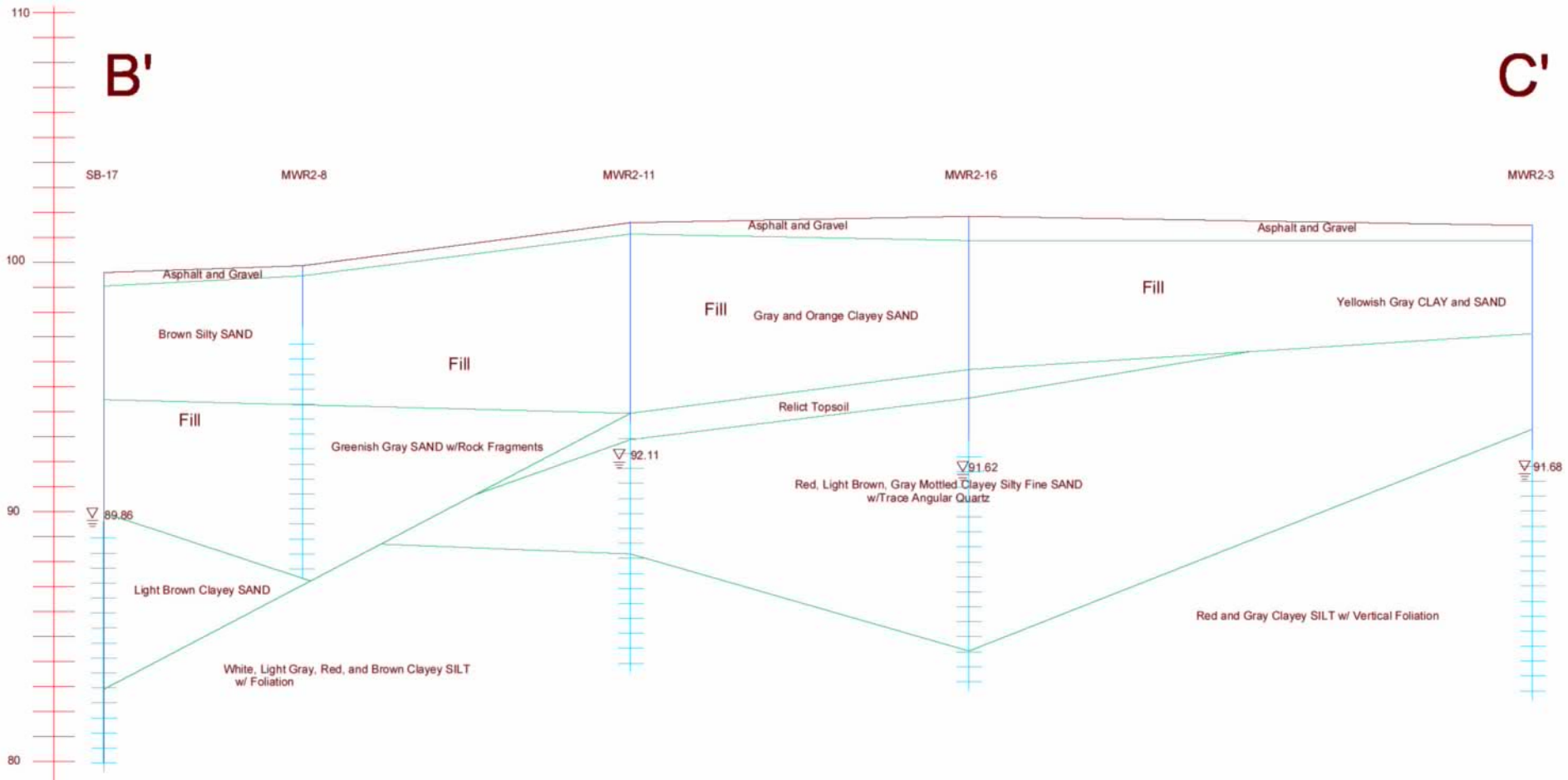
20 0 10 20

NOTE: VERTICAL SCALE IS EXAGGERATED X3

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/3/19 | SCALE:SEE GRAPHIC | Dwg: CROSSSECT. 3

CROSSSECTION 6D
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



THE SUBSURFACE CONDITIONS DEPICTED IN THIS CROSSSECTION ARE INTERPRETIVE BASED ON CONDITIONS ENCOUNTERED AT DISCREET BORING LOCATIONS. ACTUAL CONDITIONS MAY DIFFER FROM THOSE DEPICTED HERE.

HORIZONTAL SCALE

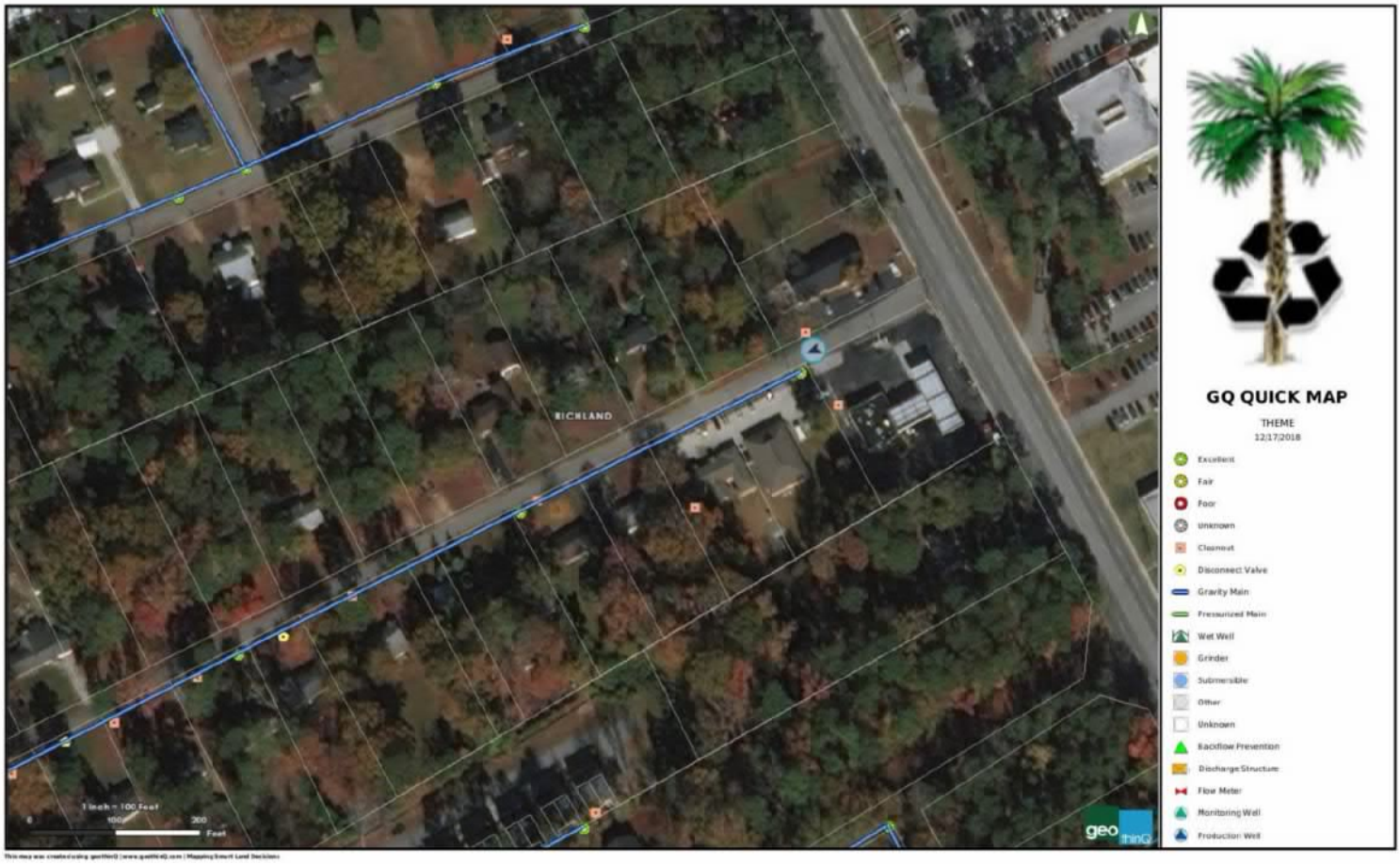
20 0 10 20

NOTE: VERTICAL SCALE IS EXAGGERATED X3

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

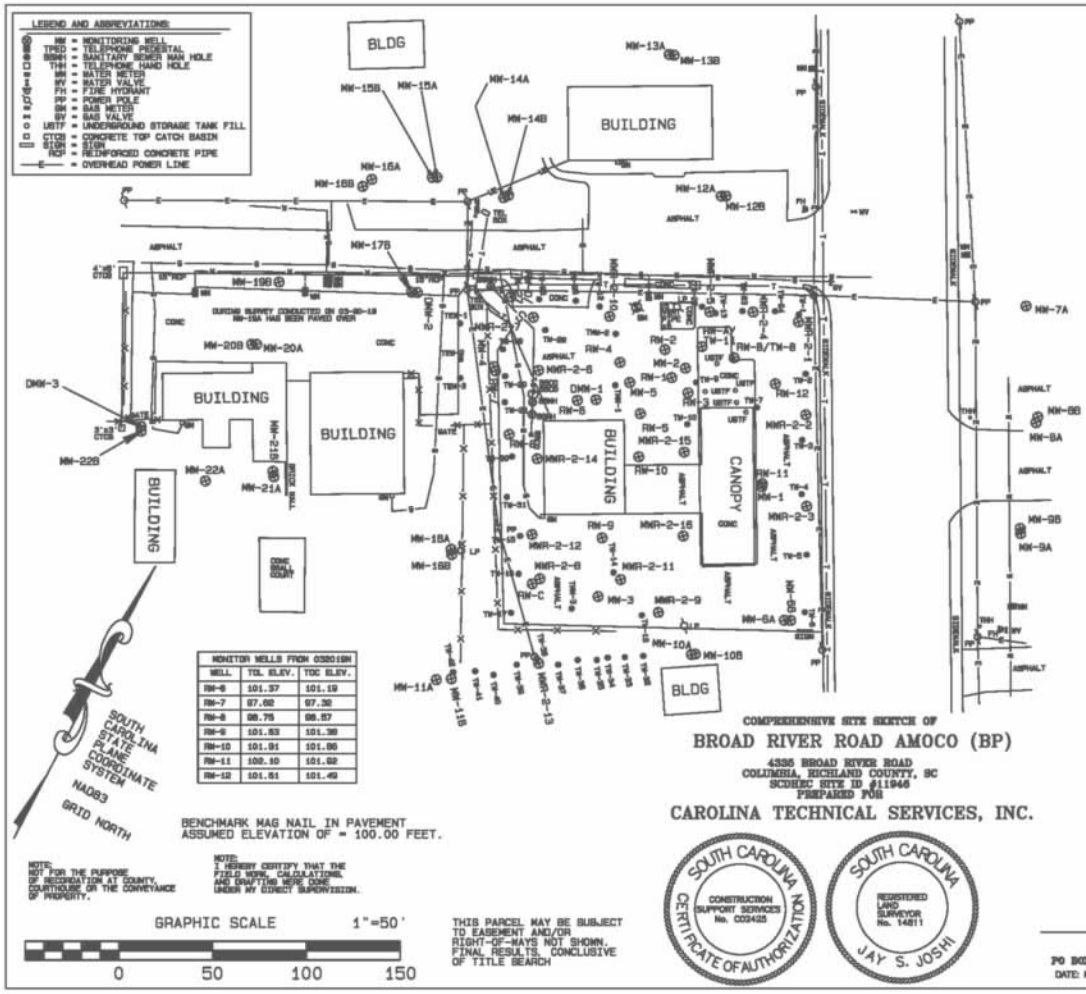
Date: 5/3/19 | SCALE:SEE GRAPHIC | Dwg: CROSSSECT. 4

FIGURE 6E
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA
SOUTH CAROLINA



CTSI Geotechnical Engineering and Environmental Services IRMO, SOUTH CAROLINA			FIGURE 7 BROAD RIVER AMOCO ORGANIC VAPOR MONITORING LOCATION MAP UST ID#11946 CTSI PROJ. 18-6580 COLUMBIA, SC
Date: 5/14/19	SCALE: SEE GRAPHIC	Dwg: OVA LOC MAP	

Appendix A
Site Survey



MONITOR WELLS FROM 032019N			MONITOR WELLS FROM 032019N		
WELL	TOL ELEV.	TOC ELEV.	WELL	TOL ELEV.	TOC ELEV.
RW-6	101.37	101.19			
RW-7	97.62	97.30			
RW-8	98.75	98.57			
RW-9	101.53	101.38			
RW-10	101.91	101.86			
RW-11	102.10	101.82			
RW-12	101.51	101.49			

MONITOR WELLS FROM 030413B			MONITOR WELLS FROM 030413B		
WELL	TOL ELEV.	TOC ELEV.	WELL	TOL ELEV.	TOC ELEV.
MW-1	102.07	101.84	MW-15A	97.07	96.87
MW-2	101.34	101.13	MW-15B	96.99	96.82
MW-3	101.33	101.09	MW-16A	ASH	ASH
MW-4	97.33	97.02	MW-16B	ASH	ASH
MW-5	101.60	101.34	MW-17B	92.85	92.66
MW-6A	102.10	101.84	MW-18A	88.54	88.20
MW-6B	102.09	101.91	MW-18B	88.95	88.30
MW-7A	100.39	100.04	MW-19A	91.83	91.63
MW-8A	100.75	100.45	MW-19B	92.07	91.86
MW-8B	100.69	100.37	MW-20A	88.97	88.67
MW-9A	101.81	101.36	MW-20B	88.94	88.61
MW-9B	101.73	101.38	MW-21A	87.41	87.18
MW-10A	97.54	97.26	MW-21B	87.52	87.23
MW-10B	97.81	97.34	MW-22B	87.57	87.40
MW-11A	90.10	89.93	DMW-1	101.48	101.18
MW-11B	90.42	90.26	DMW-2	92.97	92.83
MW-12A	98.91	98.26	DMW-3	87.65	87.41
MW-12B	98.87	98.35	RW-1	101.69	101.21
MW-13A	98.90	98.70	RW-2	101.24	100.98
MW-13B	98.91	98.69	RW-3	101.54	101.44
MW-14A	97.74	97.49	RW-4	101.33	100.93
MW-14B	97.79	97.45	RW-5	101.98	101.82

MONITOR WELLS FROM 032019N			MONITOR WELLS FROM 032019N		
WELL	TOL ELEV.	TOC ELEV.	WELL	TOL ELEV.	TOC ELEV.
MW-18A	94.92	94.72	TW-12	N/A	98.34
MW-18B	94.61	94.62	TW-13	N/A	100.20
MW-22A	87.40	87.25	TW-14	N/A	101.41
MWA-2-1	101.15	101.01	TW-15	N/A	98.24
MWA-2-2	101.89	101.32	TW-16	N/A	99.26
MWA-2-3	101.82	101.47	TW-17	N/A	98.59
MWA-2-4	100.88	100.31	TW-18	N/A	101.52
MWA-2-5	100.54	100.24	TW-19	N/A	97.20
MWA-2-6	99.79	99.41	TW-20	N/A	99.16
MWA-2-7	98.81	98.39	TW-21	N/A	98.36
MWA-2-8	100.04	99.96	TW-22	N/A	100.42
MWA-2-9	101.82	101.55	TW-23	N/A	100.30
MWA-2-10	99.70	99.48	TW-24	N/A	100.65
MWA-2-11	101.90	101.58	TW-25	N/A	97.16
MWA-2-12	99.69	99.45	TW-26	N/A	98.20
MWA-2-13	93.13	92.94	TW-27	98.04	98.73
MWA-2-14	99.07	98.77	TW-28	N/A	97.14
MWA-2-15	100.16	101.87	TW-30	N/A	100.82
MWA-2-16	102.18	101.94	TW-31	N/A	100.70
RW-A	101.04	100.73	TW-32	N/A	97.62
RW-B	101.98	101.88	TW-33	N/A	98.86
RW-C	99.90	99.68	TW-34	N/A	98.38
RW-D	98.04	98.73	TW-35	N/A	98.98
TW-1	N/A	100.75	TW-36	N/A	98.06
TW-2	N/A	101.00	TW-37	N/A	93.76
TW-3	N/A	101.18	TW-38	N/A	93.75
TW-4	N/A	101.73	TW-39	N/A	94.08
TW-5	N/A	101.84	TW-40	N/A	92.43
TW-6	N/A	101.98	TW-41	N/A	91.94
TW-7	N/A	101.53	TW-42	N/A	92.30
TW-8	101.98	101.35	TBM-1	N/A	101.37
TW-9	N/A	101.42	TBM-2	N/A	100.59
TW-10	N/A	101.82	TBM-3	N/A	100.73
TW-11	101.04	100.73	TBM-1	N/A	92.98
TBM-2	N/A	91.84	TBM-3	N/A	91.82

COMPREHENSIVE SITE SKETCH OF

BROAD RIVER ROAD AMOCO (BP)

4335 BROAD RIVER ROAD
COLUMBIA, RICHLAND COUNTY, SC
SCDHEC SITE ID #11946
PREPARED FOR

CAROLINA TECHNICAL SERVICES, INC.

BENCHMARK MAG NAIL IN PAVEMENT
ASSUMED ELEVATION OF = 100.00 FEET.

NOTE:
NOT FOR THE PURPOSE OF RECORDATION AT COUNTY COURTHOUSE OR THE CONVEYANCE OF PROPERTY.

NOTE:
I HEREBY CERTIFY THAT THE FIELD WORK, CALCULATIONS, AND DRAFTING WERE DONE UNDER MY DIRECT SUPERVISION.

THIS PARCEL MAY BE SUBJECT TO EASEMENT AND/OR RIGHT-OF-WAYS NOT SHOWN. FINAL RESULTS, CONCLUSIVE OF TITLE SEARCH

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION CONSTRUCTION SUPPORT SERVICES No. C03425

SOUTH CAROLINA REGISTERED LAND SURVEYOR No. 14811 JAY S. JOSHI

JAY S. JOSHI PLS # 14811
PO BOX 90405, COLUMBIA, SC, 29290 803-775-9908

DATE: MARCH 25, 2019 JOB #032019N sub of #030413B

Appendix B
Laboratory and Field Analytical Data

ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT
Carolina Technical Services
1111 Interstate Blvd.
Florence, SC 29501

ATTENTION
William Wood

PROJECT ID
Broad River Amaco

LABORATORY REPORT NUMBER
218120740

DATE
12/17/2018

Primary Data Review By

Authorized Signature

Secondary Data Review By

Ashley B. Amick
Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.**
- **GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955**
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 12/17/2018

GCAL Report 218120740

Project Broad River Amaco

Deliver To	*Additional Recipients*
William Wood Carolina Technical Services 1111 Interstate Blvd. Florence, SC 29501	NONE

PJLA Testing DoD ELAP

ISO 17025

NELAP ACCREDITED TNI LABORATORY

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature
GCAL Report 218120740

Certifications

Certification	Certification Number
DOD ELAP	L16-398-R5
Alabama	01955
Arkansas	18-062-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: Access Analytical **Report:** 218120740

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES GAS CHROMATOGRAPHY

In the EPA 8015C GRO analysis, the recovery for the surrogate is outside control limits due to matrix interference for samples 21812074003 (SB-2 19-23), 21812074009 (SB-7 17-19), 21812074005 (SB-4 6.5-9), 21812074012 (SB-10B 11.5-15) and 21812074018 (SB-16 15-20) .

SEMI-VOLATILES GAS CHROMATOGRAPHY

In the EPA 8015C DRO analysis, the recovery for the surrogate(s) is reported as diluted out for those analyses performed at a 10 or higher dilution.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21812074001	SB-2 26-40	Solid	12/03/2018 14:10	12/07/2018 09:55
21812074002	SB-2 6.5-9	Solid	12/03/2018 15:30	12/07/2018 09:55
21812074003	SB-2 19-23	Solid	12/03/2018 15:45	12/07/2018 09:55
21812074004	SB-3 11.5-14	Solid	12/03/2018 16:15	12/07/2018 09:55
21812074005	SB-4 6.5-9	Solid	12/03/2018 17:00	12/07/2018 09:55
21812074006	SB-5 17-22	Solid	12/04/2018 11:00	12/07/2018 09:55
21812074007	SB-5 12.5-15	Solid	12/04/2018 10:50	12/07/2018 09:55
21812074008	SB-6 11.5-14	Solid	12/04/2018 11:30	12/07/2018 09:55
21812074009	SB-7 17-19	Solid	12/04/2018 13:10	12/07/2018 09:55
21812074010	SB-8 11.5-14	Solid	12/04/2018 15:30	12/07/2018 09:55
21812074011	SB-9B 11.5-14	Solid	12/04/2018 16:35	12/07/2018 09:55
21812074012	SB-10B 11.5-15	Solid	12/05/2018 10:30	12/07/2018 09:55
21812074013	SB-12 9-11.5	Solid	12/05/2018 12:25	12/07/2018 09:55
21812074014	SB-13 7.5-10	Solid	12/05/2018 14:20	12/07/2018 09:55
21812074015	SB-14 4-6.5	Solid	12/05/2018 15:05	12/07/2018 09:55
21812074016	SB-14 9-11.5	Solid	12/05/2018 15:15	12/07/2018 09:55
21812074017	SB-15 6.5-9	Solid	12/05/2018 16:20	12/07/2018 09:55
21812074018	SB-16 15-20	Solid	12/05/2018 16:45	12/07/2018 09:55
21812074019	SB-18 7.5-10	Solid	12/06/2018 12:25	12/07/2018 09:55

Summary of Compounds Detected

SB-2 26-40

Collect Date 12/03/2018 14:10 **GCAL ID** 21812074001
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	11000	4140		ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	8070	1360	4490	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	11.4	0.010	0.010	%

SB-2 6.5-9

Collect Date 12/03/2018 15:30 **GCAL ID** 21812074002
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	29900	1040	9240	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	8500	1440	4770	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.0	0.010	0.010	%

Summary of Compounds Detected

SB-2 19-23

Collect Date 12/03/2018 15:45 **GCAL ID** 21812074003
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	29300	531	4740	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	3560J	1400	4620	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.7	0.010	0.010	%

SB-3 11.5-14

Collect Date 12/03/2018 16:15 **GCAL ID** 21812074004
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	210000	4440	39700	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	96900	1390	4590	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.3	0.010	0.010	%

Summary of Compounds Detected

SB-4 6.5-9

Collect Date 12/03/2018 17:00 **GCAL ID** 21812074005
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	24200	469	4190	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	12000	1450	4800	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.1	0.010	0.010	%

SB-5 17-22

Collect Date 12/04/2018 11:00 **GCAL ID** 21812074006
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	10800	464	4150	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	32200	1440	4750	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.7	0.010	0.010	%

Summary of Compounds Detected

SB-5 12.5-15

Collect Date 12/04/2018 10:50 **GCAL ID** 21812074007
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	2870J	1430	4720	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.2	0.010	0.010	%

SB-6 11.5-14

Collect Date 12/04/2018 11:30 **GCAL ID** 21812074008
Receive Date 12/07/2018 09:55 **Matrix** Solid

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	23.3	0.010	0.010	%

SB-7 17-19

Collect Date 12/04/2018 13:10 **GCAL ID** 21812074009
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	361000	3680	32900	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	150000	2650	8760	ug/Kg

Summary of Compounds Detected

SB-7 17-19

Collect Date 12/04/2018 13:10 **GCAL ID** 21812074009
Receive Date 12/07/2018 09:55 **Matrix** Solid

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	8.48	0.010	0.010	%

SB-8 11.5-14

Collect Date 12/04/2018 15:30 **GCAL ID** 21812074010
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	293000	3950	35200	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	178000	2910	9620	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.1	0.010	0.010	%

SB-9B 11.5-14

Collect Date 12/04/2018 16:35 **GCAL ID** 21812074011
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	307000	4520	40400	ug/Kg

Summary of Compounds Detected

SB-9B 11.5-14

Collect Date 12/04/2018 16:35 **GCAL ID** 21812074011
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	10400	1430	4740	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	16.4	0.010	0.010	%

SB-10B 11.5-15

Collect Date 12/05/2018 10:30 **GCAL ID** 21812074012
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	487000	5050	45100	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	309000	5970	19700	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.8	0.010	0.010	%

Summary of Compounds Detected

SB-12 9-11.5

Collect Date 12/05/2018 12:25 **GCAL ID** 21812074013
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	212000	4550	40600	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	231000	2950	9730	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	18.0	0.010	0.010	%

SB-13 7.5-10

Collect Date 12/05/2018 14:20 **GCAL ID** 21812074014
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	1310000	20200	180000	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	211000	3010	9930	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.7	0.010	0.010	%

Summary of Compounds Detected

SB-14 4-6.5

Collect Date 12/05/2018 15:05 **GCAL ID** 21812074015
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	1380000	42000	375000	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	96000	1400	4620	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.7	0.010	0.010	%

SB-14 9-11.5

Collect Date 12/05/2018 15:15 **GCAL ID** 21812074016
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	74300	1780	15900	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	424000	6390	21100	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	23.9	0.010	0.010	%

Summary of Compounds Detected

SB-15 6.5-9

Collect Date 12/05/2018 16:20 **GCAL ID** 21812074017
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	3700J	1440	4760	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.6	0.010	0.010	%

SB-16 15-20

Collect Date 12/05/2018 16:45 **GCAL ID** 21812074018
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	43300	473	4230	ug/Kg

EPA 8015C DRO *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	6370	1480	4890	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.1	0.010	0.010	%

Summary of Compounds Detected

SB-18 7.5-10	**Collect Date**	12/06/2018 12:25	**GCAL ID**	21812074019
	Receive Date	12/07/2018 09:55	**Matrix**	Solid

EPA 8015C GRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	2060J	491	4380	ug/Kg

EPA 8015C DRO

*Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	1160000	15300	50600	ug/Kg

SM 2540 G-2011

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	20.7	0.010	0.010	%

Sample Results

SB-2 26-40

Collect Date 12/03/2018 14:10 **GCAL ID** 21812074001
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/12/2018 16:20	JAR	650001

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	11000	464	4140	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1100	987	ug/Kg	90	47 - 164

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 00:55	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	8070	1360	4490	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2580	ug/Kg	78	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	11.4	0.010	0.010	%

SB-2 6.5-9

Collect Date 12/03/2018 15:30 **GCAL ID** 21812074002
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	100	12/13/2018 13:32	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	29900	1040	9240	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	2290	2340	ug/Kg	102	47 - 164

Sample Results

SB-2 6.5-9

Collect Date 12/03/2018 15:30 **GCAL ID** 21812074002
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/13/2018 14:06	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	8500	1440	4770	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3290	2430	ug/Kg	74	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.0	0.010	0.010	%

SB-2 19-23

Collect Date 12/03/2018 15:45 **GCAL ID** 21812074003
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/12/2018 17:09	JAR	650001

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	29300	531	4740	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1220	3770	ug/Kg	308*	47 - 164

Sample Results

SB-2 19-23

Collect Date 12/03/2018 15:45 **GCAL ID** 21812074003
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 01:24	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	3560J	1400	4620	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2660	ug/Kg	80	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.7	0.010	0.010	%

SB-3 11.5-14

Collect Date 12/03/2018 16:15 **GCAL ID** 21812074004
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/12/2018 17:28	JAR	650001

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	210000	4440	39700	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	10300	14000	ug/Kg	136	47 - 164

Sample Results

SB-3 11.5-14

Collect Date 12/03/2018 16:15 **GCAL ID** 21812074004
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/13/2018 14:21	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	96900	1390	4590	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2370	ug/Kg	72	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.3	0.010	0.010	%

SB-4 6.5-9

Collect Date 12/03/2018 17:00 **GCAL ID** 21812074005
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 13:52	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	24200	469	4190	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1040	1920	ug/Kg	185*	47 - 164

Sample Results

SB-4 6.5-9

Collect Date 12/03/2018 17:00 **GCAL ID** 21812074005
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 01:53	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	12000	1450	4800	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2640	ug/Kg	80	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.1	0.010	0.010	%

SB-5 17-22

Collect Date 12/04/2018 11:00 **GCAL ID** 21812074006
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 14:11	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	10800	464	4150	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1050	916	ug/Kg	87	47 - 164

Sample Results

SB-5 17-22

Collect Date 12/04/2018 11:00 **GCAL ID** 21812074006
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 02:07	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	32200	1440	4750	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2490	ug/Kg	75	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.7	0.010	0.010	%

SB-5 12.5-15

Collect Date 12/04/2018 10:50 **GCAL ID** 21812074007
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 14:29	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	466U	466	4160	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1060	828	ug/Kg	78	47 - 164

Sample Results

SB-5 12.5-15

Collect Date 12/04/2018 10:50 **GCAL ID** 21812074007
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 02:22	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	2870J	1430	4720	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2350	ug/Kg	71	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.2	0.010	0.010	%

SB-6 11.5-14

Collect Date 12/04/2018 11:30 **GCAL ID** 21812074008
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 14:50	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	505U	505	4510	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1040	849	ug/Kg	82	47 - 164

Sample Results

SB-6 11.5-14

Collect Date 12/04/2018 11:30 **GCAL ID** 21812074008
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 02:35	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	1580U	1580	5220	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2440	ug/Kg	73	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	23.3	0.010	0.010	%

SB-7 17-19

Collect Date 12/04/2018 13:10 **GCAL ID** 21812074009
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/12/2018 19:03	JAR	650001

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	361000	3680	32900	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	9000	20500	ug/Kg	228*	47 - 164

Sample Results

SB-7 17-19

Collect Date	12/04/2018 13:10	**GCAL ID**	21812074009
Receive Date	12/07/2018 09:55	**Matrix**	Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	2	12/13/2018 14:35	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	150000	2650	8760	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2440	ug/Kg	73	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	8.48	0.010	0.010	%

SB-8 11.5-14

Collect Date	12/04/2018 15:30	**GCAL ID**	21812074010
Receive Date	12/07/2018 09:55	**Matrix**	Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/12/2018 19:21	JAR	650001

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	293000	3950	35200	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	8730	13300	ug/Kg	152	47 - 164

Sample Results

SB-8 11.5-14

Collect Date 12/04/2018 15:30 **GCAL ID** 21812074010
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	2	12/13/2018 14:50	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	178000	2910	9620	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2430	ug/Kg	73	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	17.1	0.010	0.010	%

SB-9B 11.5-14

Collect Date 12/04/2018 16:35 **GCAL ID** 21812074011
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/13/2018 15:09	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	307000	4520	40400	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	10100	15400	ug/Kg	153	47 - 164

Sample Results

SB-9B 11.5-14

Collect Date 12/04/2018 16:35 **GCAL ID** 21812074011
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 03:33	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	10400	1430	4740	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3290	2320	ug/Kg	71	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	16.4	0.010	0.010	%

SB-10B 11.5-15

Collect Date 12/05/2018 10:30 **GCAL ID** 21812074012
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/13/2018 15:26	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	487000	5050	45100	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	10800	18200	ug/Kg	168*	47 - 164

Sample Results

SB-10B 11.5-15

Collect Date 12/05/2018 10:30 **GCAL ID** 21812074012
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	4	12/13/2018 15:04	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	309000	5970	19700	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3290	2370	ug/Kg	72	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.8	0.010	0.010	%

SB-12 9-11.5

Collect Date 12/05/2018 12:25 **GCAL ID** 21812074013
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	500	12/13/2018 15:44	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	212000	4550	40600	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	9950	13400	ug/Kg	135	47 - 164

Sample Results

SB-12 9-11.5

Collect Date 12/05/2018 12:25 **GCAL ID** 21812074013
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	2	12/13/2018 15:16	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	231000	2950	9730	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2410	ug/Kg	73	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	18.0	0.010	0.010	%

SB-13 7.5-10

Collect Date 12/05/2018 14:20 **GCAL ID** 21812074014
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	2000	12/13/2018 16:01	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	1310000	20200	180000	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	43300	55100	ug/Kg	127	47 - 164

Sample Results

SB-13 7.5-10

Collect Date 12/05/2018 14:20 **GCAL ID** 21812074014
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	2	12/13/2018 15:33	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	211000	3010	9930	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2590	ug/Kg	78	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.7	0.010	0.010	%

SB-14 4-6.5

Collect Date 12/05/2018 15:05 **GCAL ID** 21812074015
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	5000	12/13/2018 16:39	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	1380000	42000	375000	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	96800	103000	ug/Kg	106	47 - 164

Sample Results

SB-14 4-6.5

Collect Date 12/05/2018 15:05 **GCAL ID** 21812074015
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 04:31	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	96000	1400	4620	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3310	2350	ug/Kg	71	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	13.7	0.010	0.010	%

SB-14 9-11.5

Collect Date 12/05/2018 15:15 **GCAL ID** 21812074016
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	200	12/13/2018 17:12	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	74300	1780	15900	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	3610	3820	ug/Kg	106	47 - 164

Sample Results

SB-14 9-11.5

Collect Date 12/05/2018 15:15 **GCAL ID** 21812074016
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	4	12/13/2018 15:48	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	424000	6390	21100	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2620	ug/Kg	79	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	23.9	0.010	0.010	%

SB-15 6.5-9

Collect Date 12/05/2018 16:20 **GCAL ID** 21812074017
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 17:35	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	452U	452	4040	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1020	838	ug/Kg	82	47 - 164

Sample Results

SB-15 6.5-9

Collect Date 12/05/2018 16:20 **GCAL ID** 21812074017
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 05:00	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	3700J	1440	4760	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	2500	ug/Kg	75	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	15.6	0.010	0.010	%

SB-16 15-20

Collect Date 12/05/2018 16:45 **GCAL ID** 21812074018
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 17:50	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	43300	473	4230	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1020	1710	ug/Kg	167*	47 - 164

Sample Results

SB-16 15-20

Collect Date 12/05/2018 16:45 **GCAL ID** 21812074018
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C DRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	1	12/12/2018 05:14	MFS	649864

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	6370	1480	4890	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3290	2430	ug/Kg	74	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	19.1	0.010	0.010	%

SB-18 7.5-10

Collect Date 12/06/2018 12:25 **GCAL ID** 21812074019
Receive Date 12/07/2018 09:55 **Matrix** Solid

EPA 8015C GRO *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	50	12/13/2018 18:09	JAR	649867

CAS#	Parameter	Result	DL	LOQ	Units
8006-61-9	Gasoline Range Organics	2060J	491	4380	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
106-39-8	Bromochlorobenzene	1040	948	ug/Kg	91	47 - 164

Sample Results

SB-18 7.5-10

Collect Date	12/06/2018 12:25	**GCAL ID**	21812074019
Receive Date	12/07/2018 09:55	**Matrix**	Solid

EPA 8015C DRO

*Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/10/2018 08:30	649629	EPA 3550C	10	12/13/2018 16:02	MFS	649880

CAS#	Parameter	Result	DL	LOQ	Units
GCSV-00-4	Diesel Range Organics	1160000	15300	50600	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	3330	Diluted Out	ug/Kg	0*	45 - 130

SM 2540 G-2011

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	12/12/2018 12:54	CJS	649853

CAS#	Parameter	Result	DL	LOQ	Units
WET-037	Total Moisture	20.7	0.010	0.010	%

GC Volatiles QC Summary

Analytical Batch 649867	Client ID	MB649867		LCS649867				LCSD649867				
	GCAL ID	1877201		1877202				1877203				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	12/13/2018 13:13		12/13/2018 12:42				12/13/2018 13:01				
	Matrix	Solid		Solid				Solid				
EPA 8015C GRO		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Gasoline Range Organics	8006-61-9	560U	560	25000	28700	115	67 - 127	25000	28500	114	1	30
Surrogate												
Bromochlorobenzene	106-39-8	1160	77	1500	1630	109	47 - 164	1500	1610	107	NA	NA

Analytical Batch 650001	Client ID	MB650001		LCS650001				LCSD650001				
	GCAL ID	1877943		1877944				1877945				
	Sample Type	MB		LCS				LCSD				
	Prep Date	NA		NA				NA				
	Analysis Date	12/12/2018 15:13		12/12/2018 14:39				12/12/2018 15:01				
	Matrix	Solid		Solid				Solid				
EPA 8015C GRO		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Gasoline Range Organics	8006-61-9	560U	560	25000	27000	108	67 - 127	25000	27900	112	3	30
Surrogate												
Bromochlorobenzene	106-39-8	1250	83	1500	1570	105	47 - 164	1500	1630	109	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch	Client ID	MB649629		LCS649629				LCSD649629				
649864	GCAL ID	1876269		1876270				1876271				
Prep Batch	Sample Type	MB		LCS				LCSD				
649629	Prep Date	12/10/2018 08:30		12/10/2018 08:30				12/10/2018 08:30				
Prep Method	Analysis Date	12/12/2018 00:12		12/12/2018 00:26				12/12/2018 00:41				
EPA 3550C	Matrix	Solid		Solid				Solid				
EPA 8015C DRO		Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Diesel Range Organics	GCSV-00-4	2100J	1210	66700	36700	55	38 - 132	66700	41700	63	13	30
Surrogate												
o-Terphenyl	84-15-1	2290	69	3330	2460	74	45 - 130	3330	2570	77	NA	NA

General Chemistry QC Summary

Analytical Batch	Client ID	SB-2 26-40		1875950DUP		
649853	GCAL ID	21812074001		1877127		
	Sample Type	SAMPLE		DUP		
	Prep Date	NA		NA		
	Analysis Date	12/12/2018 12:54		12/12/2018 12:54		
	Matrix	Solid		Solid		
SM 2540 G-2011		Units Result	% DL	Result	RPD	RPD Limit
Total Moisture	WET-037	11.4	0.010	10.9	5	25

Analytical Batch	Client ID	SB-2 6.5-9		1875951DUP		
649853	GCAL ID	21812074002		1877128		
	Sample Type	SAMPLE		DUP		
	Prep Date	NA		NA		
	Analysis Date	12/12/2018 12:54		12/12/2018 12:54		
	Matrix	Solid		Solid		
SM 2540 G-2011		Units Result	% DL	Result	RPD	RPD Limit
Total Moisture	WET-037	17.0	0.010	16.3	4	25

Access Lab Report #: _____
Sub Lab (if applicable): GCAL / Sub Report #: _____

PO#: _____

Access Analytical, Inc.

15T
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Web

Client ID: 4565 - Access Analytical
SDG: 218120740
PM: AEC

Client:	Carolina Technical Services Inc
Attn:	William Wood
Address:	1111 Interstate Blvd
City:	Florence
State:	SC
Zip Code:	29501
Phone:	(843)610-1953
Fax:	
Email:	wwood@ctsiengineering.com
Project ID:	Broad River Annex
Sampled By:	W.Wood / C. Alexander

Preservatives (see codes): 6 0 0
Bottle Types (see codes): G G G

REQUESTED LAB ANALYSIS: TPH - GRO; TPH - DRO; % Moisture *

NaHSO4 & CH3OH, 7 = NaOH/ZnOAC, 8 = H3PO4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl, 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes:
GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section) NA = for non-regulatory samples

*Program Area Codes:
CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	# Containers per Test: TPH-GRO	# Containers per Test: TPH-DRO	# Containers per Test: % Moisture						Notes / Comments
	SB-2 26"-40"	12/3/18	1410	G	S	SHW	5	3	1	1					-1	* % Moisture for dry weight
	SB-2 6.5'-9'	12/3/18	1530													-2
	SB-2 19'-23'	12/3/18	1545													-3
	SB-3 11.5'-14'	12/3/18	1615													-4
	SB-4 6.5'-9'	12/3/18	1700													-5
	SB-5 17"-22"	12/4/18	1100													-6
	SB-5 12.5'-15'	12/4/18	1050													-7
	SB-6 11.5'-14'	12/4/18	1130													-8
	SB-7 17'-19'	12/4/18	1310													-9
	SB-8 11.5'-14'	12/4/18	1530													-10

Auto Sampler Data (composite samples only):

Date/Time On: _____ by whom: _____ Meter Reading Before: _____ Meter Reading After: _____ Difference: _____

Date/Time Off: _____ by whom: _____ X _____ (factor): _____

Turnaround Time Requested:				Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard	X	Rush *		SC	X	Cody Thacker	amart	12-6-18	1315	Y N N/A
* Date Required				NC		amart	Fedex	12-6-18	1740	Y N N/A
Rush data emailed/faxed by the end of business day on date required. Standard TAT is 7-10 business days.				Other (Specify):		Fedex	Tiffany Amos	12-7-18	09:55	✓ Y N N/A
										Y N N/A

~~Received in lab by:~~ 5035-7507-0941

Sample Temp. Upon Receipt in Lab: 1.0 (E2) °(C) 24 hrs

Chain of Custody Page 1 of 2

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

Access Lab Report #: _____ PO#: _____

Sub Lab (if applicable): GCAL Sub Report #: _____

ACCESS ANALYTICAL, INC.

Client ID: 4565 - Access Analytical
SDG: 218120740
PM: AEC

Client:	Carolina Technical Services Inc
Attn:	William Wood
Address:	1111 Interstate Blvd
City:	Florence
State:	SC
Zip Code:	29501
Phone:	(843) 610-1953
Fax:	
Email:	wwood@ctsiengineering.com
Project ID:	Broad River Amoco
Sampled By:	W. Wood / C. Alexander

Preservatives (see codes): 6 0 0
Bottle Types (see codes): 6 G 6

Lab ID	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	# Containers per Test =>	TPH-GRO	TPH DRO	% Moisture
	SB-9B 11.5-14'	12/4/18	1635	G	S	SHW	5	3	1	1	
	SB-10B 11.5-14'	12/5/18	1030								
	SB-12 9-11.5'	12/5/18	1225								
	SB-13 7.5-10'	12/4/18	1420								
	SB-14 4-6.5'	12/5/18	1505								
	SB-14 9-11.5'	12/5/18	1515								
	SB-15 6.5-9'	12/5/18	1620								
	SB-16 15'-20'	12/5/18	1645								
	SB-18 7.5-10'	12/4/18	1225								

*

0 = None, 1 = HCL, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = Na-Ascorbate, 6 = $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to 6°C, 10 = cooled to ≤10°C, 11 = Amm.Cl, 12 = Ascorbic Acid / HCL, 13 = EDA

*Matrix Codes: GW = ground water, WW = waste water, DW = drinking water, SW = surface/storm water, S = soil, SL = sludge, A = air, IW = industrial waste, O = other (specify in comments section) NA = for non-regulatory samples

*Program Area Codes: CWA = Clean Water Act (for wastewaters), SDWA = Safe Drinking Water Act (for drinking water), SHW = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

*Container Type: G = Glass, P = Plastic

Notes / Comments
-11
-12
-13
-14
-15
-16
-17
-18
-19

Auto Sampler Data (composite samples only):

Date/Time On: _____ by whom: _____ Meter Reading Before: _____ Meter Reading After: _____ Difference: _____

Date/Time Off: _____ by whom: _____ X _____ (factor): _____

Turnaround Time Requested:			Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard	X	Rush *	SC	X	[signature]	Amart	12-6-18	1315	Y N N/A
*Date Required			NC		Amate	[signature]	12-6-18	1700	Y N N/A
Rush data emailed/faxed by the end of business day on date required. Standard TAT is 7-10 business days.			Other (Specify):		FedEx	[signature]	12-7-18	09:55	✓ Y N N/A
									Y N N/A

Chain of Custody Page 2 of 2

Received in lab by: 5035-7507-0961

Sample Temp. Upon Receipt in Lab: 1.0 (E29) °(C) 24cm

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NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

SAMPLE RECEIVING CHECKLIST

SAMPLE DELIVERY GROUP 218120740	
Client PM AEC 4565 - Access Analytical	**Transport Method** FEDEX
Profile Number 271915	**Received By** Reese, Sean M
Line Item(s) 2 - Soil	**Receive Date(s)** 12/07/18

CHECKLIST	YES	NO
Samples received with proper thermal preservation?	☑	☐
Radioactivity is <1600 cpm? If no, record cpm value in notes section.	☑	☐
COC relinquished and complete (including sampleIDs, collect times, and sampler)?	☑	☐
All containers received in good condition and within hold time?	☑	☐
All sample labels and containers received match the chain of custody?	☑	☐
Preservative added to any containers?	☐	☑
If received, was headspace for VOC water containers < 6mm?	☑	☐
Samples collected in containers provided by GCAL?	☐	☑

COOLERS

Airbill	Thermometer ID: E29	Temp °C
5035 7507 0961		1.0

DISCREPANCIES

None

LAB PRESERVATIONS

None

NOTES

Revision 1.6

ACCESS ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT

Carolina Technical Services, Inc.
PO Box 115
Irmo SC 29063

ATTENTION
William Wood

PROJECT ID
Broad River Amoco

LABORATORY REPORT NUMBER
1812C00

DATE
December 19, 2018

Primary Data Review By

Chris Pafford
Project Manager, AES

Secondary Data Review By

Ashley Amick

Project Manager, Access Analytical
aamick@axs-inc.com

PLEASE NOTE:

- **Unless otherwise noted, all analysis on this report performed at Analytical Environmental Services Inc. (AES Inc), 3080 Presidential Drive, Atlanta, GA 30340.**
- **AES is SCDHEC certified laboratory # 98016, NCDENR certified lab # 562, GA certified lab # FL-E87582, NELAP certified laboratory # E87582**
- **AIHA-LAP,LLC Laboratory ID:100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination.**
- Local support services for this project are provided by Access Analytical, Inc. Access Analytical is a representative of AES serving client in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll fee at 883.315.4243

Access Lab Report #: _____

Sub Lab (if applicable): _____ / Sub Report #: _____

PO#: _____

ACCESS ANALYTICAL, INC.
15 Thames Valley Rd.
Irmo, SC 29063
Phone: 803-781-4243
Web: www.axs-inc.com

1812C00

Chain of Custody Record

Client:	CTSI
Attn:	WILLIAM WOOD
Address:	PO BOX 115
City:	IRMO
State:	SC
Zip Code:	29063
Phone:	843-610-1953
Fax:	
Email:	wwood@ctsiengineering.com
Project ID:	BROAD RIVER ANNEX
Sampled By:	W. WOOD / C. ALEXANDER

Lab ID:	Sample Name:	Date Collected:	Time Collected:	G=Grab C=Comp	Matrix (see codes)	Program Area (see codes)	Total # Containers	Preservatives (see codes)	Bottle Types (see codes)	REQUESTED LAB ANALYSIS: TPH-GRO	TPH-DRO	% Moisture	Notes / Comments
	SB-20 10'-12.5'	12/1/18	1530	G	S	SHW	5	6	G	3	1	1	
								0	G				
								0	G				

Preservation Codes / Bottle Types:

***Preservative Codes:**
0 = None, 1 = HCl, 2 = HNO_3, 3 = H_2SO_4, 4 = NaOH, 5 = $Na_2S_2O_3$, 6 = Method 5035 set w/ $NaHSO_4$ & CH_3OH, 7 = NaOH/ZnOAC, 8 = H_3PO_4, 9 = cooled to ≤6°C, 10 = cooled to ≤10°C, 11 = $Amm.Cl^-$, 12 = Ascorbic Acid / HCL, 13 = EDA

***Matrix Codes:**
GW = ground water, **WW** = waste water, **DW** = drinking water, **SW** = surface/storm water, **S** = soil, **SL** = sludge, **A** = air, **IW** = industrial waste, **O** = other (specify in comments section) **NA** = for non-regulatory samples

***Program Area Codes:**
CWA = Clean Water Act (for wastewaters), **SDWA** = Safe Drinking Water Act (for drinking water), **SHW** = Solid and Hazardous Wastes (for soils, ground waters and waste samples)

***Container Type:** G = Glass, P = Plastic

Auto Sampler Data (composite samples only):

Date/Time On: _____ by whom: _____ Meter Reading Before: _____ Meter Reading After: _____ Difference: _____

Date/Time Off: _____ by whom: _____ X _____ (factor): _____

Turnaround Time Requested:				Project Location:		Relinquished By:	Received By:	Date:	Time (24hr):	Samples Received on Ice:
Standard	X	Rush *		SC	X	William Wood	Secure Area	12/3/18	1600	Y N N/A
*Date Required				NC		SECURE AREA		12/11/18	1400	Y N N/A
Rush data emailed/faxed by the end of business day on date required. Standard TAT is 7-10 business days.				Other (Specify):				12/11/18	1419	Y N N/A
								12/12/18	10:20	✓ Y N N/A
Chain of Custody Page 1 of 1						**Received in lab by:** Ayana Blackwell		**Sample Temp. Upon Receipt in Lab:** 1.7 °(C)		

White Copy: Lab original / Canary Copy: File Copy / Pink Copy: Client Copy

NOTE: Relinquishing samples via this Chain of Custody document constitutes client acceptance of Access Analytical terms and conditions.

Analytical Environmental Services, Inc **Date:** 19-Dec-18

Client:	Carolina Technical Services, Inc.	**Client Sample ID:**	SB-20 10'-12.5'
Project Name:	Broad River Amoco	**Collection Date:**	12/7/2018 3:30:00 PM
Lab ID:	1812C00-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
GASOLINE RANGE ORGANICS SW8015C				**(SW5035)**				
TPH (Gasoline Range Organics)	BRL	0.75		mg/Kg-dry	271732	1	12/17/2018 14:05	NP
Surr: a.a.a-trifluorotoluene	105	71.5-133		%REC	271732	1	12/17/2018 14:05	NP
DIESEL RANGE ORGANICS SW8015C				**(SW3550C)**				
TPH (Diesel Range Organics)	46	7.8		mg/Kg-dry	271468	1	12/13/2018 10:50	RF
Surr: Dioctylphthalate	78	51.9-120		%REC	271468	1	12/13/2018 10:50	RF
PERCENT MOISTURE D2216								
Percent Moisture	14.0	0		wt%	R386722	1	12/13/2018 14:30	JW

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Clear Save as

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: **Access Analytical, Inc.** AES Work Order Number: **1812C00**

2. Carrier: FedEx ■ UPS ☐ USPS ☐ Client ☐ Courier ☐ Other _____

		Yes	No	N/A	Details	Comments
3.	Shipping container/cooler received in good condition?	◉	○	○	damaged ☐ leaking ☐ other ☐	
4.	Custody seals present on shipping container?	○	◉	○		
5.	Custody seals intact on shipping container?	○	○	◉		
6.	Temperature blanks present?	○	◉	○		
7.	Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.]	◉	○	○	Cooling initiated for recently collected samples / ice present ☐	
8.	Chain of Custody (COC) present?	◉	○	○		
9.	Chain of Custody signed, dated, and timed when relinquished and received?	◉	○	○		
10.	Sampler name and/or signature on COC?	◉	○	○		
11.	Were all samples received within holding time?	◉	○	○		
12.	TAT marked on the COC?	◉	○	○	If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐	

13. Cooler 1 Temperature 1.7 °C Cooler 2 Temperature _____ °C Cooler 3 Temperature _____ °C Cooler 4 Temperature _____ °C

14. Cooler 5 Temperature _____ °C Cooler 6 Temperature _____ °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

I certify that I have completed sections 1-15 (dated initials). MH 12/12/18

		Yes	No	N/A	Details	Comments
16.	Were sample containers intact upon receipt?	◉	○	○		
17.	Custody seals present on sample containers?	○	◉	○		
18.	Custody seals intact on sample containers?	○	○	◉		
19.	Do sample container labels match the COC?	◉	○	○	incomplete info ☐ illegible ☐ no label ☐ other ☐	
20.	Are analyses requested indicated on the COC?	◉	○	○		
21.	Were all of the samples listed on the COC received?	◉	○	○	samples received but not listed on COC ☐ samples listed on COC not received ☐	
22.	Was the sample collection date/time noted?	◉	○	○		
23.	Did we receive sufficient sample volume for indicated analyses?	◉	○	○		
24.	Were samples received in appropriate containers?	◉	○	○		
25.	Were VOA samples received without headspace (< 1/4" bubble)?	○	○	◉		
26.	Were trip blanks submitted?	○	◉	○	listed on COC ☐ not listed on COC ■	

27. Comments: _____

I certify that I have completed sections 16-27 (dated initials). MH 12/12/18

This section only applies to samples where pH can be checked at Sample Receipt.

		Yes	No	N/A	Details	Comments
28.	Have containers needing chemical preservation been checked? *	○	○	◉		
29.	Containers meet preservation guidelines?	○	○	◉		
30.	Was pH adjusted at Sample Receipt?	○	○	◉		

* Note: Certain analyses require chemical preservation but must be checked in the laboratory and not upon Sample Receipt such as Coliforms, VOCs and Oil & Grease/TPH.

I certify that I have completed sections 28-30 (dated initials). MH 12/12/18

Checklist 6.9.17 Rev 2

Locked

Analytical Environmental Services, Inc

Date: 19-Dec-18

Client: Carolina Technical Services, Inc.
Project Name: Broad River Amoco
Workorder: 1812C00

ANALYTICAL QC SUMMARY REPORT

BatchID: 271468

Sample ID: **MB-271468**	Client ID:				Units: **mg/Kg**		Prep Date: **12/12/2018**		Run No: **386657**	
SampleType: **MBLK**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **271468**		Analysis Date: **12/12/2018**		Seq No: **8643788**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	BRL	6.7								
Surr: Dioctylphthalate	2.746	0	3.300		83.2	70	130			

Sample ID: **LCS-271468**	Client ID:				Units: **mg/Kg**		Prep Date: **12/12/2018**		Run No: **386657**	
SampleType: **LCS**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **271468**		Analysis Date: **12/12/2018**		Seq No: **8643790**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	21.35	6.7	27.30		78.2	70	130			
Surr: Dioctylphthalate	2.627	0	3.330		78.9	70	130			

Sample ID: **1812866-007BMS**	Client ID:				Units: **mg/Kg-dry**		Prep Date: **12/12/2018**		Run No: **386657**	
SampleType: **MS**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **271468**		Analysis Date: **12/13/2018**		Seq No: **8643799**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	30.87	8.3	41.24	7.586	56.5	40.2	125			
Surr: Dioctylphthalate	2.643	0	4.124		64.1	51.9	120			

Sample ID: **1812866-007BMSD**	Client ID:				Units: **mg/Kg-dry**		Prep Date: **12/12/2018**		Run No: **386657**	
SampleType: **MSD**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **271468**		Analysis Date: **12/13/2018**		Seq No: **8643801**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	28.57	8.3	41.24	7.586	50.9	40.2	125	30.87	7.76	25.1
Surr: Dioctylphthalate	2.806	0	4.124		68.0	51.9	120	2.643	0	0

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 19-Dec-18

Client: Carolina Technical Services, Inc.
Project Name: Broad River Amoco
Workorder: 1812C00

ANALYTICAL QC SUMMARY REPORT

BatchID: 271732

Sample ID: **MB-271732**	Client ID:				Units: **mg/Kg**		Prep Date: **12/14/2018**		Run No: **386972**	
SampleType: **MBLK**	TestCode: **GASOLINE RANGE ORGANICS SW8015C**				BatchID: **271732**		Analysis Date: **12/14/2018**		Seq No: **8650029**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Gasoline Range Organics)	BRL	0.50								
Surr: a.a.a-trifluorotoluene	0.04134	0	0.0500		82.7	70	130			

Sample ID: **LCS-271732**	Client ID:				Units: **mg/Kg**		Prep Date: **12/14/2018**		Run No: **386972**	
SampleType: **LCS**	TestCode: **GASOLINE RANGE ORGANICS SW8015C**				BatchID: **271732**		Analysis Date: **12/14/2018**		Seq No: **8650028**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Gasoline Range Organics)	1.027	0.50	1.000		103	70	130			
Surr: a.a.a-trifluorotoluene	0.04272	0	0.0500		85.4	70	130			

Sample ID: **1812F00-002AMS**	Client ID:				Units: **mg/Kg-dry**		Prep Date: **12/14/2018**		Run No: **387060**	
SampleType: **MS**	TestCode: **GASOLINE RANGE ORGANICS SW8015C**				BatchID: **271732**		Analysis Date: **12/17/2018**		Seq No: **8651760**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Gasoline Range Organics)	1.111	0.55	1.104		101	54.2	134			
Surr: a.a.a-trifluorotoluene	0.06544	0	0.0552		119	71.5	133			

Sample ID: **1812F00-001ADUP**	Client ID:				Units: **mg/Kg-dry**		Prep Date: **12/14/2018**		Run No: **387060**	
SampleType: **DUP**	TestCode: **GASOLINE RANGE ORGANICS SW8015C**				BatchID: **271732**		Analysis Date: **12/17/2018**		Seq No: **8651758**	
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Gasoline Range Organics)	BRL	0.47						0	0	20
Surr: a.a.a-trifluorotoluene	0.05807	0						0.04794	0	0

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Project Number: 18-6580

Lot Number:**UD04093**

Date Completed:04/16/2019

04/16/2019 11:12 AM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD04093

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD04093

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-13B	Aqueous	04/04/2019 1425	04/04/2019
002	MW-14A	Aqueous	04/04/2019 1255	04/04/2019
003	MW-14B	Aqueous	04/04/2019 1320	04/04/2019
004	MW-15A	Aqueous	04/04/2019 1200	04/04/2019
005	MW-15B	Aqueous	04/04/2019 1215	04/04/2019
006	MW-16A	Aqueous	04/04/2019 1130	04/04/2019
007	MW-16B	Aqueous	04/04/2019 1140	04/04/2019
008	DMW-1	Aqueous	04/01/2019 1540	04/04/2019
009	DMW-2	Aqueous	04/01/2019 1610	04/04/2019
010	DMW-3	Aqueous	04/01/2019 1630	04/04/2019
011	Dup A	Aqueous	04/04/2019 1325	04/04/2019
012	Field Blank 1	Aqueous	04/01/2019 1640	04/04/2019
013	Field Blank 2	Aqueous	04/04/2019 1240	04/04/2019
014	Trip Blank	Aqueous	04/01/2019	04/04/2019
015	Trip Blank	Aqueous	04/01/2019	04/04/2019

(15 samples)

Detection Summary

Carolina Technical Services, Inc.

Lot Number: UD04093

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-13B	Aqueous	Lead	6010D	0.0047	J	mg/L	6
008	DMW-1	Aqueous	tert-Amyl alcohol (TAA)	8260B	52		ug/L	19
008	DMW-1	Aqueous	Benzene	8260B	3.2	J	ug/L	19
008	DMW-1	Aqueous	Methyl tertiary butyl ether	8260B	62		ug/L	19
008	DMW-1	Aqueous	tert-butyl alcohol (TBA)	8260B	12	J	ug/L	19
008	DMW-1	Aqueous	Benzo(a)anthracene	8270D	0.32	J	ug/L	19
008	DMW-1	Aqueous	Benzo(a)pyrene	8270D	1.3		ug/L	19
008	DMW-1	Aqueous	Benzo(b)fluoranthene	8270D	1.9		ug/L	19
008	DMW-1	Aqueous	Benzo(g,h,i)perylene	8270D	1.2		ug/L	19
008	DMW-1	Aqueous	Benzo(k)fluoranthene	8270D	0.99		ug/L	19
008	DMW-1	Aqueous	Chrysene	8270D	0.52	J	ug/L	19
008	DMW-1	Aqueous	Fluoranthene	8270D	0.80		ug/L	19
008	DMW-1	Aqueous	Indeno(1,2,3-c,d)pyrene	8270D	1.4		ug/L	19
008	DMW-1	Aqueous	Pyrene	8270D	0.59	J	ug/L	20
009	DMW-2	Aqueous	tert-Amyl alcohol (TAA)	8260B	130		ug/L	21
009	DMW-2	Aqueous	Benzene	8260B	4.6	J	ug/L	21
009	DMW-2	Aqueous	Methyl tertiary butyl ether	8260B	130		ug/L	21
009	DMW-2	Aqueous	tert-butyl alcohol (TBA)	8260B	430		ug/L	21
009	DMW-2	Aqueous	Naphthalene	8270D	0.32	J	ug/L	22
009	DMW-2	Aqueous	Lead	6010D	0.0048	J	mg/L	22
010	DMW-3	Aqueous	Methyl tertiary butyl ether	8260B	0.88	J	ug/L	23

(21 detections)

Client: **Carolina Technical Services, Inc.**
Description: **MW-13B**
Date Sampled: **04/04/2019 1425**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-001**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1450	JJG		12855

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		96	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1402	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-13B**
Date Sampled: **04/04/2019 1425**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-001**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1402	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	38-127
2-Fluorobiphenyl		85	37-129
Terphenyl-d14		94	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0417	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		108	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 0937	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	**7439-92-1**	**6010D**	**0.0047**	**J**	**0.010**	**0.0047**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-14A**
Date Sampled: **04/04/2019 1255**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-002**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1515	JJG		12855

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		94	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1426	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-14A**
Date Sampled: **04/04/2019 1255**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-002**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1426	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		100	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0427	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		113	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 0942	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-14B**
Date Sampled: **04/04/2019 1320**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-003**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1540	JJG		12855

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		95	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1542	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-14B**
Date Sampled: **04/04/2019 1320**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-003**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1542	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		63	38-127
2-Fluorobiphenyl		75	37-129
Terphenyl-d14		108	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0438	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		120	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 0948	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-15A**
Date Sampled: **04/04/2019 1200**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-004**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1134	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1607	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-15A**
Date Sampled: **04/04/2019 1200**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-004**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1607	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	38-127
2-Fluorobiphenyl		82	37-129
Terphenyl-d14		115	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0449	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		114	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 0953	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-15B**
Date Sampled: **04/04/2019 1215**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-005**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1157	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		89	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1632	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-15B**
Date Sampled: **04/04/2019 1215**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-005**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1632	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		73	38-127
2-Fluorobiphenyl		86	37-129
Terphenyl-d14		112	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0500	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.022	0.022	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		125	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1032	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-16A**
Date Sampled: **04/04/2019 1130**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-006**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1219	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		94	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1657	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-16A**
Date Sampled: **04/04/2019 1130**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-006**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1657	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		62	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		110	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0510	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		118	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1037	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-16B**
Date Sampled: **04/04/2019 1140**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-007**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1241	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1722	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **MW-16B**
Date Sampled: **04/04/2019 1140**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-007**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1722	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		66	38-127
2-Fluorobiphenyl		81	37-129
Terphenyl-d14		92	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0521	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		117	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1042	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **DMW-1**
Date Sampled: **04/01/2019 1540**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-008**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1304	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**52**		**20**	**8.0**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	**71-43-2**	**8260B**	**3.2**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**62**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**12**	**J**	**20**	**8.0**	**ug/L**	**1**
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		94	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1747	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	**56-55-3**	**8270D**	**0.32**	**J**	**0.80**	**0.20**	**ug/L**	**1**
Benzo(a)pyrene	**50-32-8**	**8270D**	**1.3**		**0.80**	**0.20**	**ug/L**	**1**
Benzo(b)fluoranthene	**205-99-2**	**8270D**	**1.9**		**0.80**	**0.20**	**ug/L**	**1**
Benzo(g,h,i)perylene	**191-24-2**	**8270D**	**1.2**		**0.80**	**0.20**	**ug/L**	**1**
Benzo(k)fluoranthene	**207-08-9**	**8270D**	**0.99**		**0.80**	**0.20**	**ug/L**	**1**
Chrysene	**218-01-9**	**8270D**	**0.52**	**J**	**0.80**	**0.20**	**ug/L**	**1**
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	**206-44-0**	**8270D**	**0.80**		**0.80**	**0.20**	**ug/L**	**1**
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	**193-39-5**	**8270D**	**1.4**		**0.80**	**0.20**	**ug/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **DMW-1**
Date Sampled: **04/01/2019 1540**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-008**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1747	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	**129-00-0**	**8270D**	**0.59**	**J**	**0.80**	**0.20**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		66	38-127
2-Fluorobiphenyl		81	37-129
Terphenyl-d14		113	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0532	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		113	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1048	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **DMW-2**
Date Sampled: **04/01/2019 1610**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-009**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1326	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	**75-85-4**	**8260B**	**130**		**20**	**8.0**	**ug/L**	**1**
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	**71-43-2**	**8260B**	**4.6**	**J**	**5.0**	**0.40**	**ug/L**	**1**
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**130**		**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	**75-65-0**	**8260B**	**430**		**20**	**8.0**	**ug/L**	**1**
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		92	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1812	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **DMW-2**
Date Sampled: **04/01/2019 1610**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-009**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1812	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	**91-20-3**	**8270D**	**0.32**	**J**	**0.80**	**0.20**	**ug/L**	**1**
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		64	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		101	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0542	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		118	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1053	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	**7439-92-1**	**6010D**	**0.0048**	**J**	**0.010**	**0.0047**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **DMW-3**
Date Sampled: **04/01/2019 1630**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-010**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1348	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**0.88**	**J**	**5.0**	**0.40**	**ug/L**	**1**
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1837	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: **Carolina Technical Services, Inc.**
Description: **DMW-3**
Date Sampled: **04/01/2019 1630**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-010**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1837	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		87	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0553	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		126	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1059	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Dup A**
Date Sampled: **04/04/2019 1325**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-011**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1410	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1902	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Dup A**
Date Sampled: **04/04/2019 1325**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-011**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1902	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		54	38-127
2-Fluorobiphenyl		61	37-129
Terphenyl-d14		109	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0614	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		116	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1104	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Field Blank 1**
Date Sampled: **04/01/2019 1640**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-012**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1432	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1927	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Field Blank 1**
Date Sampled: **04/01/2019 1640**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-012**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1927	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		114	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0636	DAL1	04/11/2019 2155	13056

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.022	0.022	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		126	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1121	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Field Blank 2**
Date Sampled: **04/04/2019 1240**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-013**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1454	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1952	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: **Carolina Technical Services, Inc.**
Description: **Field Blank 2**
Date Sampled: **04/04/2019 1240**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-013**
Matrix: **Aqueous**

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/07/2019 1952	JCG	04/05/2019 1714	12396

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		55	38-127
2-Fluorobiphenyl		69	37-129
Terphenyl-d14		106	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/12/2019 0235	DAL1	04/11/2019 2155	13058

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		68	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/12/2019 1126	LLL	04/11/2019 1457	13014

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: **Carolina Technical Services, Inc.**
Description: **Trip Blank**
Date Sampled: **04/01/2019**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-014**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1516	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: **Carolina Technical Services, Inc.**
Description: **Trip Blank**
Date Sampled: **04/01/2019**
Date Received: **04/04/2019**

Laboratory ID: **UD04093-015**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/10/2019 1538	JJG		12854

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		89	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ12854-001
Batch: 12854
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/10/2019 1026
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/10/2019 1026
Benzene	ND		1	5.0	0.40	ug/L	04/10/2019 1026
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/10/2019 1026
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/10/2019 1026
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/10/2019 1026
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/10/2019 1026
Ethanol	ND		1	100	52	ug/L	04/10/2019 1026
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/10/2019 1026
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/10/2019 1026
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/10/2019 1026
Naphthalene	ND		1	5.0	0.40	ug/L	04/10/2019 1026
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/10/2019 1026
Toluene	ND		1	5.0	0.40	ug/L	04/10/2019 1026
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/10/2019 1026

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ12854-002
Batch: 12854
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	107	70-130	04/10/2019 0942
tert-Amyl methyl ether (TAME)	50	58		1	116	70-130	04/10/2019 0942
Benzene	50	53		1	106	70-130	04/10/2019 0942
tert-Butyl formate (TBF)	250	290		1	115	70-130	04/10/2019 0942
1,2-Dichloroethane	50	59		1	118	70-130	04/10/2019 0942
Diisopropyl ether (IPE)	50	56		1	112	70-130	04/10/2019 0942
3,3-Dimethyl-1-butanol	1000	1100		1	107	70-130	04/10/2019 0942
Ethanol	5000	5800		1	117	70-130	04/10/2019 0942
Ethylbenzene	50	57		1	113	70-130	04/10/2019 0942
Ethyl-tert-butyl ether (ETBE)	50	53		1	107	70-130	04/10/2019 0942
Methyl tertiary butyl ether (MTBE)	50	53		1	106	70-130	04/10/2019 0942
Naphthalene	50	56		1	112	70-130	04/10/2019 0942
tert-butyl alcohol (TBA)	1000	1100		1	108	70-130	04/10/2019 0942
Toluene	50	55		1	111	70-130	04/10/2019 0942
Xylenes (total)	100	110		1	114	70-130	04/10/2019 0942

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		93	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		88	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ12855-001
Batch: 12855
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/10/2019 1043
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/10/2019 1043
Benzene	ND		1	5.0	0.40	ug/L	04/10/2019 1043
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/10/2019 1043
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/10/2019 1043
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/10/2019 1043
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/10/2019 1043
Ethanol	ND		1	100	52	ug/L	04/10/2019 1043
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/10/2019 1043
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/10/2019 1043
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/10/2019 1043
Naphthalene	ND		1	5.0	0.40	ug/L	04/10/2019 1043
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/10/2019 1043
Toluene	ND		1	5.0	0.40	ug/L	04/10/2019 1043
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/10/2019 1043

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ12855-002
Batch: 12855
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	950		1	95	70-130	04/10/2019 0954
tert-Amyl methyl ether (TAME)	50	45		1	91	70-130	04/10/2019 0954
Benzene	50	46		1	93	70-130	04/10/2019 0954
tert-Butyl formate (TBF)	250	240		1	97	70-130	04/10/2019 0954
1,2-Dichloroethane	50	47		1	93	70-130	04/10/2019 0954
Diisopropyl ether (IPE)	50	47		1	94	70-130	04/10/2019 0954
3,3-Dimethyl-1-butanol	1000	920		1	92	70-130	04/10/2019 0954
Ethanol	5000	4100		1	81	70-130	04/10/2019 0954
Ethylbenzene	50	49		1	99	70-130	04/10/2019 0954
Ethyl-tert-butyl ether (ETBE)	50	37		1	73	70-130	04/10/2019 0954
Methyl tertiary butyl ether (MTBE)	50	40		1	80	70-130	04/10/2019 0954
Naphthalene	50	50		1	100	70-130	04/10/2019 0954
tert-butyl alcohol (TBA)	1000	860		1	86	70-130	04/10/2019 0954
Toluene	50	48		1	97	70-130	04/10/2019 0954
Xylenes (total)	100	99		1	99	70-130	04/10/2019 0954

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ12396-001
Batch: 12396
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/05/2019 1714

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Anthracene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Chrysene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Fluoranthene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Fluorene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Naphthalene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Phenanthrene	ND		1	0.80	0.20	ug/L	04/07/2019 1312
Pyrene	ND		1	0.80	0.20	ug/L	04/07/2019 1312

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		49	38-127
2-Fluorobiphenyl		60	37-129
Terphenyl-d14		113	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ12396-002
Batch: 12396
Analytical Method: 8270D
Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/05/2019 1714

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	20		1	51	30-122	04/07/2019 1337
Acenaphthylene	40	21		1	53	30-130	04/07/2019 1337
Anthracene	40	30		1	75	30-123	04/07/2019 1337
Benzo(a)anthracene	40	34		1	85	40-125	04/07/2019 1337
Benzo(a)pyrene	40	32		1	80	40-128	04/07/2019 1337
Benzo(b)fluoranthene	40	30		1	74	30-130	04/07/2019 1337
Benzo(g,h,i)perylene	40	39		1	98	30-130	04/07/2019 1337
Benzo(k)fluoranthene	40	30		1	75	30-130	04/07/2019 1337
Chrysene	40	36		1	91	30-130	04/07/2019 1337
Dibenzo(a,h)anthracene	40	30		1	75	30-130	04/07/2019 1337
Fluoranthene	40	36		1	90	40-128	04/07/2019 1337
Fluorene	40	23		1	59	30-124	04/07/2019 1337
Indeno(1,2,3-c,d)pyrene	40	31		1	77	30-130	04/07/2019 1337
Naphthalene	40	21		1	52	30-130	04/07/2019 1337
Phenanthrene	40	27		1	66	40-123	04/07/2019 1337
Pyrene	40	32		1	79	40-126	04/07/2019 1337

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		45	38-127
2-Fluorobiphenyl		56	37-129
Terphenyl-d14		107	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: UD04093-002MS
Batch: 12396
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/05/2019 1714

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	47		1	59	30-122	04/07/2019 1451
Acenaphthylene	ND	80	49		1	61	30-130	04/07/2019 1451
Anthracene	ND	80	63		1	79	30-123	04/07/2019 1451
Benzo(a)anthracene	ND	80	63		1	79	40-125	04/07/2019 1451
Benzo(a)pyrene	ND	80	23	N	1	28	40-128	04/07/2019 1451
Benzo(b)fluoranthene	ND	80	49		1	61	30-130	04/07/2019 1451
Benzo(g,h,i)perylene	ND	80	42		1	52	30-130	04/07/2019 1451
Benzo(k)fluoranthene	ND	80	51		1	64	30-130	04/07/2019 1451
Chrysene	ND	80	66		1	83	30-130	04/07/2019 1451
Dibenzo(a,h)anthracene	ND	80	44		1	55	30-130	04/07/2019 1451
Fluoranthene	ND	80	78		1	97	40-128	04/07/2019 1451
Fluorene	ND	80	56		1	69	30-124	04/07/2019 1451
Indeno(1,2,3-c,d)pyrene	ND	80	43		1	54	30-130	04/07/2019 1451
Naphthalene	ND	80	48		1	60	30-130	04/07/2019 1451
Phenanthrene	ND	80	62		1	78	40-123	04/07/2019 1451
Pyrene	ND	80	67		1	84	40-126	04/07/2019 1451

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		54	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		94	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: UD04093-002MD
Batch: 12396
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/05/2019 1714

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	62		1	77	26	30-122	40	04/07/2019 1517
Acenaphthylene	ND	80	63		1	79	25	30-130	40	04/07/2019 1517
Anthracene	ND	80	68		1	85	7.6	30-123	40	04/07/2019 1517
Benzo(a)anthracene	ND	80	62		1	77	2.8	40-125	40	04/07/2019 1517
Benzo(a)pyrene	ND	80	19	N	1	24	17	40-128	40	04/07/2019 1517
Benzo(b)fluoranthene	ND	80	48		1	59	2.6	30-130	40	04/07/2019 1517
Benzo(g,h,i)perylene	ND	80	39		1	48	8.2	30-130	40	04/07/2019 1517
Benzo(k)fluoranthene	ND	80	48		1	61	5.7	30-130	40	04/07/2019 1517
Chrysene	ND	80	64		1	80	3.6	30-130	40	04/07/2019 1517
Dibenzo(a,h)anthracene	ND	80	42		1	53	4.8	30-130	40	04/07/2019 1517
Fluoranthene	ND	80	79		1	99	1.5	40-128	40	04/07/2019 1517
Fluorene	ND	80	71		1	88	24	30-124	40	04/07/2019 1517
Indeno(1,2,3-c,d)pyrene	ND	80	41		1	51	5.9	30-130	40	04/07/2019 1517
Naphthalene	ND	80	62		1	77	26	30-130	40	04/07/2019 1517
Phenanthrene	ND	80	73		1	91	16	40-123	40	04/07/2019 1517
Pyrene	ND	80	70		1	87	3.3	40-126	40	04/07/2019 1517

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		68	38-127
2-Fluorobiphenyl		85	37-129
Terphenyl-d14		91	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13056-001
Batch: 13056
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/12/2019 0230

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		102	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13056-002
Batch: 13056
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.27		1	108	60-140	04/12/2019 0240

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		119	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - Duplicate

Sample ID: UD04093-010DU
Batch: 13056
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	ND		1	0.00	20	04/12/2019 0604

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		125	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

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

EDB & DBCP by Microextraction - MS

Sample ID: UD04093-011MS
Batch: 13056
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.25	0.28		1	113	60-140	04/12/2019 0625

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		126	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13058-001
Batch: 13058
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/12/2019 1706

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		64	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13058-002
Batch: 13058
Analytical Method: 8011
Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/11/2019 2155

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.17	P	1	67	60-140	04/12/2019 0224

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		77	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MB

Sample ID: UQ13014-001
Batch: 13014
Analytical Method: 6010D
Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/11/2019 1457

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	04/12/2019 0926

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - LCS

Sample ID: UQ13014-002
Batch: 13014
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/11/2019 1457

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.39		1	98	80-120	04/12/2019 0931

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MS

Sample ID: UD04093-004MS
Batch: 13014
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/11/2019 1457

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	ND	0.40	0.39		1	98	75-125	04/12/2019 0959

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MSD

Sample ID: UD04093-004MD
Batch: 13014
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/11/2019 1457

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Lead	ND	0.40	0.39		1	98	0.14	75-125	20	04/12/2019 1015

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
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Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94872

Client: Carolina Technical Services, Inc.
Report to Contact: William Wood
Telephone No. / E-mail: 843-610-1953
Quote No.
Address: 7130 Broad River Rd
Sampler's Signature: X Cody Alexander
Analysis (Attach list if more space is needed)
City: Irmo | State: SC | Zip Code: 29063
Printed Name: Cody Alexander
Page 1 of 2
Project Name: Broad River Amoco
Project No.: 18-6580
P.O. No.
UD04093
LJD

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Comp	Matrix: Aqueous	Soil	Other	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Other	BTEX/Naphthalene	PAHs	Lead	EDB
MW-13B	4/4/19	1425	G	X			2	1	5				3	2	1	2
MW-14A	4/4/19	1255														
MW-14B	4/4/19	1320														
MW-15A	4/4/19	1200														
MW-15B	4/4/19	1215														
MW-16A	4/4/19	1130														
MW-16B	4/4/19	1140														
DMW-1	4/4/19	1540														
DMW-2	4/4/19	1610														
DMW-3	4/4/19	1630														

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☒ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time
1. Relinquished by: Cody Alexander	4/4/19	1520
2. Relinquished by:	4-4-19	1548
3. Relinquished by:	Date	Time
4. Relinquished by	Date	Time

	Date	Time
1. Received by:	4/4/19	1520
2. Received by:	Date	Time
3. Received by:	Date	Time
4. Laboratory received by: L Hall	4-4-19	1548

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack
Receipt Temp. 1.5 °C 2.9

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s), PINK-Field/Client Copy

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Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94873

Client: Carolina Technical Services, Inc.	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 7130 Broad River Rd	Sampler's Signature: X Cody Alexander	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Irmo / State: SC / Zip Code: 29063	Printed Name: Cody Alexander		
Project Name: Broad River Amoco			UD04093
Project No.: 18-6380	P.O. No.		Lab Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Soil/Solid or Composite	Aqueous	Soil/Solid	Non-Aqueous	Matrix	No of Containers by Preservative Type: Unpres	HCl	HNO3	H2SO4	NaOH	ZnAc/NaOH	BTEX+MTBE+Naphthalene+EDB	PAHs	Lead	EDB
Dup A	4/4/19	1325	G	X				2		1		5		3	2	1	2
Field Blank 1	4/4/19	1640	↓	↓				↓		↓		↓		↓	↓	↓	↓
Field Blank 2	4/4/19	1240	↓	↓				↓		↓		↓		↓	↓	↓	↓
Trip Blank																	
Trip Blank																	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time	Possible Hazard Identification	QC Requirements (Specify)
1. Relinquished by: Cody Alexander	4/4/19	1520	1. Received by:	Date 4/4/19 Time 1520
2. Relinquished by:	4-4-19	1548	2. Received by	Date Time
3. Relinquished by	Date	Time	3. Received by	Date Time
4. Relinquished by	Date	Time	4. Laboratory received by: L Hill	Date 4-4-19 Time 1548

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp 2.9 °C 1.5

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

Shealy Environmental Services, Inc.
Document Number: ME0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: Carolina Technical Services Cooler Inspected by/date: MEC / 4/5/19 Lot #: UD04093

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 18-2225 Chlorine Strip ID: NA Tested by: MEC

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.5 / 1.5 °C 2.9 / 2.9 °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA _____ were received with bubbles >6 mm in diameter.

Samples(s) NA _____ were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: MEC Date: 4/5/19

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Project Number: 18-6580

Lot Number:**UD10067**

Date Completed:04/24/2019

04/24/2019 1:15 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD10067

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD10067

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MWR2-1	Aqueous	04/09/2019 1400	04/10/2019
002	MWR2-2	Aqueous	04/09/2019 1415	04/10/2019
003	MWR2-3	Aqueous	04/09/2019 1430	04/10/2019
004	MW-7A	Aqueous	04/09/2019 1120	04/10/2019
005	MW-8A	Aqueous	04/09/2019 1145	04/10/2019
006	MW-8B	Aqueous	04/09/2019 1200	04/10/2019
007	MW-12A	Aqueous	04/09/2019 1235	04/10/2019
008	MW-12B	Aqueous	04/09/2019 1255	04/10/2019
009	DUP B	Aqueous	04/09/2019 1300	04/10/2019
010	FIELD BLANK 3	Aqueous	04/09/2019 1050	04/10/2019
011	TRIP BLANK	Aqueous	04/09/2019	04/10/2019

(11 samples)

Detection Summary
Carolina Technical Services, Inc.
Lot Number: UD10067

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MWR2-1	Aqueous	tert-Amyl alcohol (TAA)	8260B	430		ug/L	5
001	MWR2-1	Aqueous	tert-Amyl methyl ether	8260B	1.5	J	ug/L	5
001	MWR2-1	Aqueous	Benzene	8260B	16		ug/L	5
001	MWR2-1	Aqueous	Diisopropyl ether (IPE)	8260B	2.2	J	ug/L	5
001	MWR2-1	Aqueous	Ethylbenzene	8260B	4.3	J	ug/L	5
001	MWR2-1	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260B	0.72	J	ug/L	5
001	MWR2-1	Aqueous	Methyl tertiary butyl ether	8260B	120		ug/L	5
001	MWR2-1	Aqueous	tert-butyl alcohol (TBA)	8260B	72		ug/L	5
001	MWR2-1	Aqueous	Toluene	8260B	0.76	J	ug/L	5
001	MWR2-1	Aqueous	Xylenes (total)	8260B	3.9	J	ug/L	5
002	MWR2-2	Aqueous	tert-Amyl alcohol (TAA)	8260B	2800		ug/L	7
002	MWR2-2	Aqueous	Benzene	8260B	3000		ug/L	7
002	MWR2-2	Aqueous	Ethylbenzene	8260B	830		ug/L	7
002	MWR2-2	Aqueous	Methyl tertiary butyl ether	8260B	1200		ug/L	7
002	MWR2-2	Aqueous	Naphthalene	8260B	330	J	ug/L	7
002	MWR2-2	Aqueous	Toluene	8260B	17000		ug/L	7
002	MWR2-2	Aqueous	Xylenes (total)	8260B	11000		ug/L	7
002	MWR2-2	Aqueous	Naphthalene	8270D	270		ug/L	8
002	MWR2-2	Aqueous	1,2-Dibromoethane (EDB)	8011	3.9		ug/L	8
002	MWR2-2	Aqueous	Lead	6010D	0.0049	J	mg/L	8
003	MWR2-3	Aqueous	tert-Amyl alcohol (TAA)	8260B	290		ug/L	9
003	MWR2-3	Aqueous	Benzene	8260B	15		ug/L	9
003	MWR2-3	Aqueous	Diisopropyl ether (IPE)	8260B	0.40	J	ug/L	9
003	MWR2-3	Aqueous	Ethylbenzene	8260B	1.6	J	ug/L	9
003	MWR2-3	Aqueous	Methyl tertiary butyl ether	8260B	44		ug/L	9
003	MWR2-3	Aqueous	Naphthalene	8260B	0.63	J	ug/L	9
003	MWR2-3	Aqueous	tert-butyl alcohol (TBA)	8260B	53		ug/L	9
003	MWR2-3	Aqueous	Toluene	8260B	11		ug/L	9
003	MWR2-3	Aqueous	Xylenes (total)	8260B	19		ug/L	9
003	MWR2-3	Aqueous	Naphthalene	8270D	0.54	J	ug/L	10

(30 detections)

Client: Carolina Technical Services, Inc.
Description: MWR2-1
Date Sampled: 04/09/2019 1400
Date Received: 04/10/2019

Laboratory ID: UD10067-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/13/2019 0649	MNS		13248

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	430		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	1.5	J	10	0.42	ug/L	1
Benzene	71-43-2	8260B	16		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	2.2	J	5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	4.3	J	5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	0.72	J	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	120		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	72		20	8.0	ug/L	1
Toluene	108-88-3	8260B	0.76	J	5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	3.9	J	5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		95	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1626	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-1
Date Sampled: 04/09/2019 1400
Date Received: 04/10/2019

Laboratory ID: UD10067-001
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1626	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		85	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		83	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2029	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		106	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0133	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-2
Date Sampled: 04/09/2019 1415
Date Received: 04/10/2019

Laboratory ID: UD10067-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/13/2019 0739	MNS		13248

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	2800		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	3000		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	830		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1200		500	40	ug/L	1
Naphthalene	91-20-3	8260B	330	J	500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		2000	800	ug/L	1
Toluene	108-88-3	8260B	17000		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	11000		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		95	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1651	SCD	04/12/2019 1641	13199
2	3520C	8270D	5	04/16/2019 1316	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MWR2-2
Date Sampled: 04/09/2019 1415
Date Received: 04/10/2019

Laboratory ID: UD10067-002
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1651	SCD	04/12/2019 1641	13199
2	3520C	8270D	5	04/16/2019 1316	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	270		4.0	1.0	ug/L	2
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		93	38-127		87	38-127
2-Fluorobiphenyl		80	37-129		75	37-129
Terphenyl-d14		85	10-148		77	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	10	04/17/2019 1539	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	3.9		0.20	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		125	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0201	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0049	J	0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-3
Date Sampled: 04/09/2019 1430
Date Received: 04/10/2019

Laboratory ID: UD10067-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/13/2019 0714	MNS		13248

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	290		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	15		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	0.40	J	5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	1.6	J	5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	44		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	0.63	J	5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	53		20	8.0	ug/L	1
Toluene	108-88-3	8260B	11		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	19		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		94	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1715	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MWR2-3
Date Sampled: 04/09/2019 1430
Date Received: 04/10/2019

Laboratory ID: UD10067-003
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1715	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.54	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		89	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		100	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2049	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		85	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0206	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-7A
Date Sampled: 04/09/2019 1120
Date Received: 04/10/2019

Laboratory ID: UD10067-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/18/2019 0045	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		86	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1828	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-7A
Date Sampled: 04/09/2019 1120
Date Received: 04/10/2019

Laboratory ID: UD10067-004
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1828	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		88	38-127
2-Fluorobiphenyl		79	37-129
Terphenyl-d14		90	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2059	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0211	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-8A
Date Sampled: 04/09/2019 1145
Date Received: 04/10/2019

Laboratory ID: UD10067-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/18/2019 0110	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		86	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1852	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-8A
Date Sampled: 04/09/2019 1145
Date Received: 04/10/2019

Laboratory ID: UD10067-005
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1852	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		85	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		91	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2110	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0217	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-8B
Date Sampled: 04/09/2019 1200
Date Received: 04/10/2019

Laboratory ID: UD10067-006
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/13/2019 0304	MNS		13244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		103	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1917	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-8B
Date Sampled: 04/09/2019 1200
Date Received: 04/10/2019

Laboratory ID: UD10067-006
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 1917	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		89	38-127
2-Fluorobiphenyl		79	37-129
Terphenyl-d14		96	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2130	DAL1	04/16/2019 1620	13540

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		96	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0233	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-12A
Date Sampled: 04/09/2019 1235
Date Received: 04/10/2019

Laboratory ID: UD10067-007
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/18/2019 0134	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2035	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-12A
Date Sampled: 04/09/2019 1235
Date Received: 04/10/2019

Laboratory ID: UD10067-007
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2035	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		89	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		96	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2241	DAL1	04/16/2019 1620	13541

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		95	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0239	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-12B
Date Sampled: 04/09/2019 1255
Date Received: 04/10/2019

Laboratory ID: UD10067-008
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/18/2019 0159	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		92	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2059	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-12B
Date Sampled: 04/09/2019 1255
Date Received: 04/10/2019

Laboratory ID: UD10067-008
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2059	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		90	38-127
2-Fluorobiphenyl		81	37-129
Terphenyl-d14		97	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2251	DAL1	04/16/2019 1620	13541

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0244	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP B
Date Sampled: 04/09/2019 1300
Date Received: 04/10/2019

Laboratory ID: UD10067-009
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/18/2019 0224	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		86	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		93	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2124	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP B
Date Sampled: 04/09/2019 1300
Date Received: 04/10/2019

Laboratory ID: UD10067-009
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2124	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		89	38-127
2-Fluorobiphenyl		79	37-129
Terphenyl-d14		66	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2301	DAL1	04/16/2019 1620	13541

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0250	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 3
Date Sampled: 04/09/2019 1050
Date Received: 04/10/2019

Laboratory ID: UD10067-010
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/17/2019 2150	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		95	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2148	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 3
Date Sampled: 04/09/2019 1050
Date Received: 04/10/2019

Laboratory ID: UD10067-010
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/14/2019 2148	SCD	04/12/2019 1641	13199

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		88	38-127
2-Fluorobiphenyl		78	37-129
Terphenyl-d14		97	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/16/2019 2312	DAL1	04/16/2019 1620	13541

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0255	JCF	04/17/2019 1833	13654

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: TRIP BLANK
Date Sampled: 04/09/2019
Date Received: 04/10/2019

Laboratory ID: UD10067-011
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/17/2019 2215	MNS		13747

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		94	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ13244-001
Batch: 13244
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/12/2019 2124
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/12/2019 2124
Benzene	ND		1	5.0	0.40	ug/L	04/12/2019 2124
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/12/2019 2124
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/12/2019 2124
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/12/2019 2124
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/12/2019 2124
Ethanol	ND		1	100	52	ug/L	04/12/2019 2124
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/12/2019 2124
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/12/2019 2124
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/12/2019 2124
Naphthalene	ND		1	5.0	0.40	ug/L	04/12/2019 2124
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/12/2019 2124
Toluene	ND		1	5.0	0.40	ug/L	04/12/2019 2124
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/12/2019 2124

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		102	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13244-002
Batch: 13244
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	900		1	90	70-130	04/12/2019 2038
tert-Amyl methyl ether (TAME)	50	51		1	102	70-130	04/12/2019 2038
Benzene	50	53		1	107	70-130	04/12/2019 2038
tert-Butyl formate (TBF)	250	230		1	94	70-130	04/12/2019 2038
1,2-Dichloroethane	50	47		1	93	70-130	04/12/2019 2038
Diisopropyl ether (IPE)	50	56		1	111	70-130	04/12/2019 2038
3,3-Dimethyl-1-butanol	1000	920		1	92	70-130	04/12/2019 2038
Ethanol	5000	4400		1	89	70-130	04/12/2019 2038
Ethylbenzene	50	54		1	108	70-130	04/12/2019 2038
Ethyl-tert-butyl ether (ETBE)	50	49		1	98	70-130	04/12/2019 2038
Methyl tertiary butyl ether (MTBE)	50	48		1	97	70-130	04/12/2019 2038
Naphthalene	50	49		1	98	70-130	04/12/2019 2038
tert-butyl alcohol (TBA)	1000	890		1	89	70-130	04/12/2019 2038
Toluene	50	56		1	111	70-130	04/12/2019 2038
Xylenes (total)	100	110		1	106	70-130	04/12/2019 2038

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ13248-001
Batch: 13248
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/12/2019 2251
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/12/2019 2251
Benzene	ND		1	5.0	0.40	ug/L	04/12/2019 2251
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/12/2019 2251
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/12/2019 2251
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/12/2019 2251
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/12/2019 2251
Ethanol	ND		1	100	52	ug/L	04/12/2019 2251
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/12/2019 2251
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/12/2019 2251
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/12/2019 2251
Naphthalene	ND		1	5.0	0.40	ug/L	04/12/2019 2251
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/12/2019 2251
Toluene	ND		1	5.0	0.40	ug/L	04/12/2019 2251
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/12/2019 2251

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		86	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13248-002
Batch: 13248
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1000		1	100	70-130	04/12/2019 2202
tert-Amyl methyl ether (TAME)	50	47		1	95	70-130	04/12/2019 2202
Benzene	50	48		1	96	70-130	04/12/2019 2202
tert-Butyl formate (TBF)	250	290		1	117	70-130	04/12/2019 2202
1,2-Dichloroethane	50	46		1	93	70-130	04/12/2019 2202
Diisopropyl ether (IPE)	50	48		1	96	70-130	04/12/2019 2202
3,3-Dimethyl-1-butanol	1000	890		1	89	70-130	04/12/2019 2202
Ethanol	5000	3700		1	75	70-130	04/12/2019 2202
Ethylbenzene	50	52		1	103	70-130	04/12/2019 2202
Ethyl-tert-butyl ether (ETBE)	50	39		1	78	70-130	04/12/2019 2202
Methyl tertiary butyl ether (MTBE)	50	41		1	82	70-130	04/12/2019 2202
Naphthalene	50	50		1	100	70-130	04/12/2019 2202
tert-butyl alcohol (TBA)	1000	920		1	92	70-130	04/12/2019 2202
Toluene	50	50		1	101	70-130	04/12/2019 2202
Xylenes (total)	100	100		1	102	70-130	04/12/2019 2202

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MS

Sample ID: UD10067-002MS
Batch: 13248
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	2800	100000	100000		100	98	70-130	04/13/2019 0804
tert-Amyl methyl ether (TAME)	ND	5000	4700		100	94	70-130	04/13/2019 0804
Benzene	3000	5000	7900		100	97	70-130	04/13/2019 0804
tert-Butyl formate (TBF)	ND	25000	23000		100	94	70-130	04/13/2019 0804
1,2-Dichloroethane	ND	5000	4800		100	96	70-130	04/13/2019 0804
Diisopropyl ether (IPE)	ND	5000	4800		100	95	70-130	04/13/2019 0804
3,3-Dimethyl-1-butanol	ND	100000	89000		100	89	70-130	04/13/2019 0804
Ethanol	ND	500000	400000		100	80	70-130	04/13/2019 0804
Ethylbenzene	830	5000	5900		100	102	70-130	04/13/2019 0804
Ethyl-tert-butyl ether (ETBE)	ND	5000	4000		100	79	70-130	04/13/2019 0804
Methyl tertiary butyl ether (MTBE)	1200	5000	5400		100	84	70-130	04/13/2019 0804
Naphthalene	330	5000	5300		100	99	70-130	04/13/2019 0804
tert-butyl alcohol (TBA)	ND	100000	93000		100	92	70-130	04/13/2019 0804
Toluene	17000	5000	22000	E	100	97	70-130	04/13/2019 0804
Xylenes (total)	11000	10000	21000		100	102	70-130	04/13/2019 0804

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		104	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD10067-002MD
Batch: 13248
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	2800	100000	110000		100	104	5.3	70-130	20	04/13/2019 0829
tert-Amyl methyl ether (TAME)	ND	5000	5000		100	99	4.9	70-130	20	04/13/2019 0829
Benzene	3000	5000	8100		100	102	2.7	70-130	20	04/13/2019 0829
tert-Butyl formate (TBF)	ND	25000	24000		100	95	1.5	70-130	20	04/13/2019 0829
1,2-Dichloroethane	ND	5000	5000		100	100	4.5	70-130	20	04/13/2019 0829
Diisopropyl ether (IPE)	ND	5000	5000		100	100	5.2	70-130	20	04/13/2019 0829
3,3-Dimethyl-1-butanol	ND	100000	93000		100	93	5.1	70-130	20	04/13/2019 0829
Ethanol	ND	500000	420000		100	85	6.2	70-130	20	04/13/2019 0829
Ethylbenzene	830	5000	6300		100	109	5.4	70-130	20	04/13/2019 0829
Ethyl-tert-butyl ether (ETBE)	ND	5000	4100		100	82	3.3	70-130	20	04/13/2019 0829
Methyl tertiary butyl ether (MTBE)	1200	5000	5500		100	86	1.8	70-130	20	04/13/2019 0829
Naphthalene	330	5000	5600		100	104	4.8	70-130	20	04/13/2019 0829
tert-butyl alcohol (TBA)	ND	100000	99000		100	98	6.3	70-130	20	04/13/2019 0829
Toluene	17000	5000	22000	E	100	101	0.77	70-130	20	04/13/2019 0829
Xylenes (total)	11000	10000	21000		100	108	2.9	70-130	20	04/13/2019 0829

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		104	70-130
Toluene-d8		110	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ13747-001
Batch: 13747
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/17/2019 2109
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/17/2019 2109
Benzene	ND		1	5.0	0.40	ug/L	04/17/2019 2109
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/17/2019 2109
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/17/2019 2109
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/17/2019 2109
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/17/2019 2109
Ethanol	ND		1	100	52	ug/L	04/17/2019 2109
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/17/2019 2109
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/17/2019 2109
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/17/2019 2109
Naphthalene	ND		1	5.0	0.40	ug/L	04/17/2019 2109
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/17/2019 2109
Toluene	ND		1	5.0	0.40	ug/L	04/17/2019 2109
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/17/2019 2109

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		88	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		94	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13747-002
Batch: 13747
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1000		1	103	70-130	04/17/2019 2019
tert-Amyl methyl ether (TAME)	50	51		1	101	70-130	04/17/2019 2019
Benzene	50	50		1	99	70-130	04/17/2019 2019
tert-Butyl formate (TBF)	250	320		1	128	70-130	04/17/2019 2019
1,2-Dichloroethane	50	49		1	98	70-130	04/17/2019 2019
Diisopropyl ether (IPE)	50	52		1	103	70-130	04/17/2019 2019
3,3-Dimethyl-1-butanol	1000	910		1	91	70-130	04/17/2019 2019
Ethanol	5000	4300		1	86	70-130	04/17/2019 2019
Ethylbenzene	50	52		1	104	70-130	04/17/2019 2019
Ethyl-tert-butyl ether (ETBE)	50	42		1	84	70-130	04/17/2019 2019
Methyl tertiary butyl ether (MTBE)	50	47		1	93	70-130	04/17/2019 2019
Naphthalene	50	51		1	102	70-130	04/17/2019 2019
tert-butyl alcohol (TBA)	1000	960		1	96	70-130	04/17/2019 2019
Toluene	50	51		1	103	70-130	04/17/2019 2019
Xylenes (total)	100	100		1	104	70-130	04/17/2019 2019

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		87	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		95	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ13199-001
Batch: 13199
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/12/2019 1641

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Anthracene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Chrysene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Fluoranthene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Fluorene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Naphthalene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Phenanthrene	ND		1	0.80	0.20	ug/L	04/13/2019 1429
Pyrene	ND		1	0.80	0.20	ug/L	04/13/2019 1429

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		90	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		92	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13199-002
Batch: 13199
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/12/2019 1641

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	33		1	82	30-122	04/13/2019 1453
Acenaphthylene	40	34		1	84	30-130	04/13/2019 1453
Anthracene	40	33		1	82	30-123	04/13/2019 1453
Benzo(a)anthracene	40	30		1	75	40-125	04/13/2019 1453
Benzo(a)pyrene	40	25		1	62	40-128	04/13/2019 1453
Benzo(b)fluoranthene	40	29		1	72	30-130	04/13/2019 1453
Benzo(g,h,i)perylene	40	28		1	69	30-130	04/13/2019 1453
Benzo(k)fluoranthene	40	27		1	68	30-130	04/13/2019 1453
Chrysene	40	31		1	77	30-130	04/13/2019 1453
Dibenzo(a,h)anthracene	40	27		1	67	30-130	04/13/2019 1453
Fluoranthene	40	34		1	84	40-128	04/13/2019 1453
Fluorene	40	33		1	82	30-124	04/13/2019 1453
Indeno(1,2,3-c,d)pyrene	40	25		1	63	30-130	04/13/2019 1453
Naphthalene	40	34		1	84	30-130	04/13/2019 1453
Phenanthrene	40	33		1	82	40-123	04/13/2019 1453
Pyrene	40	36		1	91	40-126	04/13/2019 1453

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		92	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		88	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: UD10067-003MS
Batch: 13199
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/12/2019 1641

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	61		1	76	30-122	04/14/2019 1739
Acenaphthylene	ND	80	63		1	79	30-130	04/14/2019 1739
Anthracene	ND	80	66		1	83	30-123	04/14/2019 1739
Benzo(a)anthracene	ND	80	64		1	80	40-125	04/14/2019 1739
Benzo(a)pyrene	ND	80	67		1	84	40-128	04/14/2019 1739
Benzo(b)fluoranthene	ND	80	66		1	83	30-130	04/14/2019 1739
Benzo(g,h,i)perylene	ND	80	72		1	91	30-130	04/14/2019 1739
Benzo(k)fluoranthene	ND	80	63		1	79	30-130	04/14/2019 1739
Chrysene	ND	80	63		1	79	30-130	04/14/2019 1739
Dibenzo(a,h)anthracene	ND	80	69		1	86	30-130	04/14/2019 1739
Fluoranthene	ND	80	69		1	86	40-128	04/14/2019 1739
Fluorene	ND	80	63		1	79	30-124	04/14/2019 1739
Indeno(1,2,3-c,d)pyrene	ND	80	69		1	87	30-130	04/14/2019 1739
Naphthalene	0.54	80	62		1	77	30-130	04/14/2019 1739
Phenanthrene	ND	80	64		1	80	40-123	04/14/2019 1739
Pyrene	ND	80	70		1	87	40-126	04/14/2019 1739

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		91	38-127
2-Fluorobiphenyl		76	37-129
Terphenyl-d14		97	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: UD10067-003MD
Batch: 13199
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/12/2019 1641

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	63		1	79	4.2	30-122	40	04/14/2019 1804
Acenaphthylene	ND	80	65		1	81	2.2	30-130	40	04/14/2019 1804
Anthracene	ND	80	71		1	88	6.7	30-123	40	04/14/2019 1804
Benzo(a)anthracene	ND	80	68		1	85	6.4	40-125	40	04/14/2019 1804
Benzo(a)pyrene	ND	80	71		1	89	5.8	40-128	40	04/14/2019 1804
Benzo(b)fluoranthene	ND	80	70		1	87	4.6	30-130	40	04/14/2019 1804
Benzo(g,h,i)perylene	ND	80	76		1	95	4.7	30-130	40	04/14/2019 1804
Benzo(k)fluoranthene	ND	80	67		1	84	6.7	30-130	40	04/14/2019 1804
Chrysene	ND	80	68		1	84	6.4	30-130	40	04/14/2019 1804
Dibenzo(a,h)anthracene	ND	80	72		1	91	5.6	30-130	40	04/14/2019 1804
Fluoranthene	ND	80	73		1	91	5.7	40-128	40	04/14/2019 1804
Fluorene	ND	80	66		1	82	3.9	30-124	40	04/14/2019 1804
Indeno(1,2,3-c,d)pyrene	ND	80	73		1	91	4.6	30-130	40	04/14/2019 1804
Naphthalene	0.54	80	63		1	79	2.4	30-130	40	04/14/2019 1804
Phenanthrene	ND	80	68		1	84	5.8	40-123	40	04/14/2019 1804
Pyrene	ND	80	74		1	92	5.8	40-126	40	04/14/2019 1804

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		88	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		102	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13540-001
Batch: 13540
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/16/2019 1806

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		88	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13540-002
Batch: 13540
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.25		1	98	60-140	04/16/2019 1816

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		104	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - Duplicate

Sample ID: UD10067-005DU
Batch: 13540
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	ND		1	0.00	20	04/16/2019 2120

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		98	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MS

Sample ID: UD10067-006MS
Batch: 13540
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.25	0.24		1	93	60-140	04/16/2019 2140

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		98	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13541-001
Batch: 13541
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/16/2019 2221

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13541-002
Batch: 13541
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 1620

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.25		1	98	60-140	04/16/2019 2231

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

ICP-AES Metals - MB

Sample ID: UQ13654-001
Batch: 13654
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	04/19/2019 0044

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - LCS

Sample ID: UQ13654-002
Batch: 13654
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.40		1	99	80-120	04/19/2019 0050

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MS

Sample ID: UD10067-001MS
Batch: 13654
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	ND	0.40	0.40		1	100	75-125	04/19/2019 0139

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MSD

Sample ID: UD10067-001MD
Batch: 13654
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Lead	ND	0.40	0.40		1	100	0.37	75-125	20	04/19/2019 0144

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Shealy Environmental Services, Inc.
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Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
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SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94874

Client: Carolina Technical Services, Inc.	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 7130 Broad River Rd	Sampler's Signature: X Cody Alexander	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Irmo	State: SC	Zip Code: 29063	
Project Name: Broad River Amoco	Printed Name: Cody Alexander		UD10067
Project No.: H-6580	P.O. No.		LJO

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	ZnOAc/NaOH	BTEX+MTBE+Naphthalene	PAH	LEAD	EDB	Remarks / Cooler I.D.
MW R2-1	4/9/19	1400	G	X			2			15			3	2	1	2	
MW R2-2		1415															Trip Blank Included
MW R2-3		1430															
MW-7A		1120															
MW-8A		1145															
MW-8B		1200															
MW-12A		1235															
MW-12B		1255															
Dup B		1300															
Field Blank 3		1050															

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Cody Alexander	4/9/19	1650	1. Received by: Saddie Cannon	4/9/19	1650
2. Relinquished by: Saddie Cannon	4/9/19	1721	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	Date	Time	4. Laboratory Received by: Mikeadycatt	4-9-19	1721

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack — Receipt Temp. 4.1 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s), PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: MF0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: CAROLINA TECHNICAL SERVICES Cooler Inspected by/date: MEC / 04-10-2019 Lot #: UB10067

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 18-2225 Chlorine Strip ID: NA Tested by: LKH

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.1 / 4.1 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☑ Yes	☐ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If 419 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: LKH Date: 04-10-2019

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Project Number: 18-6580

Lot Number:**UD11091**

Date Completed:04/24/2019

04/24/2019 11:34 AM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD11091

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD11091

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-R2-4	Aqueous	04/10/2019 1635	04/11/2019
002	MW-R2-5	Aqueous	04/10/2019 1555	04/11/2019
003	MW-R2-9	Aqueous	04/10/2019 1245	04/11/2019
004	MW-R2-15	Aqueous	04/10/2019 1510	04/11/2019
005	MW-R2-16	Aqueous	04/10/2019 1420	04/11/2019
006	MW-6B	Aqueous	04/10/2019 1135	04/11/2019
007	MW-6A	Aqueous	04/10/2019 1150	04/11/2019
008	MW-R2-11	Aqueous	04/10/2019 1335	04/11/2019
009	MW-11A	Aqueous	04/11/2019 1505	04/11/2019
010	MW-11B	Aqueous	04/11/2019 1515	04/11/2019
011	MW-3	Aqueous	04/11/2019 1215	04/11/2019
012	MW-R2-10	Aqueous	04/11/2019 1305	04/11/2019
013	DUP C	Aqueous	04/10/2019 1640	04/11/2019
014	DUP D	Aqueous	04/11/2019 1310	04/11/2019
015	Field Blank 4	Aqueous	04/10/2019 1630	04/11/2019
016	Field Blank 5	Aqueous	04/11/2019 1540	04/11/2019
017	Trip Blank	Aqueous	04/10/2019	04/11/2019
018	Trip Blank	Aqueous	04/10/2019	04/11/2019

(18 samples)

Detection Summary
Carolina Technical Services, Inc.
Lot Number: UD11091

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-R2-4	Aqueous	tert-Amyl alcohol (TAA)	8260B	8300		ug/L	7
001	MW-R2-4	Aqueous	tert-Amyl methyl ether	8260B	54	J	ug/L	7
001	MW-R2-4	Aqueous	Benzene	8260B	6600		ug/L	7
001	MW-R2-4	Aqueous	Ethylbenzene	8260B	1200		ug/L	7
001	MW-R2-4	Aqueous	Methyl tertiary butyl ether	8260B	8300		ug/L	7
001	MW-R2-4	Aqueous	Naphthalene	8260B	490	J	ug/L	7
001	MW-R2-4	Aqueous	tert-butyl alcohol (TBA)	8260B	3200		ug/L	7
001	MW-R2-4	Aqueous	Toluene	8260B	14000		ug/L	7
001	MW-R2-4	Aqueous	Xylenes (total)	8260B	12000		ug/L	7
001	MW-R2-4	Aqueous	Fluorene	8270D	0.37	J	ug/L	7
001	MW-R2-4	Aqueous	Naphthalene	8270D	370		ug/L	8
001	MW-R2-4	Aqueous	Phenanthrene	8270D	0.23	J	ug/L	8
001	MW-R2-4	Aqueous	1,2-Dibromoethane (EDB)	8011	0.42		ug/L	8
002	MW-R2-5	Aqueous	tert-Amyl alcohol (TAA)	8260B	3100	J	ug/L	9
002	MW-R2-5	Aqueous	Benzene	8260B	9100		ug/L	9
002	MW-R2-5	Aqueous	Ethylbenzene	8260B	1700		ug/L	9
002	MW-R2-5	Aqueous	Methyl tertiary butyl ether	8260B	2500		ug/L	9
002	MW-R2-5	Aqueous	Naphthalene	8260B	600	J	ug/L	9
002	MW-R2-5	Aqueous	Toluene	8260B	21000		ug/L	9
002	MW-R2-5	Aqueous	Xylenes (total)	8260B	12000		ug/L	9
002	MW-R2-5	Aqueous	Benzo(a)anthracene	8270D	0.45	J	ug/L	9
002	MW-R2-5	Aqueous	Benzo(a)pyrene	8270D	0.44	J	ug/L	9
002	MW-R2-5	Aqueous	Benzo(b)fluoranthene	8270D	0.78	J	ug/L	9
002	MW-R2-5	Aqueous	Benzo(g,h,i)perylene	8270D	0.65	J	ug/L	9
002	MW-R2-5	Aqueous	Benzo(k)fluoranthene	8270D	0.24	J	ug/L	9
002	MW-R2-5	Aqueous	Chrysene	8270D	0.26	J	ug/L	9
002	MW-R2-5	Aqueous	Fluoranthene	8270D	0.62	J	ug/L	9
002	MW-R2-5	Aqueous	Indeno(1,2,3-c,d)pyrene	8270D	0.40	J	ug/L	10
002	MW-R2-5	Aqueous	Naphthalene	8270D	210		ug/L	10
002	MW-R2-5	Aqueous	Phenanthrene	8270D	0.22	J	ug/L	10
002	MW-R2-5	Aqueous	Pyrene	8270D	0.54	J	ug/L	10
003	MW-R2-9	Aqueous	tert-Amyl alcohol (TAA)	8260B	25		ug/L	11
003	MW-R2-9	Aqueous	Benzene	8260B	1.2	J	ug/L	11
003	MW-R2-9	Aqueous	Diisopropyl ether (IPE)	8260B	0.63	J	ug/L	11
003	MW-R2-9	Aqueous	Lead	6010D	0.0047	J	mg/L	12
004	MW-R2-15	Aqueous	tert-Amyl alcohol (TAA)	8260B	2600		ug/L	13
004	MW-R2-15	Aqueous	Benzene	8260B	6600		ug/L	13
004	MW-R2-15	Aqueous	Ethylbenzene	8260B	1500		ug/L	13
004	MW-R2-15	Aqueous	Methyl tertiary butyl ether	8260B	150	J	ug/L	13
004	MW-R2-15	Aqueous	Naphthalene	8260B	330	J	ug/L	13
004	MW-R2-15	Aqueous	Toluene	8260B	11000		ug/L	13
004	MW-R2-15	Aqueous	Xylenes (total)	8260B	8800		ug/L	13
004	MW-R2-15	Aqueous	Acenaphthene	8270D	0.29	J	ug/L	13
004	MW-R2-15	Aqueous	Fluorene	8270D	0.33	J	ug/L	13
004	MW-R2-15	Aqueous	Naphthalene	8270D	240		ug/L	14

Detection Summary (Continued)

Lot Number: UD11091

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	MW-R2-15	Aqueous	Phenanthrene	8270D	0.34	J	ug/L	14
005	MW-R2-16	Aqueous	tert-Amyl alcohol (TAA)	8260B	380		ug/L	15
005	MW-R2-16	Aqueous	Benzene	8260B	1100		ug/L	15
005	MW-R2-16	Aqueous	Ethylbenzene	8260B	220		ug/L	15
005	MW-R2-16	Aqueous	Methyl tertiary butyl ether	8260B	13	J	ug/L	15
005	MW-R2-16	Aqueous	Naphthalene	8260B	27	J	ug/L	15
005	MW-R2-16	Aqueous	Toluene	8260B	1900		ug/L	15
005	MW-R2-16	Aqueous	Xylenes (total)	8260B	1500		ug/L	15
005	MW-R2-16	Aqueous	Naphthalene	8270D	16		ug/L	16
006	MW-6B	Aqueous	Toluene	8260B	2.6	J	ug/L	17
006	MW-6B	Aqueous	Xylenes (total)	8260B	2.8	J	ug/L	17
006	MW-6B	Aqueous	Naphthalene	8270D	0.29	J	ug/L	18
007	MW-6A	Aqueous	Toluene	8260B	0.52	J	ug/L	19
007	MW-6A	Aqueous	Xylenes (total)	8260B	0.61	J	ug/L	19
007	MW-6A	Aqueous	Naphthalene	8270D	0.29	J	ug/L	20
007	MW-6A	Aqueous	Lead	6010D	0.0071	J	mg/L	20
008	MW-R2-11	Aqueous	tert-Amyl alcohol (TAA)	8260B	1200		ug/L	21
008	MW-R2-11	Aqueous	Benzene	8260B	2200		ug/L	21
008	MW-R2-11	Aqueous	Ethylbenzene	8260B	180	J	ug/L	21
008	MW-R2-11	Aqueous	Naphthalene	8260B	27	J	ug/L	21
008	MW-R2-11	Aqueous	Toluene	8260B	4400		ug/L	21
008	MW-R2-11	Aqueous	Xylenes (total)	8260B	2900		ug/L	21
008	MW-R2-11	Aqueous	Naphthalene	8270D	17		ug/L	22
009	MW-11A	Aqueous	Benzene	8260B	2.2	J	ug/L	23
009	MW-11A	Aqueous	Methyl tertiary butyl ether	8260B	0.77	J	ug/L	23
009	MW-11A	Aqueous	Naphthalene	8260B	0.47	J	ug/L	23
009	MW-11A	Aqueous	Naphthalene	8270D	0.72	J	ug/L	24
010	MW-11B	Aqueous	Methyl tertiary butyl ether	8260B	0.56	J	ug/L	25
010	MW-11B	Aqueous	Naphthalene	8270D	0.39	J	ug/L	26
011	MW-3	Aqueous	tert-Amyl alcohol (TAA)	8260B	98	J	ug/L	27
011	MW-3	Aqueous	Benzene	8260B	340		ug/L	27
011	MW-3	Aqueous	Ethylbenzene	8260B	21	J	ug/L	27
011	MW-3	Aqueous	Methyl tertiary butyl ether	8260B	6.2	J	ug/L	27
011	MW-3	Aqueous	Naphthalene	8260B	36		ug/L	27
011	MW-3	Aqueous	Toluene	8260B	56		ug/L	27
011	MW-3	Aqueous	Xylenes (total)	8260B	250		ug/L	27
011	MW-3	Aqueous	Benzo(a)anthracene	8270D	0.44	J	ug/L	27
011	MW-3	Aqueous	Benzo(a)pyrene	8270D	0.29	J	ug/L	27
011	MW-3	Aqueous	Benzo(b)fluoranthene	8270D	0.41	J	ug/L	27
011	MW-3	Aqueous	Benzo(g,h,i)perylene	8270D	0.24	J	ug/L	27
011	MW-3	Aqueous	Benzo(k)fluoranthene	8270D	0.22	J	ug/L	27
011	MW-3	Aqueous	Chrysene	8270D	0.31	J	ug/L	27
011	MW-3	Aqueous	Fluoranthene	8270D	0.92		ug/L	27
011	MW-3	Aqueous	Indeno(1,2,3-c,d)pyrene	8270D	0.20	J	ug/L	27
011	MW-3	Aqueous	Naphthalene	8270D	23		ug/L	28
011	MW-3	Aqueous	Phenanthrene	8270D	0.95		ug/L	28
011	MW-3	Aqueous	Pyrene	8270D	0.61	J	ug/L	28
011	MW-3	Aqueous	Lead	6010D	0.032		mg/L	28

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
012	MW-R2-10	Aqueous	tert-Amyl alcohol (TAA)	8260B	3200		ug/L	29
012	MW-R2-10	Aqueous	Benzene	8260B	6700		ug/L	29
012	MW-R2-10	Aqueous	Ethylbenzene	8260B	1500		ug/L	29
012	MW-R2-10	Aqueous	Methyl tertiary butyl ether	8260B	1200		ug/L	29
012	MW-R2-10	Aqueous	Naphthalene	8260B	540		ug/L	29
012	MW-R2-10	Aqueous	tert-butyl alcohol (TBA)	8260B	840	J	ug/L	29
012	MW-R2-10	Aqueous	Toluene	8260B	7500		ug/L	29
012	MW-R2-10	Aqueous	Xylenes (total)	8260B	8900		ug/L	29
012	MW-R2-10	Aqueous	Acenaphthene	8270D	0.21	J	ug/L	29
012	MW-R2-10	Aqueous	Fluorene	8270D	0.39	J	ug/L	29
012	MW-R2-10	Aqueous	Naphthalene	8270D	320		ug/L	30
012	MW-R2-10	Aqueous	Phenanthrene	8270D	0.27	J	ug/L	30
013	DUP C	Aqueous	tert-Amyl alcohol (TAA)	8260B	9000		ug/L	31
013	DUP C	Aqueous	tert-Amyl methyl ether	8260B	69	J	ug/L	31
013	DUP C	Aqueous	Benzene	8260B	7300		ug/L	31
013	DUP C	Aqueous	Ethylbenzene	8260B	1400		ug/L	31
013	DUP C	Aqueous	Methyl tertiary butyl ether	8260B	11000		ug/L	31
013	DUP C	Aqueous	Naphthalene	8260B	540		ug/L	31
013	DUP C	Aqueous	tert-butyl alcohol (TBA)	8260B	3000		ug/L	31
013	DUP C	Aqueous	Toluene	8260B	16000		ug/L	31
013	DUP C	Aqueous	Xylenes (total)	8260B	13000		ug/L	31
013	DUP C	Aqueous	Fluorene	8270D	0.30	J	ug/L	31
013	DUP C	Aqueous	Naphthalene	8270D	350		ug/L	32
013	DUP C	Aqueous	Phenanthrene	8270D	0.25	J	ug/L	32
013	DUP C	Aqueous	1,2-Dibromoethane (EDB)	8011	0.41		ug/L	32
014	DUP D	Aqueous	tert-Amyl alcohol (TAA)	8260B	3400		ug/L	33
014	DUP D	Aqueous	Benzene	8260B	6900		ug/L	33
014	DUP D	Aqueous	Ethylbenzene	8260B	1500		ug/L	33
014	DUP D	Aqueous	Methyl tertiary butyl ether	8260B	1300		ug/L	33
014	DUP D	Aqueous	Naphthalene	8260B	540		ug/L	33
014	DUP D	Aqueous	tert-butyl alcohol (TBA)	8260B	900	J	ug/L	33
014	DUP D	Aqueous	Toluene	8260B	7800		ug/L	33
014	DUP D	Aqueous	Xylenes (total)	8260B	9100		ug/L	33
014	DUP D	Aqueous	Acenaphthene	8270D	0.21	J	ug/L	33
014	DUP D	Aqueous	Fluorene	8270D	0.40	J	ug/L	33
014	DUP D	Aqueous	Naphthalene	8270D	340		ug/L	34
014	DUP D	Aqueous	Phenanthrene	8270D	0.25	J	ug/L	34

(130 detections)

Client: Carolina Technical Services, Inc.
Description: MW-R2-4
Date Sampled: 04/10/2019 1635
Date Received: 04/11/2019

Laboratory ID: UD11091-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/19/2019 1638	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	8300		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	54	J	1000	42	ug/L	1
Benzene	71-43-2	8260B	6600		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1200		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	8300		500	40	ug/L	1
Naphthalene	91-20-3	8260B	490	J	500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	3200		2000	800	ug/L	1
Toluene	108-88-3	8260B	14000		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	12000		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		85	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/18/2019 2338	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1500	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.37	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-4
Date Sampled: 04/10/2019 1635
Date Received: 04/11/2019

Laboratory ID: UD11091-001
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/18/2019 2338	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1500	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	370		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.23	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		107	38-127		108	38-127
2-Fluorobiphenyl		84	37-129		78	37-129
Terphenyl-d14		122	10-148		109	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0731	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	0.42		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		80	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 1944	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-5
Date Sampled: 04/10/2019 1555
Date Received: 04/11/2019

Laboratory ID: UD11091-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	04/19/2019 1703	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3100	J	4000	1600	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		2000	84	ug/L	1
Benzene	71-43-2	8260B	9100		1000	80	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	ND		20000	10000	ug/L	1
Ethylbenzene	100-41-4	8260B	1700		1000	80	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	2500		1000	80	ug/L	1
Naphthalene	91-20-3	8260B	600	J	1000	80	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		4000	1600	ug/L	1
Toluene	108-88-3	8260B	21000		1000	80	ug/L	1
Xylenes (total)	1330-20-7	8260B	12000		1000	90	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0003	SCD	04/17/2019 1332	13680
2	3520C	8270D	5	04/19/2019 1525	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	0.45	J	0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	0.44	J	0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	0.78	J	0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	0.65	J	0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	0.24	J	0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	0.26	J	0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	0.62	J	0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-R2-5
Date Sampled: 04/10/2019 1555
Date Received: 04/11/2019

Laboratory ID: UD11091-002
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0003	SCD	04/17/2019 1332	13680
2	3520C	8270D	5	04/19/2019 1525	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	0.40	J	0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	210		4.0	1.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.22	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	0.54	J	0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		80	38-127		80	38-127
2-Fluorobiphenyl		57	37-129		54	37-129
Terphenyl-d14		20	10-148		22	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0741	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		63	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2022	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-R2-9
Date Sampled: 04/10/2019 1245
Date Received: 04/11/2019

Laboratory ID: UD11091-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1433	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	25		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	1.2	J	5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	0.63	J	5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		92	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0028	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-9
Date Sampled: 04/10/2019 1245
Date Received: 04/11/2019

Laboratory ID: UD11091-003
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0028	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		89	38-127
2-Fluorobiphenyl		90	37-129
Terphenyl-d14		96	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0751	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		102	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2028	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0047	J	0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-15
Date Sampled: 04/10/2019 1510
Date Received: 04/11/2019

Laboratory ID: UD11091-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/19/2019 1728	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	2600		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	6600		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1500		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	150	J	500	40	ug/L	1
Naphthalene	91-20-3	8260B	330	J	500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		2000	800	ug/L	1
Toluene	108-88-3	8260B	11000		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	8800		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0053	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1550	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	0.29	J	0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.33	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-15
Date Sampled: 04/10/2019 1510
Date Received: 04/11/2019

Laboratory ID: UD11091-004
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0053	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1550	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	240		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.34	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		88	38-127		80	38-127
2-Fluorobiphenyl		74	37-129		69	37-129
Terphenyl-d14		114	10-148		104	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0801	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2033	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-R2-16
Date Sampled: 04/10/2019 1420
Date Received: 04/11/2019

Laboratory ID: UD11091-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	10	04/19/2019 1753	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	380		200	80	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		100	4.2	ug/L	1
Benzene	71-43-2	8260B	1100		50	4.0	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		50	20	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		50	4.0	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		50	4.0	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		200	80	ug/L	1
Ethanol	64-17-5	8260B	ND		1000	520	ug/L	1
Ethylbenzene	100-41-4	8260B	220		50	4.0	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		10	4.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	13	J	50	4.0	ug/L	1
Naphthalene	91-20-3	8260B	27	J	50	4.0	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		200	80	ug/L	1
Toluene	108-88-3	8260B	1900		50	4.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	1500		50	4.5	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0118	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-R2-16
Date Sampled: 04/10/2019 1420
Date Received: 04/11/2019

Laboratory ID: UD11091-005
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0118	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	16		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		77	38-127
2-Fluorobiphenyl		74	37-129
Terphenyl-d14		74	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0812	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		94	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2039	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-6B
Date Sampled: 04/10/2019 1135
Date Received: 04/11/2019

Laboratory ID: UD11091-006
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1458	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	2.6	J	5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	2.8	J	5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		92	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0233	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-6B
Date Sampled: 04/10/2019 1135
Date Received: 04/11/2019

Laboratory ID: UD11091-006
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 0233	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.29	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		79	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		120	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0822	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2044	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-6A
Date Sampled: 04/10/2019 1150
Date Received: 04/11/2019

Laboratory ID: UD11091-007
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1523	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	0.52	J	5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.61	J	5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1255	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-6A
Date Sampled: 04/10/2019 1150
Date Received: 04/11/2019

Laboratory ID: UD11091-007
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1255	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.29	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		84	38-127
2-Fluorobiphenyl		84	37-129
Terphenyl-d14		105	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0832	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2050	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0071	J	0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-11
Date Sampled: 04/10/2019 1335
Date Received: 04/11/2019

Laboratory ID: UD11091-008
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	50	04/19/2019 1818	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	1200		1000	400	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		500	21	ug/L	1
Benzene	71-43-2	8260B	2200		250	20	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		250	100	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		250	20	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		250	20	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		1000	400	ug/L	1
Ethanol	64-17-5	8260B	ND		5000	2600	ug/L	1
Ethylbenzene	100-41-4	8260B	180	J	250	20	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		250	20	ug/L	1
Naphthalene	91-20-3	8260B	27	J	250	20	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		1000	400	ug/L	1
Toluene	108-88-3	8260B	4400		250	20	ug/L	1
Xylenes (total)	1330-20-7	8260B	2900		250	23	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1345	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-R2-11
Date Sampled: 04/10/2019 1335
Date Received: 04/11/2019

Laboratory ID: UD11091-008
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1345	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	17		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		87	38-127
2-Fluorobiphenyl		82	37-129
Terphenyl-d14		138	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0842	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		87	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2055	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-11A
Date Sampled: 04/11/2019 1505
Date Received: 04/11/2019

Laboratory ID: UD11091-009
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1548	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	2.2	J	5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	0.77	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	0.47	J	5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		86	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1316	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-11A
Date Sampled: 04/11/2019 1505
Date Received: 04/11/2019

Laboratory ID: UD11091-009
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1316	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.72	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		79	38-127
2-Fluorobiphenyl		79	37-129
Terphenyl-d14		124	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0853	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		92	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2112	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-11B
Date Sampled: 04/11/2019 1515
Date Received: 04/11/2019

Laboratory ID: UD11091-010
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1613	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	0.56	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		92	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1340	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-11B
Date Sampled: 04/11/2019 1515
Date Received: 04/11/2019

Laboratory ID: UD11091-010
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1340	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.39	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		79	38-127
2-Fluorobiphenyl		78	37-129
Terphenyl-d14		122	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0903	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2117	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-3
Date Sampled: 04/11/2019 1215
Date Received: 04/11/2019

Laboratory ID: UD11091-011
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	5	04/19/2019 1843	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	98	J	100	40	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		50	2.1	ug/L	1
Benzene	71-43-2	8260B	340		25	2.0	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		25	10	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		25	2.0	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		25	2.0	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		100	40	ug/L	1
Ethanol	64-17-5	8260B	ND		500	260	ug/L	1
Ethylbenzene	100-41-4	8260B	21	J	25	2.0	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		5.0	2.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.2	J	25	2.0	ug/L	1
Naphthalene	91-20-3	8260B	36		25	2.0	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		100	40	ug/L	1
Toluene	108-88-3	8260B	56		25	2.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	250		25	2.3	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1452	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	0.44	J	0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	0.29	J	0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	0.41	J	0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	0.24	J	0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	0.22	J	0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	0.31	J	0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	0.92		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	0.20	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-3
Date Sampled: 04/11/2019 1215
Date Received: 04/11/2019

Laboratory ID: UD11091-011
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1452	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	23		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	0.95		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	0.61	J	0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		68	38-127
2-Fluorobiphenyl		66	37-129
Terphenyl-d14		67	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0913	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.022	0.022	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		81	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2122	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.032		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-R2-10
Date Sampled: 04/11/2019 1305
Date Received: 04/11/2019

Laboratory ID: UD11091-012
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/19/2019 1908	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3200		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	6700		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1500		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1200		500	40	ug/L	1
Naphthalene	91-20-3	8260B	540		500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	840	J	2000	800	ug/L	1
Toluene	108-88-3	8260B	7500		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	8900		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1516	SCD	04/18/2019 1518	13797
2	3520C	8270D	10	04/22/2019 1620	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	0.21	J	0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.39	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-R2-10
Date Sampled: 04/11/2019 1305
Date Received: 04/11/2019

Laboratory ID: UD11091-012
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1516	SCD	04/18/2019 1518	13797
2	3520C	8270D	10	04/22/2019 1620	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	320		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.27	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		82	38-127		82	38-127
2-Fluorobiphenyl		72	37-129		69	37-129
Terphenyl-d14		122	10-148		98	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0923	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		103	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2128	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP C
Date Sampled: 04/10/2019 1640
Date Received: 04/11/2019

Laboratory ID: UD11091-013
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/19/2019 1752	JJG		13974

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	9000		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	69	J	1000	42	ug/L	1
Benzene	71-43-2	8260B	7300		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1400		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	11000		500	40	ug/L	1
Naphthalene	91-20-3	8260B	540		500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	3000		2000	800	ug/L	1
Toluene	108-88-3	8260B	16000		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	13000		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		107	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		117	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1410	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1756	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.30	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP C
Date Sampled: 04/10/2019 1640
Date Received: 04/11/2019

Laboratory ID: UD11091-013
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1410	SCD	04/17/2019 1332	13680
2	3520C	8270D	10	04/19/2019 1756	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	350		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.25	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		103	38-127		105	38-127
2-Fluorobiphenyl		77	37-129		78	37-129
Terphenyl-d14		129	10-148		112	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0933	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	0.41		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		86	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2133	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP D
Date Sampled: 04/11/2019 1310
Date Received: 04/11/2019

Laboratory ID: UD11091-014
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/19/2019 1933	JJG		13971

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3400		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	6900		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1500		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1300		500	40	ug/L	1
Naphthalene	91-20-3	8260B	540		500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	900	J	2000	800	ug/L	1
Toluene	108-88-3	8260B	7800		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	9100		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1540	SCD	04/18/2019 1518	13797
2	3520C	8270D	10	04/22/2019 1644	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	0.21	J	0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.40	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP D
Date Sampled: 04/11/2019 1310
Date Received: 04/11/2019

Laboratory ID: UD11091-014
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1540	SCD	04/18/2019 1518	13797
2	3520C	8270D	10	04/22/2019 1644	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	340		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.25	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		80	38-127		79	38-127
2-Fluorobiphenyl		76	37-129		73	37-129
Terphenyl-d14		119	10-148		101	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 0944	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2139	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Field Blank 4
Date Sampled: 04/10/2019 1630
Date Received: 04/11/2019

Laboratory ID: UD11091-015
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1221	JJG		13974

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		113	70-130
Toluene-d8		119	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1435	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: Field Blank 4
Date Sampled: 04/10/2019 1630
Date Received: 04/11/2019

Laboratory ID: UD11091-015
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/19/2019 1435	SCD	04/17/2019 1332	13680

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		77	38-127
2-Fluorobiphenyl		78	37-129
Terphenyl-d14		128	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 1004	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		95	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2144	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Field Blank 5
Date Sampled: 04/11/2019 1540
Date Received: 04/11/2019

Laboratory ID: UD11091-016
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1243	JJG		13974

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		112	70-130
Toluene-d8		118	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1604	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: Field Blank 5
Date Sampled: 04/11/2019 1540
Date Received: 04/11/2019

Laboratory ID: UD11091-016
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/20/2019 1604	SCD	04/18/2019 1518	13797

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		83	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		118	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 1014	DAL1	04/16/2019 2015	13569

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		97	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 2150	JCF	04/18/2019 1929	13875

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Trip Blank
Date Sampled: 04/10/2019
Date Received: 04/11/2019

Laboratory ID: UD11091-017
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1306	JJG		13974

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		110	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		118	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: Trip Blank
Date Sampled: 04/10/2019
Date Received: 04/11/2019

Laboratory ID: UD11091-018
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/19/2019 1328	JJG		13974

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		110	70-130
Toluene-d8		115	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ13971-001
Batch: 13971
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/19/2019 1117
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/19/2019 1117
Benzene	ND		1	5.0	0.40	ug/L	04/19/2019 1117
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/19/2019 1117
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/19/2019 1117
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/19/2019 1117
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/19/2019 1117
Ethanol	ND		1	100	52	ug/L	04/19/2019 1117
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/19/2019 1117
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/19/2019 1117
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/19/2019 1117
Naphthalene	ND		1	5.0	0.40	ug/L	04/19/2019 1117
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/19/2019 1117
Toluene	ND		1	5.0	0.40	ug/L	04/19/2019 1117
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/19/2019 1117

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13971-002
Batch: 13971
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	930		1	93	70-130	04/19/2019 1028
tert-Amyl methyl ether (TAME)	50	46		1	91	70-130	04/19/2019 1028
Benzene	50	46		1	91	70-130	04/19/2019 1028
tert-Butyl formate (TBF)	250	260		1	106	70-130	04/19/2019 1028
1,2-Dichloroethane	50	45		1	91	70-130	04/19/2019 1028
Diisopropyl ether (IPE)	50	46		1	92	70-130	04/19/2019 1028
3,3-Dimethyl-1-butanol	1000	850		1	85	70-130	04/19/2019 1028
Ethanol	5000	3800		1	76	70-130	04/19/2019 1028
Ethylbenzene	50	50		1	100	70-130	04/19/2019 1028
Ethyl-tert-butyl ether (ETBE)	50	36		1	72	70-130	04/19/2019 1028
Methyl tertiary butyl ether (MTBE)	50	39		1	79	70-130	04/19/2019 1028
Naphthalene	50	50		1	100	70-130	04/19/2019 1028
tert-butyl alcohol (TBA)	1000	860		1	86	70-130	04/19/2019 1028
Toluene	50	48		1	97	70-130	04/19/2019 1028
Xylenes (total)	100	99		1	99	70-130	04/19/2019 1028

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MS

Sample ID: UD11091-005MS
Batch: 13971
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	380	10000	10000		10	99	70-130	04/19/2019 1958
tert-Amyl methyl ether (TAME)	ND	500	480		10	97	70-130	04/19/2019 1958
Benzene	1100	500	1500	N	10	62	70-130	04/19/2019 1958
tert-Butyl formate (TBF)	ND	2500	640	N	10	26	70-130	04/19/2019 1958
1,2-Dichloroethane	ND	500	500		10	99	70-130	04/19/2019 1958
Diisopropyl ether (IPE)	ND	500	470		10	95	70-130	04/19/2019 1958
3,3-Dimethyl-1-butanol	ND	10000	9100		10	91	70-130	04/19/2019 1958
Ethanol	ND	50000	40000		10	79	70-130	04/19/2019 1958
Ethylbenzene	220	500	700		10	97	70-130	04/19/2019 1958
Ethyl-tert-butyl ether (ETBE)	ND	500	380		10	76	70-130	04/19/2019 1958
Methyl tertiary butyl ether (MTBE)	13	500	430		10	82	70-130	04/19/2019 1958
Naphthalene	27	500	550		10	104	70-130	04/19/2019 1958
tert-butyl alcohol (TBA)	ND	10000	10000		10	100	70-130	04/19/2019 1958
Toluene	1900	500	2100	N	10	55	70-130	04/19/2019 1958
Xylenes (total)	1500	1000	2300		10	85	70-130	04/19/2019 1958

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD11091-005MD
Batch: 13971
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	380	10000	10000		10	99	0.43	70-130	20	04/19/2019 2024
tert-Amyl methyl ether (TAME)	ND	500	500		10	100	3.1	70-130	20	04/19/2019 2024
Benzene	1100	500	1500	N	10	61	0.13	70-130	20	04/19/2019 2024
tert-Butyl formate (TBF)	ND	2500	640	N	10	26	0.55	70-130	20	04/19/2019 2024
1,2-Dichloroethane	ND	500	500		10	99	0.027	70-130	20	04/19/2019 2024
Diisopropyl ether (IPE)	ND	500	480		10	95	0.43	70-130	20	04/19/2019 2024
3,3-Dimethyl-1-butanol	ND	10000	9000		10	90	0.78	70-130	20	04/19/2019 2024
Ethanol	ND	50000	38000		10	77	2.8	70-130	20	04/19/2019 2024
Ethylbenzene	220	500	700		10	96	0.26	70-130	20	04/19/2019 2024
Ethyl-tert-butyl ether (ETBE)	ND	500	390		10	78	3.5	70-130	20	04/19/2019 2024
Methyl tertiary butyl ether (MTBE)	13	500	440		10	85	2.8	70-130	20	04/19/2019 2024
Naphthalene	27	500	550		10	105	1.2	70-130	20	04/19/2019 2024
tert-butyl alcohol (TBA)	ND	10000	10000		10	102	1.7	70-130	20	04/19/2019 2024
Toluene	1900	500	2100	N	10	54	0.27	70-130	20	04/19/2019 2024
Xylenes (total)	1500	1000	2300		10	85	0.11	70-130	20	04/19/2019 2024

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		92	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ13974-001
Batch: 13974
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/19/2019 1136
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/19/2019 1136
Benzene	ND		1	5.0	0.40	ug/L	04/19/2019 1136
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/19/2019 1136
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/19/2019 1136
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/19/2019 1136
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/19/2019 1136
Ethanol	ND		1	100	52	ug/L	04/19/2019 1136
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/19/2019 1136
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/19/2019 1136
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/19/2019 1136
Naphthalene	ND		1	5.0	0.40	ug/L	04/19/2019 1136
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/19/2019 1136
Toluene	ND		1	5.0	0.40	ug/L	04/19/2019 1136
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/19/2019 1136

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		110	70-130
Toluene-d8		115	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13974-002
Batch: 13974
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	107	70-130	04/19/2019 1052
tert-Amyl methyl ether (TAME)	50	58		1	115	70-130	04/19/2019 1052
Benzene	50	55		1	110	70-130	04/19/2019 1052
tert-Butyl formate (TBF)	250	270		1	109	70-130	04/19/2019 1052
1,2-Dichloroethane	50	55		1	111	70-130	04/19/2019 1052
Diisopropyl ether (IPE)	50	55		1	111	70-130	04/19/2019 1052
3,3-Dimethyl-1-butanol	1000	1100		1	110	70-130	04/19/2019 1052
Ethanol	5000	5600		1	112	70-130	04/19/2019 1052
Ethylbenzene	50	56		1	113	70-130	04/19/2019 1052
Ethyl-tert-butyl ether (ETBE)	50	58		1	117	70-130	04/19/2019 1052
Methyl tertiary butyl ether (MTBE)	50	57		1	113	70-130	04/19/2019 1052
Naphthalene	50	57		1	113	70-130	04/19/2019 1052
tert-butyl alcohol (TBA)	1000	1100		1	109	70-130	04/19/2019 1052
Toluene	50	56		1	111	70-130	04/19/2019 1052
Xylenes (total)	100	110		1	110	70-130	04/19/2019 1052

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		110	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		116	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MS

Sample ID: UD11091-013MS
Batch: 13974
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	9000	100000	110000		100	104	70-130	04/19/2019 1814
tert-Amyl methyl ether (TAME)	69	5000	5300		100	105	70-130	04/19/2019 1814
Benzene	7300	5000	12000		100	85	70-130	04/19/2019 1814
tert-Butyl formate (TBF)	ND	25000	24000		100	97	70-130	04/19/2019 1814
1,2-Dichloroethane	ND	5000	5600		100	111	70-130	04/19/2019 1814
Diisopropyl ether (IPE)	ND	5000	5200		100	104	70-130	04/19/2019 1814
3,3-Dimethyl-1-butanol	ND	100000	110000		100	107	70-130	04/19/2019 1814
Ethanol	ND	500000	520000		100	103	70-130	04/19/2019 1814
Ethylbenzene	1400	5000	7000		100	111	70-130	04/19/2019 1814
Ethyl-tert-butyl ether (ETBE)	ND	5000	5300		100	107	70-130	04/19/2019 1814
Methyl tertiary butyl ether (MTBE)	11000	5000	15000		100	87	70-130	04/19/2019 1814
Naphthalene	540	5000	6200		100	114	70-130	04/19/2019 1814
tert-butyl alcohol (TBA)	3000	100000	110000		100	109	70-130	04/19/2019 1814
Toluene	16000	5000	20000	E	100	86	70-130	04/19/2019 1814
Xylenes (total)	13000	10000	23000		100	98	70-130	04/19/2019 1814

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		105	70-130
Bromofluorobenzene		112	70-130
Toluene-d8		117	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD11091-013MD
Batch: 13974
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	9000	100000	110000		100	100	3.1	70-130	20	04/19/2019 1836
tert-Amyl methyl ether (TAME)	69	5000	5200		100	102	3.2	70-130	20	04/19/2019 1836
Benzene	7300	5000	11000		100	80	2.3	70-130	20	04/19/2019 1836
tert-Butyl formate (TBF)	ND	25000	23000		100	94	3.5	70-130	20	04/19/2019 1836
1,2-Dichloroethane	ND	5000	5300		100	107	4.0	70-130	20	04/19/2019 1836
Diisopropyl ether (IPE)	ND	5000	5000		100	100	3.7	70-130	20	04/19/2019 1836
3,3-Dimethyl-1-butanol	ND	100000	100000		100	104	3.5	70-130	20	04/19/2019 1836
Ethanol	ND	500000	490000		100	97	5.9	70-130	20	04/19/2019 1836
Ethylbenzene	1400	5000	6800		100	109	1.7	70-130	20	04/19/2019 1836
Ethyl-tert-butyl ether (ETBE)	ND	5000	5100		100	103	4.2	70-130	20	04/19/2019 1836
Methyl tertiary butyl ether (MTBE)	11000	5000	15000		100	74	4.3	70-130	20	04/19/2019 1836
Naphthalene	540	5000	5900		100	107	6.2	70-130	20	04/19/2019 1836
tert-butyl alcohol (TBA)	3000	100000	110000		100	104	4.2	70-130	20	04/19/2019 1836
Toluene	16000	5000	20000		100	75	2.7	70-130	20	04/19/2019 1836
Xylenes (total)	13000	10000	22000		100	91	3.1	70-130	20	04/19/2019 1836

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		115	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ13680-001
Batch: 13680
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/17/2019 1332

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Anthracene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Chrysene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Fluoranthene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Fluorene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Naphthalene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Phenanthrene	ND		1	0.80	0.20	ug/L	04/18/2019 1902
Pyrene	ND		1	0.80	0.20	ug/L	04/18/2019 1902

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		81	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		121	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13680-002
Batch: 13680
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/17/2019 1332

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	32		1	81	30-122	04/18/2019 1927
Acenaphthylene	40	34		1	86	30-130	04/18/2019 1927
Anthracene	40	41		1	103	30-123	04/18/2019 1927
Benzo(a)anthracene	40	41		1	102	40-125	04/18/2019 1927
Benzo(a)pyrene	40	42		1	106	40-128	04/18/2019 1927
Benzo(b)fluoranthene	40	40		1	100	30-130	04/18/2019 1927
Benzo(g,h,i)perylene	40	39		1	98	30-130	04/18/2019 1927
Benzo(k)fluoranthene	40	39		1	97	30-130	04/18/2019 1927
Chrysene	40	41		1	101	30-130	04/18/2019 1927
Dibenzo(a,h)anthracene	40	39		1	97	30-130	04/18/2019 1927
Fluoranthene	40	41		1	103	40-128	04/18/2019 1927
Fluorene	40	35		1	88	30-124	04/18/2019 1927
Indeno(1,2,3-c,d)pyrene	40	39		1	98	30-130	04/18/2019 1927
Naphthalene	40	32		1	81	30-130	04/18/2019 1927
Phenanthrene	40	38		1	95	40-123	04/18/2019 1927
Pyrene	40	39		1	98	40-126	04/18/2019 1927

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		84	38-127
2-Fluorobiphenyl		84	37-129
Terphenyl-d14		116	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MS

Sample ID: UD11091-005MS
Batch: 13680
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/17/2019 1332

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	ND	80	68		1	84	30-122	04/19/2019 0143
Acenaphthylene	ND	80	68		1	85	30-130	04/19/2019 0143
Anthracene	ND	80	80		1	100	30-123	04/19/2019 0143
Benzo(a)anthracene	ND	80	75		1	93	40-125	04/19/2019 0143
Benzo(a)pyrene	ND	80	31	N	1	38	40-128	04/19/2019 0143
Benzo(b)fluoranthene	ND	80	61		1	76	30-130	04/19/2019 0143
Benzo(g,h,i)perylene	ND	80	49		1	62	30-130	04/19/2019 0143
Benzo(k)fluoranthene	ND	80	61		1	76	30-130	04/19/2019 0143
Chrysene	ND	80	69		1	86	30-130	04/19/2019 0143
Dibenzo(a,h)anthracene	ND	80	52		1	65	30-130	04/19/2019 0143
Fluoranthene	ND	80	82		1	102	40-128	04/19/2019 0143
Fluorene	ND	80	72		1	90	30-124	04/19/2019 0143
Indeno(1,2,3-c,d)pyrene	ND	80	52		1	66	30-130	04/19/2019 0143
Naphthalene	16	80	84		1	85	30-130	04/19/2019 0143
Phenanthrene	ND	80	78		1	98	40-123	04/19/2019 0143
Pyrene	ND	80	83		1	103	40-126	04/19/2019 0143

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		81	38-127
2-Fluorobiphenyl		84	37-129
Terphenyl-d14		97	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: UD11091-005MD
Batch: 13680
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/17/2019 1332

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	66		1	83	2.0	30-122	40	04/19/2019 0208
Acenaphthylene	ND	80	67		1	84	1.2	30-130	40	04/19/2019 0208
Anthracene	ND	80	80		1	99	0.96	30-123	40	04/19/2019 0208
Benzo(a)anthracene	ND	80	71		1	88	5.2	40-125	40	04/19/2019 0208
Benzo(a)pyrene	ND	80	28	N	1	35	10	40-128	40	04/19/2019 0208
Benzo(b)fluoranthene	ND	80	57		1	71	6.1	30-130	40	04/19/2019 0208
Benzo(g,h,i)perylene	ND	80	44		1	55	12	30-130	40	04/19/2019 0208
Benzo(k)fluoranthene	ND	80	57		1	71	6.8	30-130	40	04/19/2019 0208
Chrysene	ND	80	65		1	81	6.9	30-130	40	04/19/2019 0208
Dibenzo(a,h)anthracene	ND	80	47		1	58	11	30-130	40	04/19/2019 0208
Fluoranthene	ND	80	80		1	100	2.2	40-128	40	04/19/2019 0208
Fluorene	ND	80	72		1	90	0.86	30-124	40	04/19/2019 0208
Indeno(1,2,3-c,d)pyrene	ND	80	47		1	59	10	30-130	40	04/19/2019 0208
Naphthalene	16	80	87		1	89	3.4	30-130	40	04/19/2019 0208
Phenanthrene	ND	80	77		1	96	2.2	40-123	40	04/19/2019 0208
Pyrene	ND	80	80		1	100	3.5	40-126	40	04/19/2019 0208

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		86	38-127
2-Fluorobiphenyl		83	37-129
Terphenyl-d14		91	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ13797-001
Batch: 13797
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2019 1518

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Anthracene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Chrysene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Fluoranthene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Fluorene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Naphthalene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Phenanthrene	ND		1	0.80	0.20	ug/L	04/20/2019 1227
Pyrene	ND		1	0.80	0.20	ug/L	04/20/2019 1227

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		50	37-129
Terphenyl-d14		78	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13797-002
Batch: 13797
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/18/2019 1518

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	30		1	75	30-122	04/20/2019 1251
Acenaphthylene	40	29		1	72	30-130	04/20/2019 1251
Anthracene	40	37		1	94	30-123	04/20/2019 1251
Benzo(a)anthracene	40	39		1	97	40-125	04/20/2019 1251
Benzo(a)pyrene	40	42		1	106	40-128	04/20/2019 1251
Benzo(b)fluoranthene	40	40		1	101	30-130	04/20/2019 1251
Benzo(g,h,i)perylene	40	45		1	113	30-130	04/20/2019 1251
Benzo(k)fluoranthene	40	39		1	97	30-130	04/20/2019 1251
Chrysene	40	38		1	96	30-130	04/20/2019 1251
Dibenzo(a,h)anthracene	40	43		1	109	30-130	04/20/2019 1251
Fluoranthene	40	42		1	105	40-128	04/20/2019 1251
Fluorene	40	31		1	79	30-124	04/20/2019 1251
Indeno(1,2,3-c,d)pyrene	40	43		1	108	30-130	04/20/2019 1251
Naphthalene	40	29		1	73	30-130	04/20/2019 1251
Phenanthrene	40	36		1	89	40-123	04/20/2019 1251
Pyrene	40	41		1	102	40-126	04/20/2019 1251

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		74	38-127
2-Fluorobiphenyl		73	37-129
Terphenyl-d14		114	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13569-001
Batch: 13569
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 2015

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/17/2019 0650

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		96	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13569-002
Batch: 13569
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 2015

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.23		1	94	60-140	04/17/2019 0700

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - Duplicate

Sample ID: UD11091-014DU
Batch: 13569
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/16/2019 2015

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	ND		1	0.00	20	04/17/2019 0954

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		102	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

ICP-AES Metals - MB

Sample ID: UQ13875-001
Batch: 13875
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/18/2019 1929

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	04/19/2019 1933

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - LCS

Sample ID: UQ13875-002
Batch: 13875
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/18/2019 1929

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.42		1	104	80-120	04/19/2019 1938

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MS

Sample ID: UD11091-001MS
Batch: 13875
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/18/2019 1929

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	ND	0.40	0.43		1	107	75-125	04/19/2019 1949

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MSD

Sample ID: UD11091-001MD
Batch: 13875
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/18/2019 1929

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Lead	ND	0.40	0.43		1	108	1.2	75-125	20	04/19/2019 2006

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
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SHEALY **Chain of Custody Record**

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94875

Client: Carolina Technical Services Inc.	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 7130 Broad River Rd	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Irmo	State: SC	Zip Code: 29063	Printed Name: Cody Taylor	
Project Name: Broad River Amoco			
Project No.: 186580	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	# Containers	Matrix: Liquid	Matrix: Soil	Matrix: Air	No. of Containers by Preservation Type: Unpres.	HNO3	HCl	NaOH	H2SO4	Analysis: BTEX + MTBE + Naphthalene	PAH	LEAD	EDB	Remarks / Cooler I.D.
MWR2-4	4/10/19	1635	G	X			2		1	5		3	2	1	2	UD11091 LJO
MWR2-5	4/10/19	1555														
MWR2-9	4/10/19	1245														
MWR2-15	4/10/19	1510														
MWR2-16	4/10/19	1420														
MW-6B	4/10/19	1135														
MW-6A	4/10/19	1150														
MWR2-11	4/10/19	1335														
MW-11A	4/11/19	1505														
MW-11B	4/11/19	1515														

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Cody Taylor	4/11/19	1652	1. Received by		
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by: L Hall	Date: 4-11-19	Time: 1652

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): (Yes) No Ice Pack Receipt Temp: 2.1, 3.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 05-01-2014

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Chain of Custody Record

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106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 94877

Client: Carolina Technical Services Inc
Address: 7130 Broad River Rd
City: Irmo | State: SC | Zip Code: 29063
Project Name: Broad River Arco
Project No.: IT-6580
Report to Contact: William Wood
Sampler's Signature: X Cody Alexander
Printed Name: Cody Alexander
Telephone No. / E-mail: 843-610-1953
Quote No.
Page 2 of 2
UD11091
LJO

Sample ID / Description (Containers for each sample may be combined on one line)	P.O. No. / Date	Time	Matrix: Grab/Time Composite	Matrix: Aqueous	Matrix: Soil	Matrix: Other Solids	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnOAc/NaOH	Analysis: BTEX+MTBE+Naphthalene	PAH	Lead	EDB	Remarks / Cooler I.D.
MW-3	4/10/19	1215	G	X			2		1	5			3	2	1	2	
MWR2-10	4/11/19	1305															
Dup C	4/10/19	1640															
Dup D	4/11/19	1310															
Field Blank 4	4/10/19	1630															
Field Blank 5	4/11/19	1540															
Trip Blank																	
Trip Blank																	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Cody Alexander	4/11/19	1652	1. Received by		
2. Relinquished by	Date	Time	2. Received by		
3. Relinquished by	Date	Time	3. Received by		
4. Relinquished by	Date	Time	4. Laboratory received by: L Hill	4-11-19	1652

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): (Yes) No Ice Pack
Receipt Temp: 2.1, 3.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Shealy Environmental Services, Inc.
Document Number: ME0018C-14
Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: Carolina Technical Services Cooler Inspected by/date: ETB / 4/11/19 Lot #: UD11091

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 18-2225 Chlorine Strip ID: NA Tested by: ETB

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

2.1 / 2.1 °C 3.4 / 3.4 °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☑ Yes	☐ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: ETB Date: 4/11/19

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Project Number: 18-6580

Lot Number:**UD12101**

Date Completed:04/24/2019

04/24/2019 1:18 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD12101

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD12101

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-10A	Aqueous	04/12/2019 1145	04/12/2019
002	MW-13A	Aqueous	04/12/2019 1350	04/12/2019
003	MWR2-13	Aqueous	04/12/2019 1335	04/12/2019
004	DUP E	Aqueous	04/12/2019 1150	04/12/2019
005	FIELD BLANK 6	Aqueous	04/12/2019 1450	04/12/2019
006	TRIP BLANK	Aqueous	04/12/2019	04/12/2019

(6 samples)

Detection Summary

Carolina Technical Services, Inc.

Lot Number: UD12101

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-10A	Aqueous	Lead	6010D	0.014		mg/L	6
003	MWR2-13	Aqueous	Lead	6010D	0.037		mg/L	10
004	DUP E	Aqueous	Lead	6010D	0.015		mg/L	12

(3 detections)

Client: Carolina Technical Services, Inc.
Description: MW-10A
Date Sampled: 04/12/2019 1145
Date Received: 04/12/2019

Laboratory ID: UD12101-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0016	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		117	70-130
Toluene-d8		110	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1141	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-10A
Date Sampled: 04/12/2019 1145
Date Received: 04/12/2019

Laboratory ID: UD12101-001
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1141	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		67	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		84	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 2256	DAL1	04/17/2019 1623	13698

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0525	JCF	04/17/2019 1833	13658

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.014		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-13A
Date Sampled: 04/12/2019 1350
Date Received: 04/12/2019

Laboratory ID: UD12101-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0039	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		114	70-130
Toluene-d8		109	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1204	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-13A
Date Sampled: 04/12/2019 1350
Date Received: 04/12/2019

Laboratory ID: UD12101-002
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1204	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		66	38-127
2-Fluorobiphenyl		78	37-129
Terphenyl-d14		81	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 2306	DAL1	04/17/2019 1623	13698

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		87	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0531	JCF	04/17/2019 1833	13658

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-13
Date Sampled: 04/12/2019 1335
Date Received: 04/12/2019

Laboratory ID: UD12101-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0102	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		115	70-130
Toluene-d8		111	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1227	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-13
Date Sampled: 04/12/2019 1335
Date Received: 04/12/2019

Laboratory ID: UD12101-003
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1227	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		81	38-127
2-Fluorobiphenyl		88	37-129
Terphenyl-d14		67	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 2316	DAL1	04/17/2019 1623	13698

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		89	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0536	JCF	04/17/2019 1833	13658

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.037		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP E
Date Sampled: 04/12/2019 1150
Date Received: 04/12/2019

Laboratory ID: UD12101-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0125	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		115	70-130
Toluene-d8		110	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1250	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: DUP E
Date Sampled: 04/12/2019 1150
Date Received: 04/12/2019

Laboratory ID: UD12101-004
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1250	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		70	38-127
2-Fluorobiphenyl		83	37-129
Terphenyl-d14		88	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 2326	DAL1	04/17/2019 1623	13698

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		87	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0553	JCF	04/17/2019 1833	13658

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.015		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 6
Date Sampled: 04/12/2019 1450
Date Received: 04/12/2019

Laboratory ID: UD12101-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0148	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		115	70-130
Toluene-d8		108	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1314	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 6
Date Sampled: 04/12/2019 1450
Date Received: 04/12/2019

Laboratory ID: UD12101-005
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/23/2019 1314	JCG	04/19/2019 1515	13988

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		71	38-127
2-Fluorobiphenyl		81	37-129
Terphenyl-d14		124	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/17/2019 2336	DAL1	04/17/2019 1623	13698

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		87	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/19/2019 0558	JCF	04/17/2019 1833	13658

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: TRIP BLANK
Date Sampled: 04/12/2019
Date Received: 04/12/2019

Laboratory ID: UD12101-006
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/21/2019 0211	STM		14054

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		113	70-130
Toluene-d8		108	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14054-001
Batch: 14054
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/20/2019 1900
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/20/2019 1900
Benzene	ND		1	5.0	0.40	ug/L	04/20/2019 1900
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/20/2019 1900
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/20/2019 1900
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/20/2019 1900
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/20/2019 1900
Ethanol	ND		1	100	52	ug/L	04/20/2019 1900
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/20/2019 1900
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/20/2019 1900
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/20/2019 1900
Naphthalene	ND		1	5.0	0.40	ug/L	04/20/2019 1900
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/20/2019 1900
Toluene	ND		1	5.0	0.40	ug/L	04/20/2019 1900
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/20/2019 1900

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		112	70-130
Toluene-d8		108	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14054-002
Batch: 14054
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	1100		1	108	70-130	04/20/2019 1711
tert-Amyl methyl ether (TAME)	50	56		1	113	70-130	04/20/2019 1711
Benzene	50	53		1	107	70-130	04/20/2019 1711
tert-Butyl formate (TBF)	250	320		1	129	70-130	04/20/2019 1711
1,2-Dichloroethane	50	55		1	109	70-130	04/20/2019 1711
Diisopropyl ether (IPE)	50	57		1	114	70-130	04/20/2019 1711
3,3-Dimethyl-1-butanol	1000	1100		1	110	70-130	04/20/2019 1711
Ethanol	5000	5500		1	110	70-130	04/20/2019 1711
Ethylbenzene	50	55		1	111	70-130	04/20/2019 1711
Ethyl-tert-butyl ether (ETBE)	50	56		1	111	70-130	04/20/2019 1711
Methyl tertiary butyl ether (MTBE)	50	55		1	110	70-130	04/20/2019 1711
Naphthalene	50	56		1	111	70-130	04/20/2019 1711
tert-butyl alcohol (TBA)	1000	1100		1	106	70-130	04/20/2019 1711
Toluene	50	55		1	110	70-130	04/20/2019 1711
Xylenes (total)	100	110		1	109	70-130	04/20/2019 1711

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		110	70-130
Toluene-d8		107	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ13988-001
Batch: 13988
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/19/2019 1515

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Anthracene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Chrysene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Fluoranthene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Fluorene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Naphthalene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Phenanthrene	ND		1	0.80	0.20	ug/L	04/23/2019 1055
Pyrene	ND		1	0.80	0.20	ug/L	04/23/2019 1055

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		69	38-127
2-Fluorobiphenyl		84	37-129
Terphenyl-d14		126	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ13988-002
Batch: 13988
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/19/2019 1515

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	32		1	80	30-122	04/23/2019 1118
Acenaphthylene	40	31		1	78	30-130	04/23/2019 1118
Anthracene	40	40		1	100	30-123	04/23/2019 1118
Benzo(a)anthracene	40	38		1	95	40-125	04/23/2019 1118
Benzo(a)pyrene	40	37		1	93	40-128	04/23/2019 1118
Benzo(b)fluoranthene	40	35		1	88	30-130	04/23/2019 1118
Benzo(g,h,i)perylene	40	42		1	105	30-130	04/23/2019 1118
Benzo(k)fluoranthene	40	36		1	90	30-130	04/23/2019 1118
Chrysene	40	38		1	95	30-130	04/23/2019 1118
Dibenzo(a,h)anthracene	40	36		1	89	30-130	04/23/2019 1118
Fluoranthene	40	40		1	99	40-128	04/23/2019 1118
Fluorene	40	35		1	87	30-124	04/23/2019 1118
Indeno(1,2,3-c,d)pyrene	40	37		1	92	30-130	04/23/2019 1118
Naphthalene	40	32		1	81	30-130	04/23/2019 1118
Phenanthrene	40	38		1	94	40-123	04/23/2019 1118
Pyrene	40	35		1	88	40-126	04/23/2019 1118

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		79	38-127
2-Fluorobiphenyl		86	37-129
Terphenyl-d14		113	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ13698-001
Batch: 13698
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/17/2019 1623

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/17/2019 2022

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		84	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ13698-002
Batch: 13698
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/17/2019 1623

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.20		1	78	60-140	04/17/2019 2033

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		83	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MB

Sample ID: UQ13658-001
Batch: 13658
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	04/19/2019 0306

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - LCS

Sample ID: UQ13658-002
Batch: 13658
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/17/2019 1833

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.40		1	100	80-120	04/19/2019 0312

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Chain of Custody
and
Miscellaneous Documents

SHEALY **Chain of Custody Record**

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Telephone No. 803-791-9700 Fax No. 803-791-9111
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Number 94878

Client: CAROLINA TECHNICAL SERVICES INC	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 1130 BROAD RIVER RD	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)	Page 1 / 1
City: IRMO · State: SC · Zip Code: 29063	Printed Name: KEVIN WESSINGER		UD12101
Project Name: BROAD RIVER AMACO			1.0
Project No.: 18-6580 · P.O. No.			

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous		Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3		BTEX+[illegible]	PAH	LEAD	EDB	Remarks / Cooler I.D.
MW-10A	4/12/19	1145	G	X				2		1	5				3	2	1	2	
MW-13A	4/12/19	1350	↓	↓				↓		↓	↓				↓	↓	↓	↓	
MWR2-13	4/12/19	1335	↓	↓				↓		↓	↓				↓	↓	↓	↓	
Dup E	4/12/19	1150	↓	↓				↓		↓	↓				↓	↓	↓	↓	
Field Blank 6	4/12/19	1450	↓	↓				↓		↓	↓				↓	↓	↓	↓	
Trip Blank																			

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by [signature]	4/12/19	1448	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by [signature]	4.12.19	1648

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp. 3.9 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Sample Receipt Checklist (SRC)

Client: CTSI Cooler Inspected by/date: ECC / 4/12/12 Lot #: UD12101

Means of receipt: ☐ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 18-2225 Chlorine Strip ID: NA Tested by: ECC

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.9 / 3.9 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☑ Yes	☐ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) ~~820 TB(2)~~ ECC 4/12/19 _____ were received with bubbles >6 mm in diameter.

Samples(s) NA _____ were received with TRC > 0.5 mg/l. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: ECC Date: 4/12/19

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Lot Number:**UD17001**

Date Completed:05/02/2019

05/02/2019 1:43 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD17001

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

VOCs by GC/MS

The following samples were received with solid in the sample vial: UD17001-005, UD17001-008. The liquid was decanted from vial and analyzed on instrument.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD17001

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-10B	Aqueous	04/15/2019 0950	04/16/2019
002	DUP-F	Aqueous	04/15/2019 1015	04/16/2019
003	MW-9A	Aqueous	04/15/2019 1135	04/16/2019
004	MWR2-14	Aqueous	04/15/2019 1330	04/16/2019
005	MW-20A	Aqueous	04/15/2019 1530	04/16/2019
006	MW-20B	Aqueous	04/15/2019 1545	04/16/2019
007	FIELD BLANK 7	Aqueous	04/15/2019 1615	04/16/2019
008	MW-19B	Aqueous	04/15/2019 1745	04/16/2019
009	TRIP BLANK 01	Aqueous	04/15/2019	04/16/2019
010	MW-9B	Aqueous	04/16/2019 1100	04/16/2019
011	MW-18B	Aqueous	04/16/2019 1210	04/16/2019
012	DUP-G	Aqueous	04/16/2019 1220	04/16/2019
013	MW-17B	Aqueous	04/16/2019 1235	04/16/2019
014	FIELD BLANK 8	Aqueous	04/16/2019 1250	04/16/2019
015	MW-21A	Aqueous	04/16/2019 1430	04/16/2019
016	TRIP BLANK 02	Aqueous	04/16/2019	04/16/2019

(16 samples)

Detection Summary
Carolina Technical Services, Inc.
Lot Number: UD17001

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	DUP-F	Aqueous	Lead	6010D	0.0057	J	mg/L	9
003	MW-9A	Aqueous	Benzene	8260B	2.0	J	ug/L	10
003	MW-9A	Aqueous	Ethylbenzene	8260B	2.8	J	ug/L	10
003	MW-9A	Aqueous	Methyl tertiary butyl ether	8260B	1.7	J	ug/L	10
003	MW-9A	Aqueous	Naphthalene	8260B	1.5	J	ug/L	10
003	MW-9A	Aqueous	Toluene	8260B	13		ug/L	10
003	MW-9A	Aqueous	Xylenes (total)	8260B	24		ug/L	10
003	MW-9A	Aqueous	Naphthalene	8270D	0.55	J	ug/L	11
004	MWR2-14	Aqueous	tert-Amyl alcohol (TAA)	8260B	520		ug/L	12
004	MWR2-14	Aqueous	Benzene	8260B	550		ug/L	12
004	MWR2-14	Aqueous	1,2-Dichloroethane	8260B	15	J	ug/L	12
004	MWR2-14	Aqueous	Ethylbenzene	8260B	700		ug/L	12
004	MWR2-14	Aqueous	Methyl tertiary butyl ether	8260B	130		ug/L	12
004	MWR2-14	Aqueous	Naphthalene	8260B	220		ug/L	12
004	MWR2-14	Aqueous	Toluene	8260B	640		ug/L	12
004	MWR2-14	Aqueous	Xylenes (total)	8260B	3600		ug/L	12
004	MWR2-14	Aqueous	Anthracene	8270D	0.26	J	ug/L	12
004	MWR2-14	Aqueous	Fluorene	8270D	0.29	J	ug/L	12
004	MWR2-14	Aqueous	Naphthalene	8270D	170		ug/L	13
004	MWR2-14	Aqueous	Phenanthrene	8270D	0.35	J	ug/L	13
004	MWR2-14	Aqueous	Pyrene	8270D	0.54	J	ug/L	13
005	MW-20A	Aqueous	Benzene	8260B	22		ug/L	14
005	MW-20A	Aqueous	Ethylbenzene	8260B	41		ug/L	14
005	MW-20A	Aqueous	Methyl tertiary butyl ether	8260B	0.44	J	ug/L	14
005	MW-20A	Aqueous	Naphthalene	8260B	17		ug/L	14
005	MW-20A	Aqueous	Toluene	8260B	88		ug/L	14
005	MW-20A	Aqueous	Xylenes (total)	8260B	240		ug/L	14
005	MW-20A	Aqueous	Naphthalene	8270D	6.6		ug/L	15
005	MW-20A	Aqueous	Lead	6010D	0.055		mg/L	15
006	MW-20B	Aqueous	Methyl tertiary butyl ether	8260B	11		ug/L	16
008	MW-19B	Aqueous	tert-Amyl alcohol (TAA)	8260B	20		ug/L	20
008	MW-19B	Aqueous	Benzene	8260B	1.1	J	ug/L	20
008	MW-19B	Aqueous	Methyl tertiary butyl ether	8260B	1.1	J	ug/L	20
008	MW-19B	Aqueous	tert-butyl alcohol (TBA)	8260B	13	J	ug/L	20
008	MW-19B	Aqueous	Toluene	8260B	0.82	J	ug/L	20
008	MW-19B	Aqueous	Lead	6010D	0.086		mg/L	21
010	MW-9B	Aqueous	Methyl tertiary butyl ether	8260B	1.7	J	ug/L	23
013	MW-17B	Aqueous	tert-Amyl alcohol (TAA)	8260B	520		ug/L	29
013	MW-17B	Aqueous	tert-Amyl methyl ether	8260B	0.95	J	ug/L	29
013	MW-17B	Aqueous	Benzene	8260B	62		ug/L	29
013	MW-17B	Aqueous	1,2-Dichloroethane	8260B	2.0	J	ug/L	29
013	MW-17B	Aqueous	Diisopropyl ether (IPE)	8260B	5.6		ug/L	29
013	MW-17B	Aqueous	Ethylbenzene	8260B	0.74	J	ug/L	29
013	MW-17B	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260B	1.7		ug/L	29
013	MW-17B	Aqueous	Methyl tertiary butyl ether	8260B	270		ug/L	29

Detection Summary (Continued)

Lot Number: UD17001

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
013	MW-17B	Aqueous	Naphthalene	8260B	6.0		ug/L	29
013	MW-17B	Aqueous	tert-butyl alcohol (TBA)	8260B	1800		ug/L	29
013	MW-17B	Aqueous	Toluene	8260B	0.51	J	ug/L	29
013	MW-17B	Aqueous	Xylenes (total)	8260B	11		ug/L	29
013	MW-17B	Aqueous	Naphthalene	8270D	3.4		ug/L	30
015	MW-21A	Aqueous	Benzene	8260B	4.9	J	ug/L	33
015	MW-21A	Aqueous	Xylenes (total)	8260B	0.77	J	ug/L	33
015	MW-21A	Aqueous	Lead	6010D	0.0053	J	mg/L	34

(53 detections)

Client: Carolina Technical Services, Inc.
Description: MW-10B
Date Sampled: 04/15/2019 0950
Date Received: 04/16/2019

Laboratory ID: UD17001-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1637	JJG		14474

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		122	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		112	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1251	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-10B
Date Sampled: 04/15/2019 0950
Date Received: 04/16/2019

Laboratory ID: UD17001-001
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1251	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		93	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1053	DAL1	04/22/2019 1803	14210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1819	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP-F
Date Sampled: 04/15/2019 1015
Date Received: 04/16/2019

Laboratory ID: UD17001-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1333	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1314	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: DUP-F
Date Sampled: 04/15/2019 1015
Date Received: 04/16/2019

Laboratory ID: UD17001-002
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1314	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		60	38-127
2-Fluorobiphenyl		71	37-129
Terphenyl-d14		101	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1104	DAL1	04/22/2019 1803	14210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		93	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1825	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0057	J	0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-9A
Date Sampled: 04/15/2019 1135
Date Received: 04/16/2019

Laboratory ID: UD17001-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1358	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	2.0	J	5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	2.8	J	5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.7	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	1.5	J	5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	13		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	24		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1337	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-9A
Date Sampled: 04/15/2019 1135
Date Received: 04/16/2019

Laboratory ID: UD17001-003
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1337	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	0.55	J	0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		38	38-127
2-Fluorobiphenyl		49	37-129
Terphenyl-d14		68	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1114	DAL1	04/22/2019 1803	14210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		96	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1830	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-14
Date Sampled: 04/15/2019 1330
Date Received: 04/16/2019

Laboratory ID: UD17001-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	20	04/24/2019 2011	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	520		400	160	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		200	8.4	ug/L	1
Benzene	71-43-2	8260B	550		100	8.0	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		100	40	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	15	J	100	8.0	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		100	8.0	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		400	160	ug/L	1
Ethanol	64-17-5	8260B	ND		2000	1000	ug/L	1
Ethylbenzene	100-41-4	8260B	700		100	8.0	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		20	8.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	130		100	8.0	ug/L	1
Naphthalene	91-20-3	8260B	220		100	8.0	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		400	160	ug/L	1
Toluene	108-88-3	8260B	640		100	8.0	ug/L	1
Xylenes (total)	1330-20-7	8260B	3600		100	9.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		89	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1400	JCG	04/22/2019 1207	14098
2	3520C	8270D	5	04/24/2019 2010	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	0.26	J	0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.29	J	0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-14
Date Sampled: 04/15/2019 1330
Date Received: 04/16/2019

Laboratory ID: UD17001-004
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1400	JCG	04/22/2019 1207	14098
2	3520C	8270D	5	04/24/2019 2010	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	170		4.0	1.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.35	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	0.54	J	0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		65	38-127		59	38-127
2-Fluorobiphenyl		71	37-129		69	37-129
Terphenyl-d14		100	10-148		98	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1124	DAL1	04/22/2019 1803	14210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		108	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1836	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-20A
Date Sampled: 04/15/2019 1530
Date Received: 04/16/2019

Laboratory ID: UD17001-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1422	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	22		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	41		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	0.44	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	17		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	88		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	240		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		89	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1423	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-20A
Date Sampled: 04/15/2019 1530
Date Received: 04/16/2019

Laboratory ID: UD17001-005
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1423	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	6.6		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		51	38-127
2-Fluorobiphenyl		63	37-129
Terphenyl-d14		83	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1145	DAL1	04/22/2019 1803	14210

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1841	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.055		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-20B
Date Sampled: 04/15/2019 1545
Date Received: 04/16/2019

Laboratory ID: UD17001-006
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1447	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	11		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		79	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1446	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-20B
Date Sampled: 04/15/2019 1545
Date Received: 04/16/2019

Laboratory ID: UD17001-006
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1446	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		54	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		92	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1220	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1847	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 7
Date Sampled: 04/15/2019 1615
Date Received: 04/16/2019

Laboratory ID: UD17001-007
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1513	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1509	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 7
Date Sampled: 04/15/2019 1615
Date Received: 04/16/2019

Laboratory ID: UD17001-007
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1509	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	38-127
2-Fluorobiphenyl		74	37-129
Terphenyl-d14		100	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1241	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		84	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1903	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-19B
Date Sampled: 04/15/2019 1745
Date Received: 04/16/2019

Laboratory ID: UD17001-008
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1537	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	20		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	1.1	J	5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.1	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	13	J	20	8.0	ug/L	1
Toluene	108-88-3	8260B	0.82	J	5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1532	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-19B
Date Sampled: 04/15/2019 1745
Date Received: 04/16/2019

Laboratory ID: UD17001-008
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1532	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	38-127
2-Fluorobiphenyl		69	37-129
Terphenyl-d14		91	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1252	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.021	0.021	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		108	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1909	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.086		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: TRIP BLANK 01
Date Sampled: 04/15/2019
Date Received: 04/16/2019

Laboratory ID: UD17001-009
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1602	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-9B
Date Sampled: 04/16/2019 1100
Date Received: 04/16/2019

Laboratory ID: UD17001-010
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1627	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1.7	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1556	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-9B
Date Sampled: 04/16/2019 1100
Date Received: 04/16/2019

Laboratory ID: UD17001-010
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1556	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	38-127
2-Fluorobiphenyl		72	37-129
Terphenyl-d14		91	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1303	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1914	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-18B
Date Sampled: 04/16/2019 1210
Date Received: 04/16/2019

Laboratory ID: UD17001-011
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1651	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1619	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-18B
Date Sampled: 04/16/2019 1210
Date Received: 04/16/2019

Laboratory ID: UD17001-011
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/24/2019 1619	JCG	04/22/2019 1207	14098

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	38-127
2-Fluorobiphenyl		71	37-129
Terphenyl-d14		97	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1324	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		88	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1919	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: DUP-G
Date Sampled: 04/16/2019 1220
Date Received: 04/16/2019

Laboratory ID: UD17001-012
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1716	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1450	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: DUP-G
Date Sampled: 04/16/2019 1220
Date Received: 04/16/2019

Laboratory ID: UD17001-012
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1450	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		56	38-127
2-Fluorobiphenyl		73	37-129
Terphenyl-d14		97	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1335	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		98	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1925	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-17B
Date Sampled: 04/16/2019 1235
Date Received: 04/16/2019

Laboratory ID: UD17001-013
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1741	JJG		14477
2	5030B	8260B	5	04/26/2019 0457	STM		14707

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	520		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	0.95	J	10	0.42	ug/L	1
Benzene	71-43-2	8260B	62		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	2.0	J	5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	5.6		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	0.74	J	5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	1.7		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	270		25	2.0	ug/L	2
Naphthalene	91-20-3	8260B	6.0		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	1800		20	8.0	ug/L	1
Toluene	108-88-3	8260B	0.51	J	5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	11		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		77	70-130		85	70-130
Bromofluorobenzene		88	70-130		88	70-130
Toluene-d8		90	70-130		91	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1513	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-17B
Date Sampled: 04/16/2019 1235
Date Received: 04/16/2019

Laboratory ID: UD17001-013
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1513	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	3.4		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		64	37-129
Terphenyl-d14		96	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1345	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		83	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1930	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 8
Date Sampled: 04/16/2019 1250
Date Received: 04/16/2019

Laboratory ID: UD17001-014
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1806	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		90	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1536	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: FIELD BLANK 8
Date Sampled: 04/16/2019 1250
Date Received: 04/16/2019

Laboratory ID: UD17001-014
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1536	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		95	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1356	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1936	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-21A
Date Sampled: 04/16/2019 1430
Date Received: 04/16/2019

Laboratory ID: UD17001-015
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1831	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	4.9	J	5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.77	J	5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		89	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1559	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-21A
Date Sampled: 04/16/2019 1430
Date Received: 04/16/2019

Laboratory ID: UD17001-015
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1559	JCG	04/23/2019 1318	14278

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		66	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1407	DAL1	04/23/2019 0854	14242

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		113	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	05/01/2019 1942	LLL	04/24/2019 0915	14288

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0053	J	0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: TRIP BLANK 02
Date Sampled: 04/16/2019
Date Received: 04/16/2019

Laboratory ID: UD17001-016
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/24/2019 1856	JJG		14477

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		89	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14474-001
Batch: 14474
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/24/2019 1047
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/24/2019 1047
Benzene	ND		1	5.0	0.40	ug/L	04/24/2019 1047
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/24/2019 1047
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/24/2019 1047
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/24/2019 1047
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/24/2019 1047
Ethanol	ND		1	100	52	ug/L	04/24/2019 1047
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/24/2019 1047
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/24/2019 1047
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/24/2019 1047
Naphthalene	ND		1	5.0	0.40	ug/L	04/24/2019 1047
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/24/2019 1047
Toluene	ND		1	5.0	0.40	ug/L	04/24/2019 1047
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/24/2019 1047

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		116	70-130
Bromofluorobenzene		116	70-130
Toluene-d8		112	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14474-002
Batch: 14474
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	990		1	99	70-130	04/24/2019 1001
tert-Amyl methyl ether (TAME)	50	53		1	107	70-130	04/24/2019 1001
Benzene	50	49		1	98	70-130	04/24/2019 1001
tert-Butyl formate (TBF)	250	310		1	125	70-130	04/24/2019 1001
1,2-Dichloroethane	50	55		1	110	70-130	04/24/2019 1001
Diisopropyl ether (IPE)	50	53		1	106	70-130	04/24/2019 1001
3,3-Dimethyl-1-butanol	1000	970		1	97	70-130	04/24/2019 1001
Ethanol	5000	4500		1	90	70-130	04/24/2019 1001
Ethylbenzene	50	51		1	102	70-130	04/24/2019 1001
Ethyl-tert-butyl ether (ETBE)	50	51		1	103	70-130	04/24/2019 1001
Methyl tertiary butyl ether (MTBE)	50	50		1	99	70-130	04/24/2019 1001
Naphthalene	50	49		1	99	70-130	04/24/2019 1001
tert-butyl alcohol (TBA)	1000	1000		1	100	70-130	04/24/2019 1001
Toluene	50	50		1	101	70-130	04/24/2019 1001
Xylenes (total)	100	100		1	102	70-130	04/24/2019 1001

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		111	70-130
Bromofluorobenzene		110	70-130
Toluene-d8		109	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14477-001
Batch: 14477
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/24/2019 1139
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/24/2019 1139
Benzene	ND		1	5.0	0.40	ug/L	04/24/2019 1139
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/24/2019 1139
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/24/2019 1139
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/24/2019 1139
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/24/2019 1139
Ethanol	ND		1	100	52	ug/L	04/24/2019 1139
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/24/2019 1139
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/24/2019 1139
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/24/2019 1139
Naphthalene	ND		1	5.0	0.40	ug/L	04/24/2019 1139
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/24/2019 1139
Toluene	ND		1	5.0	0.40	ug/L	04/24/2019 1139
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/24/2019 1139

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14477-002
Batch: 14477
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	950		1	95	70-130	04/24/2019 1226
tert-Amyl methyl ether (TAME)	50	48		1	96	70-130	04/24/2019 1226
Benzene	50	46		1	93	70-130	04/24/2019 1226
tert-Butyl formate (TBF)	250	270		1	107	70-130	04/24/2019 1226
1,2-Dichloroethane	50	46		1	92	70-130	04/24/2019 1226
Diisopropyl ether (IPE)	50	46		1	93	70-130	04/24/2019 1226
3,3-Dimethyl-1-butanol	1000	870		1	87	70-130	04/24/2019 1226
Ethanol	5000	3900		1	79	70-130	04/24/2019 1226
Ethylbenzene	50	49		1	99	70-130	04/24/2019 1226
Ethyl-tert-butyl ether (ETBE)	50	37		1	74	70-130	04/24/2019 1226
Methyl tertiary butyl ether (MTBE)	50	41		1	82	70-130	04/24/2019 1226
Naphthalene	50	49		1	98	70-130	04/24/2019 1226
tert-butyl alcohol (TBA)	1000	870		1	87	70-130	04/24/2019 1226
Toluene	50	48		1	96	70-130	04/24/2019 1226
Xylenes (total)	100	100		1	100	70-130	04/24/2019 1226

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MS

Sample ID: UD17001-004MS
Batch: 14477
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	520	20000	19000		20	93	70-130	04/24/2019 2036
tert-Amyl methyl ether (TAME)	ND	1000	960		20	96	70-130	04/24/2019 2036
Benzene	550	1000	1500		20	95	70-130	04/24/2019 2036
tert-Butyl formate (TBF)	ND	5000	3000	N	20	60	70-130	04/24/2019 2036
1,2-Dichloroethane	15	1000	970		20	96	70-130	04/24/2019 2036
Diisopropyl ether (IPE)	ND	1000	960		20	96	70-130	04/24/2019 2036
3,3-Dimethyl-1-butanol	ND	20000	17000		20	84	70-130	04/24/2019 2036
Ethanol	ND	100000	73000		20	73	70-130	04/24/2019 2036
Ethylbenzene	700	1000	1700		20	103	70-130	04/24/2019 2036
Ethyl-tert-butyl ether (ETBE)	ND	1000	730		20	73	70-130	04/24/2019 2036
Methyl tertiary butyl ether (MTBE)	130	1000	950		20	81	70-130	04/24/2019 2036
Naphthalene	220	1000	1200		20	99	70-130	04/24/2019 2036
tert-butyl alcohol (TBA)	ND	20000	18000		20	92	70-130	04/24/2019 2036
Toluene	640	1000	1600		20	99	70-130	04/24/2019 2036
Xylenes (total)	3600	2000	5600		20	98	70-130	04/24/2019 2036

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		89	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD17001-004MD
Batch: 14477
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	520	20000	20000		20	96	2.7	70-130	20	04/24/2019 2101
tert-Amyl methyl ether (TAME)	ND	1000	940		20	93	2.6	70-130	20	04/24/2019 2101
Benzene	550	1000	1500		20	93	1.7	70-130	20	04/24/2019 2101
tert-Butyl formate (TBF)	ND	5000	2800	N	20	56	6.3	70-130	20	04/24/2019 2101
1,2-Dichloroethane	15	1000	970		20	96	0.38	70-130	20	04/24/2019 2101
Diisopropyl ether (IPE)	ND	1000	970		20	97	0.96	70-130	20	04/24/2019 2101
3,3-Dimethyl-1-butanol	ND	20000	17000		20	87	3.6	70-130	20	04/24/2019 2101
Ethanol	ND	100000	75000		20	75	3.2	70-130	20	04/24/2019 2101
Ethylbenzene	700	1000	1700		20	98	3.0	70-130	20	04/24/2019 2101
Ethyl-tert-butyl ether (ETBE)	ND	1000	720		20	72	1.4	70-130	20	04/24/2019 2101
Methyl tertiary butyl ether (MTBE)	130	1000	930		20	80	1.5	70-130	20	04/24/2019 2101
Naphthalene	220	1000	1200		20	99	0.12	70-130	20	04/24/2019 2101
tert-butyl alcohol (TBA)	ND	20000	19000		20	95	2.8	70-130	20	04/24/2019 2101
Toluene	640	1000	1600		20	96	1.9	70-130	20	04/24/2019 2101
Xylenes (total)	3600	2000	5400		20	91	2.8	70-130	20	04/24/2019 2101

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		79	70-130
Bromofluorobenzene		88	70-130
Toluene-d8		89	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14707-001
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/25/2019 2229

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14707-002
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Methyl tertiary butyl ether (MTBE)	50	49		1	97	70-130	04/25/2019 2126

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		85	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ14098-001
Batch: 14098
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/22/2019 1207

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Anthracene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Chrysene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Fluoranthene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Fluorene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Naphthalene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Phenanthrene	ND		1	0.80	0.20	ug/L	04/24/2019 1010
Pyrene	ND		1	0.80	0.20	ug/L	04/24/2019 1010

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		63	38-127
2-Fluorobiphenyl		77	37-129
Terphenyl-d14		107	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14098-002
Batch: 14098
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/22/2019 1207

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	26		1	66	30-122	04/24/2019 1033
Acenaphthylene	40	25		1	63	30-130	04/24/2019 1033
Anthracene	40	30		1	74	30-123	04/24/2019 1033
Benzo(a)anthracene	40	32		1	80	40-125	04/24/2019 1033
Benzo(a)pyrene	40	28		1	70	40-128	04/24/2019 1033
Benzo(b)fluoranthene	40	29		1	73	30-130	04/24/2019 1033
Benzo(g,h,i)perylene	40	30		1	74	30-130	04/24/2019 1033
Benzo(k)fluoranthene	40	29		1	74	30-130	04/24/2019 1033
Chrysene	40	32		1	79	30-130	04/24/2019 1033
Dibenzo(a,h)anthracene	40	26		1	65	30-130	04/24/2019 1033
Fluoranthene	40	32		1	80	40-128	04/24/2019 1033
Fluorene	40	30		1	74	30-124	04/24/2019 1033
Indeno(1,2,3-c,d)pyrene	40	27		1	67	30-130	04/24/2019 1033
Naphthalene	40	27		1	67	30-130	04/24/2019 1033
Phenanthrene	40	29		1	73	40-123	04/24/2019 1033
Pyrene	40	31		1	77	40-126	04/24/2019 1033

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		62	38-127
2-Fluorobiphenyl		75	37-129
Terphenyl-d14		97	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ14278-001
Batch: 14278
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/23/2019 1318

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Chrysene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Fluorene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Naphthalene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Phenanthrene	ND		1	0.80	0.20	ug/L	04/26/2019 1036
Pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 1036

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		55	38-127
2-Fluorobiphenyl		68	37-129
Terphenyl-d14		99	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14278-002
Batch: 14278
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/23/2019 1318

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	32		1	81	30-122	04/26/2019 1059
Acenaphthylene	40	27		1	67	30-130	04/26/2019 1059
Anthracene	40	31		1	78	30-123	04/26/2019 1059
Benzo(a)anthracene	40	35		1	87	40-125	04/26/2019 1059
Benzo(a)pyrene	40	29		1	73	40-128	04/26/2019 1059
Benzo(b)fluoranthene	40	31		1	78	30-130	04/26/2019 1059
Benzo(g,h,i)perylene	40	30		1	75	30-130	04/26/2019 1059
Benzo(k)fluoranthene	40	31		1	79	30-130	04/26/2019 1059
Chrysene	40	34		1	84	30-130	04/26/2019 1059
Dibenzo(a,h)anthracene	40	27		1	68	30-130	04/26/2019 1059
Fluoranthene	40	33		1	82	40-128	04/26/2019 1059
Fluorene	40	33		1	82	30-124	04/26/2019 1059
Indeno(1,2,3-c,d)pyrene	40	27		1	68	30-130	04/26/2019 1059
Naphthalene	40	32		1	79	30-130	04/26/2019 1059
Phenanthrene	40	31		1	78	40-123	04/26/2019 1059
Pyrene	40	31		1	78	40-126	04/26/2019 1059

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		67	38-127
2-Fluorobiphenyl		80	37-129
Terphenyl-d14		96	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ14210-001
Batch: 14210
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/22/2019 1803

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/23/2019 0751

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		97	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ14210-002
Batch: 14210
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/22/2019 1803

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.25		1	98	60-140	04/23/2019 0801

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		99	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

EDB & DBCP by Microextraction - Duplicate

Sample ID: UD17001-004DU
Batch: 14210
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/22/2019 1803

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	ND		1	0.00	20	04/23/2019 1134

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		100	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MS

Sample ID: UD17001-005MS
Batch: 14210
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/22/2019 1803

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.26	0.27		1	105	60-140	04/23/2019 1155

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		91	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ14242-001
Batch: 14242
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 854

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/23/2019 1158

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		79	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ14242-002
Batch: 14242
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 854

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.21		1	84	60-140	04/23/2019 1209

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		84	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MS

Sample ID: UD17001-006MS
Batch: 14242
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 854

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	0.25	0.20		1	83	60-140	04/23/2019 1231

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		87	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - Duplicate

Sample ID: UD17001-010DU
Batch: 14242
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 854

Parameter	Sample Amount (ug/L)	Result (ug/L)	Q	Dil	% RPD	% RPD Limit	Analysis Date
1,2-Dibromoethane (EDB)	ND	ND		1	0.00	20	04/23/2019 1313

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		82	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MB

Sample ID: UQ14288-001
Batch: 14288
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	05/01/2019 1808

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - LCS

Sample ID: UQ14288-002
Batch: 14288
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.41		1	104	80-120	05/01/2019 1814

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MS

Sample ID: UD17001-015MS
Batch: 14288
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.0053	0.40	0.41		1	102	75-125	05/01/2019 1947

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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ICP-AES Metals - MSD

Sample ID: UD17001-015MD
Batch: 14288
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Lead	0.0053	0.40	0.42		1	103	0.20	75-125	20	05/01/2019 1952

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Chain of Custody
and
Miscellaneous Documents

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www.shealylab.com

SHEALY Chain of Custody Record

Number 95163

Client: CAROLINA TECHNICAL SERVICES INC	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 7130 BROAD RIVER RD	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 2
City: IRMO State: SC Zip Code: 29063	Printed Name: KEVIN WESSINGER		
Project Name: BROAD RIVER AMOCO			
Project No.: 18-6580 P.O. No.:			

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	# Containers	Matrix: Liquid	Matrix: Soil	Matrix: Air	Matrix: Sludge	Matrix: Solid	Matrix: Other	Preservative: Unpres	Preservative: H2SO4	Preservative: HNO3	Preservative: HCl	Preservative: NaOH	Preservative: ZnAc/NaOH	BTEX+MTBE+OXYS+ETHANOL	PAH	LEAD	EDB
MW-10B	4/15/19	950	G	X						2		1	5			3	2	1	2
DUP-F		1015																	
MW-9A		1135																	
MWR2-14		1330																	
MW-20A		1530																	
MW-20B		1545																	
FIELD BLANK 7		1615																	
MW-19B		1745																	

UD17001

LIO

Remarks / Cooler I.D.

Turn Around Time Required (Prior lab approval required for expedited TAT.)
X Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	4/16/19	1710	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by	4/16/19	1710

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack

Receipt Temp. 1.5 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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Chain of Custody Record

Number 94879

Client: CAROLINA TECHNICAL SERVICES INC	Report to Contact: William Wood	Telephone No. / E-mail: 843-610-1953	Quote No.
Address: 7130 BROAD RIVER RD	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page: 2 of 2
City: IRMO	State: SC	Zip Code: 29063	Printed Name: KEVIN WESSINGER
Project Name: BROAD RIVER HMACO			
Project No.: 18-6520	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Other Liquid	No. of Containers by Preservative Type: HNO3	No. of Containers by Preservative Type: HCl	BTEX+MTBE+Naphthalene+Oxygenates+EDB	DAH	LEAD	EDB
MW-9B	4/16/19	1100	G	X			2	15	3	2	1	2
MW-18B		1210										
DUP-G		1220										
MW-17B		1235										
FIELD BLANK 8		1250										
MW-21A		1430										

UD17001
LJC

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by:	4/16/19	1710	1. Received by		
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	Date	Time	4. Laboratory received by: Melody Cato	4/16/19	Time 1710

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack Receipt Temp 1.8 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 09-01-2014

Sample Receipt Checklist (SRC)

Client: CTSI Cooler Inspected by/date: LKH / 04-16-2019 Lot #: UD17001

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 18-2225 Chlorine Strip ID: NA Tested by: LKH

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.8 / 1.8 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☑ No	☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☑ Yes	☐ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: LKH Date: 04-17-2019

Comments: WE RECEIVED TWO SETS OF 2 40ML HCL VIALS FOR TRIP BLANKS THAT ARE NOT LISTED ON THE COC.

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Carolina Technical Services, Inc.
7130 Broad River Road
Suite A
Irmo, SC 29063
Attention: Bill Wood

Project Name: Broad River Amoco

Project Number: 18-6580

Lot Number:**UD18015**

Date Completed:04/30/2019

05/01/2019 11:39 AM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Carolina Technical Services, Inc.
Lot Number: UD18015

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

EDB by Mircoextraction

Sample -002 has been qualified with a "P" as the relative percent difference between the two GC columns exceeds method criteria. Per SCDHEC, the lesser of the two values has been reported.

Sample Summary
Carolina Technical Services, Inc.
Lot Number: UD18015

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-1	Aqueous	04/17/2019 1255	04/17/2019
002	MW-2	Aqueous	04/17/2019 1645	04/17/2019
003	MW-4	Aqueous	04/17/2019 1440	04/17/2019
004	MW-5	Aqueous	04/17/2019 1510	04/17/2019
005	MW-18A	Aqueous	04/17/2019 1420	04/17/2019
006	MW-21B	Aqueous	04/17/2019 0945	04/17/2019
007	MW-22A	Aqueous	04/17/2019 1030	04/17/2019
008	MW-22B	Aqueous	04/17/2019 1120	04/17/2019
009	MWR2-6	Aqueous	04/17/2019 1415	04/17/2019
010	MWR2-7	Aqueous	04/17/2019 1330	04/17/2019
011	MWR2-12	Aqueous	04/17/2019 1345	04/17/2019
012	Dup H	Aqueous	04/17/2019 1025	04/17/2019
013	Field Blank 9	Aqueous	04/17/2019 1230	04/17/2019
014	Trip Blank	Aqueous	04/17/2019	04/17/2019
015	Trip Blank	Aqueous	04/17/2019	04/17/2019

(15 samples)

Detection Summary
Carolina Technical Services, Inc.
Lot Number: UD18015

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-1	Aqueous	tert-Amyl alcohol (TAA)	8260B	3200		ug/L	7
001	MW-1	Aqueous	Benzene	8260B	2100		ug/L	7
001	MW-1	Aqueous	Ethylbenzene	8260B	2600		ug/L	7
001	MW-1	Aqueous	Methyl tertiary butyl ether	8260B	62	J	ug/L	7
001	MW-1	Aqueous	Naphthalene	8260B	600		ug/L	7
001	MW-1	Aqueous	Toluene	8260B	8900		ug/L	7
001	MW-1	Aqueous	Xylenes (total)	8260B	9800		ug/L	7
001	MW-1	Aqueous	Naphthalene	8270D	370		ug/L	8
001	MW-1	Aqueous	Lead	6010D	0.028		mg/L	8
002	MW-2	Aqueous	tert-Amyl alcohol (TAA)	8260B	33000		ug/L	9
002	MW-2	Aqueous	tert-Amyl methyl ether	8260B	240	J	ug/L	9
002	MW-2	Aqueous	Benzene	8260B	12000		ug/L	9
002	MW-2	Aqueous	Ethanol	8260B	680000		ug/L	9
002	MW-2	Aqueous	Ethylbenzene	8260B	1300		ug/L	9
002	MW-2	Aqueous	Methyl tertiary butyl ether	8260B	15000		ug/L	9
002	MW-2	Aqueous	Naphthalene	8260B	350	J	ug/L	9
002	MW-2	Aqueous	tert-butyl alcohol (TBA)	8260B	11000		ug/L	9
002	MW-2	Aqueous	Toluene	8260B	17000		ug/L	9
002	MW-2	Aqueous	Xylenes (total)	8260B	7000		ug/L	9
002	MW-2	Aqueous	Naphthalene	8270D	300		ug/L	10
002	MW-2	Aqueous	Pyrene	8270D	3.2	J	ug/L	10
002	MW-2	Aqueous	1,2-Dibromoethane (EDB)	8011	0.12	P	ug/L	10
003	MW-4	Aqueous	tert-Amyl alcohol (TAA)	8260B	3200		ug/L	11
003	MW-4	Aqueous	tert-Amyl methyl ether	8260B	150	J	ug/L	11
003	MW-4	Aqueous	Benzene	8260B	7200		ug/L	11
003	MW-4	Aqueous	Ethylbenzene	8260B	3300		ug/L	11
003	MW-4	Aqueous	Methyl tertiary butyl ether	8260B	5800		ug/L	11
003	MW-4	Aqueous	Naphthalene	8260B	930		ug/L	11
003	MW-4	Aqueous	tert-butyl alcohol (TBA)	8260B	4100		ug/L	11
003	MW-4	Aqueous	Toluene	8260B	720		ug/L	11
003	MW-4	Aqueous	Xylenes (total)	8260B	5200		ug/L	11
003	MW-4	Aqueous	Anthracene	8270D	0.68	J	ug/L	11
003	MW-4	Aqueous	Benzo(a)anthracene	8270D	0.33	J	ug/L	11
003	MW-4	Aqueous	Benzo(b)fluoranthene	8270D	0.79	J	ug/L	11
003	MW-4	Aqueous	Chrysene	8270D	0.23	J	ug/L	11
003	MW-4	Aqueous	Fluoranthene	8270D	0.40	J	ug/L	11
003	MW-4	Aqueous	Fluorene	8270D	0.81		ug/L	11
003	MW-4	Aqueous	Naphthalene	8270D	440		ug/L	12
003	MW-4	Aqueous	Phenanthrene	8270D	1.2		ug/L	12
003	MW-4	Aqueous	Pyrene	8270D	0.96		ug/L	12
003	MW-4	Aqueous	Lead	6010D	0.014		mg/L	12
004	MW-5	Aqueous	tert-Amyl alcohol (TAA)	8260B	7200		ug/L	13
004	MW-5	Aqueous	tert-Amyl methyl ether	8260B	200	J	ug/L	13
004	MW-5	Aqueous	Benzene	8260B	20000		ug/L	13
004	MW-5	Aqueous	Ethanol	8260B	3000000		ug/L	13

Detection Summary (Continued)

Lot Number: UD18015

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	MW-5	Aqueous	Ethylbenzene	8260B	3300		ug/L	13
004	MW-5	Aqueous	Methyl tertiary butyl ether	8260B	5900		ug/L	13
004	MW-5	Aqueous	Naphthalene	8260B	630	J	ug/L	13
004	MW-5	Aqueous	tert-butyl alcohol (TBA)	8260B	2400	J	ug/L	13
004	MW-5	Aqueous	Toluene	8260B	38000		ug/L	13
004	MW-5	Aqueous	Xylenes (total)	8260B	17000		ug/L	13
004	MW-5	Aqueous	Naphthalene	8270D	310		ug/L	14
004	MW-5	Aqueous	Lead	6010D	0.0094	J	mg/L	14
005	MW-18A	Aqueous	tert-Amyl alcohol (TAA)	8260B	530	J	ug/L	15
005	MW-18A	Aqueous	Benzene	8260B	2700		ug/L	15
005	MW-18A	Aqueous	Ethylbenzene	8260B	530		ug/L	15
005	MW-18A	Aqueous	Methyl tertiary butyl ether	8260B	96	J	ug/L	15
005	MW-18A	Aqueous	Naphthalene	8260B	65	J	ug/L	15
005	MW-18A	Aqueous	Toluene	8260B	5400		ug/L	15
005	MW-18A	Aqueous	Xylenes (total)	8260B	2400		ug/L	15
005	MW-18A	Aqueous	Naphthalene	8270D	49		ug/L	16
005	MW-18A	Aqueous	Lead	6010D	0.018		mg/L	16
006	MW-21B	Aqueous	Methyl tertiary butyl ether	8260B	3.6	J	ug/L	17
007	MW-22A	Aqueous	Lead	6010D	0.015		mg/L	20
008	MW-22B	Aqueous	Methyl tertiary butyl ether	8260B	6.7		ug/L	21
008	MW-22B	Aqueous	tert-butyl alcohol (TBA)	8260B	9.5	J	ug/L	21
009	MWR2-6	Aqueous	tert-Amyl alcohol (TAA)	8260B	2500		ug/L	23
009	MWR2-6	Aqueous	Benzene	8260B	9200		ug/L	23
009	MWR2-6	Aqueous	Ethylbenzene	8260B	1400		ug/L	23
009	MWR2-6	Aqueous	Methyl tertiary butyl ether	8260B	180	J	ug/L	23
009	MWR2-6	Aqueous	Naphthalene	8260B	160	J	ug/L	23
009	MWR2-6	Aqueous	tert-butyl alcohol (TBA)	8260B	950	J	ug/L	23
009	MWR2-6	Aqueous	Toluene	8260B	18000		ug/L	23
009	MWR2-6	Aqueous	Xylenes (total)	8260B	7400		ug/L	23
009	MWR2-6	Aqueous	Naphthalene	8270D	55		ug/L	24
010	MWR2-7	Aqueous	tert-Amyl alcohol (TAA)	8260B	6400		ug/L	25
010	MWR2-7	Aqueous	Benzene	8260B	24000		ug/L	25
010	MWR2-7	Aqueous	Ethylbenzene	8260B	2600		ug/L	25
010	MWR2-7	Aqueous	Methyl tertiary butyl ether	8260B	1100		ug/L	25
010	MWR2-7	Aqueous	Naphthalene	8260B	360	J	ug/L	25
010	MWR2-7	Aqueous	tert-butyl alcohol (TBA)	8260B	2200	J	ug/L	25
010	MWR2-7	Aqueous	Toluene	8260B	40000		ug/L	25
010	MWR2-7	Aqueous	Xylenes (total)	8260B	14000		ug/L	25
010	MWR2-7	Aqueous	Fluoranthene	8270D	0.25	J	ug/L	25
010	MWR2-7	Aqueous	Naphthalene	8270D	160		ug/L	26
010	MWR2-7	Aqueous	Phenanthrene	8270D	0.38	J	ug/L	26
010	MWR2-7	Aqueous	Pyrene	8270D	0.64	J	ug/L	26
011	MWR2-12	Aqueous	tert-Amyl alcohol (TAA)	8260B	3600	J	ug/L	27
011	MWR2-12	Aqueous	Benzene	8260B	13000		ug/L	27
011	MWR2-12	Aqueous	Ethylbenzene	8260B	2400		ug/L	27
011	MWR2-12	Aqueous	Naphthalene	8260B	330	J	ug/L	27
011	MWR2-12	Aqueous	Toluene	8260B	33000		ug/L	27
011	MWR2-12	Aqueous	Xylenes (total)	8260B	13000		ug/L	27

Detection Summary (Continued)

Lot Number: UD18015

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
011	MWR2-12	Aqueous	Naphthalene	8270D	180		ug/L	28
012	Dup H	Aqueous	Methyl tertiary butyl ether	8260B	4.6	J	ug/L	29

(95 detections)

Client: Carolina Technical Services, Inc.
Description: MW-1
Date Sampled: 04/17/2019 1255
Date Received: 04/17/2019

Laboratory ID: UD18015-001
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/26/2019 0634	STM		14707

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3200		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	2100		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	2600		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	62	J	500	40	ug/L	1
Naphthalene	91-20-3	8260B	600		500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		2000	800	ug/L	1
Toluene	108-88-3	8260B	8900		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	9800		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		90	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1403	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/26/2019 2036	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-1
Date Sampled: 04/17/2019 1255
Date Received: 04/17/2019

Laboratory ID: UD18015-001
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1403	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/26/2019 2036	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	370		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127		48	38-127
2-Fluorobiphenyl		52	37-129		53	37-129
Terphenyl-d14		73	10-148		71	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1926	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		119	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1637	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.028		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-2
Date Sampled: 04/17/2019 1645
Date Received: 04/17/2019

Laboratory ID: UD18015-002
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	200	04/27/2019 0703	STM		14817

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	33000		4000	1600	ug/L	2
tert-Amyl methyl ether (TAME)	994-05-8	8260B	240	J	2000	84	ug/L	2
Benzene	71-43-2	8260B	12000		1000	80	ug/L	2
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	2
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	2
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	2
Ethanol	64-17-5	8260B	680000		20000	10000	ug/L	2
Ethylbenzene	100-41-4	8260B	1300		1000	80	ug/L	2
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	15000		1000	80	ug/L	2
Naphthalene	91-20-3	8260B	350	J	1000	80	ug/L	2
tert-butyl alcohol (TBA)	75-65-0	8260B	11000		4000	1600	ug/L	2
Toluene	108-88-3	8260B	17000		1000	80	ug/L	2
Xylenes (total)	1330-20-7	8260B	7000		1000	90	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		83	70-130
Bromofluorobenzene		91	70-130
Toluene-d8		89	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	5	04/26/2019 1426	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		4.0	1.0	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		4.0	1.0	ug/L	1
Anthracene	120-12-7	8270D	ND		4.0	1.0	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		4.0	1.0	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		4.0	1.0	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		4.0	1.0	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		4.0	1.0	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		4.0	1.0	ug/L	1
Chrysene	218-01-9	8270D	ND		4.0	1.0	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		4.0	1.0	ug/L	1
Fluoranthene	206-44-0	8270D	ND		4.0	1.0	ug/L	1
Fluorene	86-73-7	8270D	ND		4.0	1.0	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		4.0	1.0	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-2
Date Sampled: 04/17/2019 1645
Date Received: 04/17/2019

Laboratory ID: UD18015-002
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	5	04/26/2019 1426	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	300		4.0	1.0	ug/L	1
Phenanthrene	85-01-8	8270D	ND		4.0	1.0	ug/L	1
Pyrene	129-00-0	8270D	3.2	J	4.0	1.0	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		54	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		73	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/24/2019 1738	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	0.12	P	0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		111	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1643	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-4
Date Sampled: 04/17/2019 1440
Date Received: 04/17/2019

Laboratory ID: UD18015-003
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/26/2019 1505	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3200		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	150	J	1000	42	ug/L	1
Benzene	71-43-2	8260B	7200		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	3300		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5800		500	40	ug/L	1
Naphthalene	91-20-3	8260B	930		500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	4100		2000	800	ug/L	1
Toluene	108-88-3	8260B	720		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	5200		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		101	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1622	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/29/2019 1107	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	0.68	J	0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	0.33	J	0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	0.79	J	0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	0.23	J	0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	0.40	J	0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	0.81		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-4
Date Sampled: 04/17/2019 1440
Date Received: 04/17/2019

Laboratory ID: UD18015-003
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1622	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/29/2019 1107	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	440		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	1.2		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	0.96		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		84	38-127		45	38-127
2-Fluorobiphenyl		64	37-129		39	37-129
Terphenyl-d14		89	10-148		56	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1948	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		91	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1648	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.014		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-5
Date Sampled: 04/17/2019 1510
Date Received: 04/17/2019

Laboratory ID: UD18015-004
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	04/26/2019 1527	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	7200		4000	1600	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	200	J	2000	84	ug/L	1
Benzene	71-43-2	8260B	20000		1000	80	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	3000000		20000	10000	ug/L	1
Ethylbenzene	100-41-4	8260B	3300		1000	80	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	5900		1000	80	ug/L	1
Naphthalene	91-20-3	8260B	630	J	1000	80	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	2400	J	4000	1600	ug/L	1
Toluene	108-88-3	8260B	38000		1000	80	ug/L	1
Xylenes (total)	1330-20-7	8260B	17000		1000	90	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		106	70-130
Toluene-d8		105	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	50	04/29/2019 1130	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		40	10	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		40	10	ug/L	1
Anthracene	120-12-7	8270D	ND		40	10	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		40	10	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		40	10	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		40	10	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		40	10	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		40	10	ug/L	1
Chrysene	218-01-9	8270D	ND		40	10	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		40	10	ug/L	1
Fluoranthene	206-44-0	8270D	ND		40	10	ug/L	1
Fluorene	86-73-7	8270D	ND		40	10	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		40	10	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Client: Carolina Technical Services, Inc.
Description: MW-5
Date Sampled: 04/17/2019 1510
Date Received: 04/17/2019

Laboratory ID: UD18015-004
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	50	04/29/2019 1130	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	310		40	10	ug/L	1
Phenanthrene	85-01-8	8270D	ND		40	10	ug/L	1
Pyrene	129-00-0	8270D	ND		40	10	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	38-127
2-Fluorobiphenyl		64	37-129
Terphenyl-d14		48	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 1959	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		100	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	3005A	6010D	2	04/29/2019 0146	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.0094	J	0.020	0.0094	mg/L	2

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-18A
Date Sampled: 04/17/2019 1420
Date Received: 04/17/2019

Laboratory ID: UD18015-005
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	50	04/26/2019 1549	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	530	J	1000	400	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		500	21	ug/L	1
Benzene	71-43-2	8260B	2700		250	20	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		250	100	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		250	20	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		250	20	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		1000	400	ug/L	1
Ethanol	64-17-5	8260B	ND		5000	2600	ug/L	1
Ethylbenzene	100-41-4	8260B	530		250	20	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	96	J	250	20	ug/L	1
Naphthalene	91-20-3	8260B	65	J	250	20	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		1000	400	ug/L	1
Toluene	108-88-3	8260B	5400		250	20	ug/L	1
Xylenes (total)	1330-20-7	8260B	2400		250	23	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		108	70-130
Toluene-d8		107	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1708	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-18A
Date Sampled: 04/17/2019 1420
Date Received: 04/17/2019

Laboratory ID: UD18015-005
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1708	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	49		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		57	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		72	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2009	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		104	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1659	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.018		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-21B
Date Sampled: 04/17/2019 0945
Date Received: 04/17/2019

Laboratory ID: UD18015-006
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/26/2019 1143	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	3.6	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		102	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1731	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-21B
Date Sampled: 04/17/2019 0945
Date Received: 04/17/2019

Laboratory ID: UD18015-006
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1731	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		39	38-127
2-Fluorobiphenyl		52	37-129
Terphenyl-d14		93	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2020	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1704	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: MW-22A
Date Sampled: 04/17/2019 1030
Date Received: 04/17/2019

Laboratory ID: UD18015-007
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/26/2019 1206	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		103	70-130
Toluene-d8		104	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1754	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-22A
Date Sampled: 04/17/2019 1030
Date Received: 04/17/2019

Laboratory ID: UD18015-007
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1754	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		47	38-127
2-Fluorobiphenyl		65	37-129
Terphenyl-d14		57	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2031	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1710	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	0.015		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MW-22B
Date Sampled: 04/17/2019 1120
Date Received: 04/17/2019

Laboratory ID: UD18015-008
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/26/2019 1228	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	6.7		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	9.5	J	20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		103	70-130
Toluene-d8		103	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1817	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MW-22B
Date Sampled: 04/17/2019 1120
Date Received: 04/17/2019

Laboratory ID: UD18015-008
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1817	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		44	38-127
2-Fluorobiphenyl		58	37-129
Terphenyl-d14		53	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2041	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		102	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1726	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-6
Date Sampled: 04/17/2019 1415
Date Received: 04/17/2019

Laboratory ID: UD18015-009
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	100	04/26/2019 1611	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	2500		2000	800	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		1000	42	ug/L	1
Benzene	71-43-2	8260B	9200		500	40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		500	200	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		500	40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		500	40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		2000	800	ug/L	1
Ethanol	64-17-5	8260B	ND		10000	5200	ug/L	1
Ethylbenzene	100-41-4	8260B	1400		500	40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	180	J	500	40	ug/L	1
Naphthalene	91-20-3	8260B	160	J	500	40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	950	J	2000	800	ug/L	1
Toluene	108-88-3	8260B	18000		500	40	ug/L	1
Xylenes (total)	1330-20-7	8260B	7400		500	45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		103	70-130
Bromofluorobenzene		105	70-130
Toluene-d8		102	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1840	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-6
Date Sampled: 04/17/2019 1415
Date Received: 04/17/2019

Laboratory ID: UD18015-009
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1840	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	55		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		59	38-127
2-Fluorobiphenyl		67	37-129
Terphenyl-d14		86	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2052	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		102	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1732	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: MWR2-7
Date Sampled: 04/17/2019 1330
Date Received: 04/17/2019

Laboratory ID: UD18015-010
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	04/26/2019 1633	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	6400		4000	1600	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		2000	84	ug/L	1
Benzene	71-43-2	8260B	24000		1000	80	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	ND		20000	10000	ug/L	1
Ethylbenzene	100-41-4	8260B	2600		1000	80	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	1100		1000	80	ug/L	1
Naphthalene	91-20-3	8260B	360	J	1000	80	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	2200	J	4000	1600	ug/L	1
Toluene	108-88-3	8260B	40000		1000	80	ug/L	1
Xylenes (total)	1330-20-7	8260B	14000		1000	90	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		104	70-130
Toluene-d8		102	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1903	JCG	04/24/2019 1545	14467
2	3520C	8270D	5	04/29/2019 1153	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	0.25	J	0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-7
Date Sampled: 04/17/2019 1330
Date Received: 04/17/2019

Laboratory ID: UD18015-010
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1903	JCG	04/24/2019 1545	14467
2	3520C	8270D	5	04/29/2019 1153	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	160		4.0	1.0	ug/L	2
Phenanthrene	85-01-8	8270D	0.38	J	0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	0.64	J	0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		53	38-127		40	38-127
2-Fluorobiphenyl		57	37-129		40	37-129
Terphenyl-d14		80	10-148		57	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2103	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		99	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1737	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-12
Date Sampled: 04/17/2019 1345
Date Received: 04/17/2019

Laboratory ID: UD18015-011
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	200	04/26/2019 1655	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	3600	J	4000	1600	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		2000	84	ug/L	1
Benzene	71-43-2	8260B	13000		1000	80	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		1000	400	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1000	80	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1000	80	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		4000	1600	ug/L	1
Ethanol	64-17-5	8260B	ND		20000	10000	ug/L	1
Ethylbenzene	100-41-4	8260B	2400		1000	80	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		200	80	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1000	80	ug/L	1
Naphthalene	91-20-3	8260B	330	J	1000	80	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		4000	1600	ug/L	1
Toluene	108-88-3	8260B	33000		1000	80	ug/L	1
Xylenes (total)	1330-20-7	8260B	13000		1000	90	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		102	70-130
Bromofluorobenzene		104	70-130
Toluene-d8		104	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1927	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/29/2019 1216	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: MWR2-12
Date Sampled: 04/17/2019 1345
Date Received: 04/17/2019

Laboratory ID: UD18015-011
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1927	JCG	04/24/2019 1545	14467
2	3520C	8270D	10	04/29/2019 1216	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1
Naphthalene	91-20-3	8270D	180		8.0	2.0	ug/L	2
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
Nitrobenzene-d5		71	38-127		40	38-127
2-Fluorobiphenyl		74	37-129		46	37-129
Terphenyl-d14		96	10-148		54	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2113	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		102	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1743	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Client: Carolina Technical Services, Inc.
Description: Dup H
Date Sampled: 04/17/2019 1025
Date Received: 04/17/2019

Laboratory ID: UD18015-012
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/26/2019 1251	JJG		14761

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	4.6	J	5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		101	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1950	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Dup H
Date Sampled: 04/17/2019 1025
Date Received: 04/17/2019

Laboratory ID: UD18015-012
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 1950	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		54	38-127
2-Fluorobiphenyl		72	37-129
Terphenyl-d14		101	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2124	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.019	0.019	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		106	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1748	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Field Blank 9
Date Sampled: 04/17/2019 1230
Date Received: 04/17/2019

Laboratory ID: UD18015-013
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/25/2019 1608	JJG		14594

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		109	70-130
Bromofluorobenzene		114	70-130
Toluene-d8		109	70-130

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 2013	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acenaphthene	83-32-9	8270D	ND		0.80	0.20	ug/L	1
Acenaphthylene	208-96-8	8270D	ND		0.80	0.20	ug/L	1
Anthracene	120-12-7	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)anthracene	56-55-3	8270D	ND		0.80	0.20	ug/L	1
Benzo(a)pyrene	50-32-8	8270D	ND		0.80	0.20	ug/L	1
Benzo(b)fluoranthene	205-99-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(g,h,i)perylene	191-24-2	8270D	ND		0.80	0.20	ug/L	1
Benzo(k)fluoranthene	207-08-9	8270D	ND		0.80	0.20	ug/L	1
Chrysene	218-01-9	8270D	ND		0.80	0.20	ug/L	1
Dibenzo(a,h)anthracene	53-70-3	8270D	ND		0.80	0.20	ug/L	1
Fluoranthene	206-44-0	8270D	ND		0.80	0.20	ug/L	1
Fluorene	86-73-7	8270D	ND		0.80	0.20	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270D	ND		0.80	0.20	ug/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: Field Blank 9
Date Sampled: 04/17/2019 1230
Date Received: 04/17/2019

Laboratory ID: UD18015-013
Matrix: Aqueous

Semivolatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3520C	8270D	1	04/26/2019 2013	JCG	04/24/2019 1545	14467

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Naphthalene	91-20-3	8270D	ND		0.80	0.20	ug/L	1
Phenanthrene	85-01-8	8270D	ND		0.80	0.20	ug/L	1
Pyrene	129-00-0	8270D	ND		0.80	0.20	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Nitrobenzene-d5		52	38-127
2-Fluorobiphenyl		69	37-129
Terphenyl-d14		99	10-148

EDB & DBCP by Microextraction

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	8011	8011	1	04/23/2019 2135	DAL1	04/23/2019 0925	14244

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
1,2-Dibromoethane (EDB)	106-93-4	8011	ND		0.020	0.020	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,1,1,2-Tetrachloroethane		109	57-137

ICP-AES Metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3005A	6010D	1	04/27/2019 1754	LLL	04/24/2019 0915	14289

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Client: Carolina Technical Services, Inc.
Description: Trip Blank
Date Sampled: 04/17/2019
Date Received: 04/17/2019

Laboratory ID: UD18015-014
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/25/2019 1630	JJG		14594

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		111	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		109	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: Carolina Technical Services, Inc.
Description: Trip Blank
Date Sampled: 04/17/2019
Date Received: 04/17/2019

Laboratory ID: UD18015-015
Matrix: Aqueous

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/25/2019 1653	JJG		14594

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		5.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		5.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.45	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		112	70-130
Bromofluorobenzene		111	70-130
Toluene-d8		109	70-130

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14594-001
Batch: 14594
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/25/2019 1009
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/25/2019 1009
Benzene	ND		1	5.0	0.40	ug/L	04/25/2019 1009
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/25/2019 1009
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/25/2019 1009
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/25/2019 1009
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/25/2019 1009
Ethanol	ND		1	100	52	ug/L	04/25/2019 1009
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/25/2019 1009
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/25/2019 1009
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/25/2019 1009
Naphthalene	ND		1	5.0	0.40	ug/L	04/25/2019 1009
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/25/2019 1009
Toluene	ND		1	5.0	0.40	ug/L	04/25/2019 1009
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/25/2019 1009

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		108	70-130
Bromofluorobenzene		114	70-130
Toluene-d8		109	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14594-002
Batch: 14594
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	950		1	95	70-130	04/25/2019 0923
tert-Amyl methyl ether (TAME)	50	49		1	97	70-130	04/25/2019 0923
Benzene	50	48		1	96	70-130	04/25/2019 0923
tert-Butyl formate (TBF)	250	290		1	114	70-130	04/25/2019 0923
1,2-Dichloroethane	50	50		1	100	70-130	04/25/2019 0923
Diisopropyl ether (IPE)	50	49		1	99	70-130	04/25/2019 0923
3,3-Dimethyl-1-butanol	1000	920		1	92	70-130	04/25/2019 0923
Ethanol	5000	4300		1	86	70-130	04/25/2019 0923
Ethylbenzene	50	51		1	102	70-130	04/25/2019 0923
Ethyl-tert-butyl ether (ETBE)	50	47		1	93	70-130	04/25/2019 0923
Methyl tertiary butyl ether (MTBE)	50	45		1	91	70-130	04/25/2019 0923
Naphthalene	50	45		1	90	70-130	04/25/2019 0923
tert-butyl alcohol (TBA)	1000	930		1	93	70-130	04/25/2019 0923
Toluene	50	49		1	99	70-130	04/25/2019 0923
Xylenes (total)	100	100		1	100	70-130	04/25/2019 0923

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		104	70-130
Bromofluorobenzene		112	70-130
Toluene-d8		110	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14707-001
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/25/2019 2229
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/25/2019 2229
Benzene	ND		1	5.0	0.40	ug/L	04/25/2019 2229
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/25/2019 2229
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/25/2019 2229
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/25/2019 2229
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/25/2019 2229
Ethanol	ND		1	100	52	ug/L	04/25/2019 2229
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/25/2019 2229
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/25/2019 2229
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/25/2019 2229
Naphthalene	ND		1	5.0	0.40	ug/L	04/25/2019 2229
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/25/2019 2229
Toluene	ND		1	5.0	0.40	ug/L	04/25/2019 2229
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/25/2019 2229

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		84	70-130
Bromofluorobenzene		85	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14707-002
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	930		1	93	70-130	04/25/2019 2126
tert-Amyl methyl ether (TAME)	50	49		1	97	70-130	04/25/2019 2126
Benzene	50	44		1	87	70-130	04/25/2019 2126
tert-Butyl formate (TBF)	250	270		1	107	70-130	04/25/2019 2126
1,2-Dichloroethane	50	45		1	89	70-130	04/25/2019 2126
Diisopropyl ether (IPE)	50	46		1	92	70-130	04/25/2019 2126
3,3-Dimethyl-1-butanol	1000	1000		1	101	70-130	04/25/2019 2126
Ethanol	5000	4400		1	89	70-130	04/25/2019 2126
Ethylbenzene	50	45		1	91	70-130	04/25/2019 2126
Ethyl-tert-butyl ether (ETBE)	50	47		1	94	70-130	04/25/2019 2126
Methyl tertiary butyl ether (MTBE)	50	49		1	97	70-130	04/25/2019 2126
Naphthalene	50	48		1	96	70-130	04/25/2019 2126
tert-butyl alcohol (TBA)	1000	930		1	93	70-130	04/25/2019 2126
Toluene	50	46		1	91	70-130	04/25/2019 2126
Xylenes (total)	100	91		1	91	70-130	04/25/2019 2126

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		85	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		93	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MS

Sample ID: UD18015-002MS
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	31000	200000	220000		200	93	70-130	04/26/2019 0927
tert-Amyl methyl ether (TAME)	230	10000	10000		200	101	70-130	04/26/2019 0927
Benzene	14000	10000	22000		200	83	70-130	04/26/2019 0927
tert-Butyl formate (TBF)	ND	50000	53000		200	106	70-130	04/26/2019 0927
1,2-Dichloroethane	ND	10000	9900		200	99	70-130	04/26/2019 0927
Diisopropyl ether (IPE)	ND	10000	10000		200	101	70-130	04/26/2019 0927
3,3-Dimethyl-1-butanol	ND	200000	200000		200	101	70-130	04/26/2019 0927
Ethanol	550000	1000000	1300000		200	79	70-130	04/26/2019 0927
Ethylbenzene	1700	10000	12000		200	101	70-130	04/26/2019 0927
Ethyl-tert-butyl ether (ETBE)	ND	10000	9900		200	99	70-130	04/26/2019 0927
Methyl tertiary butyl ether (MTBE)	15000	10000	24000		200	89	70-130	04/26/2019 0927
Naphthalene	380	10000	10000		200	98	70-130	04/26/2019 0927
tert-butyl alcohol (TBA)	11000	200000	200000		200	94	70-130	04/26/2019 0927
Toluene	22000	10000	31000		200	87	70-130	04/26/2019 0927
Xylenes (total)	9700	20000	29000		200	97	70-130	04/26/2019 0927

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD18015-002MD
Batch: 14707
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	31000	200000	220000		200	95	1.8	70-130	20	04/26/2019 0951
tert-Amyl methyl ether (TAME)	230	10000	10000		200	102	1.0	70-130	20	04/26/2019 0951
Benzene	14000	10000	22000		200	87	1.4	70-130	20	04/26/2019 0951
tert-Butyl formate (TBF)	ND	50000	50000		200	101	4.7	70-130	20	04/26/2019 0951
1,2-Dichloroethane	ND	10000	9900		200	99	0.89	70-130	20	04/26/2019 0951
Diisopropyl ether (IPE)	ND	10000	10000		200	101	0.030	70-130	20	04/26/2019 0951
3,3-Dimethyl-1-butanol	ND	200000	210000		200	103	2.0	70-130	20	04/26/2019 0951
Ethanol	550000	1000000	1400000		200	86	4.6	70-130	20	04/26/2019 0951
Ethylbenzene	1700	10000	12000		200	102	1.3	70-130	20	04/26/2019 0951
Ethyl-tert-butyl ether (ETBE)	ND	10000	9800		200	98	0.79	70-130	20	04/26/2019 0951
Methyl tertiary butyl ether (MTBE)	15000	10000	24000		200	95	2.4	70-130	20	04/26/2019 0951
Naphthalene	380	10000	10000		200	101	3.1	70-130	20	04/26/2019 0951
tert-butyl alcohol (TBA)	11000	200000	200000		200	97	2.2	70-130	20	04/26/2019 0951
Toluene	22000	10000	31000		200	89	0.94	70-130	20	04/26/2019 0951
Xylenes (total)	9700	20000	29000		200	99	1.3	70-130	20	04/26/2019 0951

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		91	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14761-001
Batch: 14761
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/26/2019 1052
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/26/2019 1052
Benzene	ND		1	5.0	0.40	ug/L	04/26/2019 1052
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/26/2019 1052
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/26/2019 1052
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/26/2019 1052
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/26/2019 1052
Ethanol	ND		1	100	52	ug/L	04/26/2019 1052
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/26/2019 1052
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/26/2019 1052
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/26/2019 1052
Naphthalene	ND		1	5.0	0.40	ug/L	04/26/2019 1052
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/26/2019 1052
Toluene	ND		1	5.0	0.40	ug/L	04/26/2019 1052
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/26/2019 1052

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		103	70-130
Toluene-d8		100	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14761-002
Batch: 14761
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	950		1	95	70-130	04/26/2019 1008
tert-Amyl methyl ether (TAME)	50	51		1	102	70-130	04/26/2019 1008
Benzene	50	45		1	90	70-130	04/26/2019 1008
tert-Butyl formate (TBF)	250	270		1	108	70-130	04/26/2019 1008
1,2-Dichloroethane	50	47		1	94	70-130	04/26/2019 1008
Diisopropyl ether (IPE)	50	48		1	96	70-130	04/26/2019 1008
3,3-Dimethyl-1-butanol	1000	970		1	97	70-130	04/26/2019 1008
Ethanol	5000	4700		1	95	70-130	04/26/2019 1008
Ethylbenzene	50	48		1	96	70-130	04/26/2019 1008
Ethyl-tert-butyl ether (ETBE)	50	47		1	95	70-130	04/26/2019 1008
Methyl tertiary butyl ether (MTBE)	50	49		1	99	70-130	04/26/2019 1008
Naphthalene	50	48		1	96	70-130	04/26/2019 1008
tert-butyl alcohol (TBA)	1000	940		1	94	70-130	04/26/2019 1008
Toluene	50	47		1	94	70-130	04/26/2019 1008
Xylenes (total)	100	96		1	96	70-130	04/26/2019 1008

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		101	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MB

Sample ID: UQ14817-001
Batch: 14817
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/26/2019 2234
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/26/2019 2234
Benzene	ND		1	5.0	0.40	ug/L	04/26/2019 2234
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/26/2019 2234
1,2-Dichloroethane	ND		1	5.0	0.40	ug/L	04/26/2019 2234
Diisopropyl ether (IPE)	ND		1	5.0	0.40	ug/L	04/26/2019 2234
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/26/2019 2234
Ethanol	ND		1	100	52	ug/L	04/26/2019 2234
Ethylbenzene	ND		1	5.0	0.40	ug/L	04/26/2019 2234
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/26/2019 2234
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.40	ug/L	04/26/2019 2234
Naphthalene	ND		1	5.0	0.40	ug/L	04/26/2019 2234
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	04/26/2019 2234
Toluene	ND		1	5.0	0.40	ug/L	04/26/2019 2234
Xylenes (total)	ND		1	5.0	0.45	ug/L	04/26/2019 2234

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		82	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14817-002
Batch: 14817
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	930		1	93	70-130	04/26/2019 2130
tert-Amyl methyl ether (TAME)	50	49		1	98	70-130	04/26/2019 2130
Benzene	50	42		1	84	70-130	04/26/2019 2130
tert-Butyl formate (TBF)	250	260		1	105	70-130	04/26/2019 2130
1,2-Dichloroethane	50	44		1	89	70-130	04/26/2019 2130
Diisopropyl ether (IPE)	50	45		1	89	70-130	04/26/2019 2130
3,3-Dimethyl-1-butanol	1000	960		1	96	70-130	04/26/2019 2130
Ethanol	5000	4500		1	89	70-130	04/26/2019 2130
Ethylbenzene	50	44		1	88	70-130	04/26/2019 2130
Ethyl-tert-butyl ether (ETBE)	50	47		1	93	70-130	04/26/2019 2130
Methyl tertiary butyl ether (MTBE)	50	46		1	91	70-130	04/26/2019 2130
Naphthalene	50	46		1	92	70-130	04/26/2019 2130
tert-butyl alcohol (TBA)	1000	900		1	90	70-130	04/26/2019 2130
Toluene	50	44		1	88	70-130	04/26/2019 2130
Xylenes (total)	100	89		1	89	70-130	04/26/2019 2130

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		87	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Volatile Organic Compounds by GC/MS - MS

Sample ID: UD18015-002MS
Batch: 14817
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	33000	200000	240000		200	101	70-130	04/27/2019 0728
tert-Amyl methyl ether (TAME)	240	10000	10000		200	98	70-130	04/27/2019 0728
Benzene	12000	10000	21000		200	95	70-130	04/27/2019 0728
tert-Butyl formate (TBF)	ND	50000	54000		200	108	70-130	04/27/2019 0728
1,2-Dichloroethane	ND	10000	9700		200	97	70-130	04/27/2019 0728
Diisopropyl ether (IPE)	ND	10000	10000		200	102	70-130	04/27/2019 0728
3,3-Dimethyl-1-butanol	ND	200000	210000		200	107	70-130	04/27/2019 0728
Ethanol	680000	1000000	1600000		200	93	70-130	04/27/2019 0728
Ethylbenzene	1300	10000	11000		200	101	70-130	04/27/2019 0728
Ethyl-tert-butyl ether (ETBE)	ND	10000	9600		200	96	70-130	04/27/2019 0728
Methyl tertiary butyl ether (MTBE)	15000	10000	25000		200	94	70-130	04/27/2019 0728
Naphthalene	350	10000	9800		200	95	70-130	04/27/2019 0728
tert-butyl alcohol (TBA)	11000	200000	210000		200	98	70-130	04/27/2019 0728
Toluene	17000	10000	28000		200	106	70-130	04/27/2019 0728
Xylenes (total)	7000	20000	27000		200	99	70-130	04/27/2019 0728

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		80	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: UD18015-002MD
Batch: 14817
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	33000	200000	230000		200	96	4.5	70-130	20	04/27/2019 0752
tert-Amyl methyl ether (TAME)	240	10000	10000		200	97	0.76	70-130	20	04/27/2019 0752
Benzene	12000	10000	21000		200	89	2.6	70-130	20	04/27/2019 0752
tert-Butyl formate (TBF)	ND	50000	53000		200	106	2.1	70-130	20	04/27/2019 0752
1,2-Dichloroethane	ND	10000	9400		200	94	3.3	70-130	20	04/27/2019 0752
Diisopropyl ether (IPE)	ND	10000	9700		200	97	5.1	70-130	20	04/27/2019 0752
3,3-Dimethyl-1-butanol	ND	200000	200000		200	101	5.4	70-130	20	04/27/2019 0752
Ethanol	680000	1000000	1500000		200	85	4.9	70-130	20	04/27/2019 0752
Ethylbenzene	1300	10000	11000		200	97	3.6	70-130	20	04/27/2019 0752
Ethyl-tert-butyl ether (ETBE)	ND	10000	9400		200	94	1.8	70-130	20	04/27/2019 0752
Methyl tertiary butyl ether (MTBE)	15000	10000	23000		200	84	4.3	70-130	20	04/27/2019 0752
Naphthalene	350	10000	9400		200	91	4.0	70-130	20	04/27/2019 0752
tert-butyl alcohol (TBA)	11000	200000	200000		200	94	4.0	70-130	20	04/27/2019 0752
Toluene	17000	10000	27000		200	97	3.0	70-130	20	04/27/2019 0752
Xylenes (total)	7000	20000	26000		200	96	3.0	70-130	20	04/27/2019 0752

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		81	70-130
Bromofluorobenzene		89	70-130
Toluene-d8		90	70-130

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - MB

Sample ID: UQ14467-001
Batch: 14467
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/24/2019 1545

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Acenaphthylene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Chrysene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Fluoranthene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Fluorene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Indeno(1,2,3-c,d)pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Naphthalene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Phenanthrene	ND		1	0.80	0.20	ug/L	04/26/2019 0950
Pyrene	ND		1	0.80	0.20	ug/L	04/26/2019 0950

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		44	38-127
2-Fluorobiphenyl		56	37-129
Terphenyl-d14		96	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: UQ14467-002
Batch: 14467
Analytical Method: 8270D

Matrix: Aqueous
Prep Method: 3520C
Prep Date: 04/24/2019 1545

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acenaphthene	40	22		1	55	30-122	04/26/2019 1013
Acenaphthylene	40	20		1	49	30-130	04/26/2019 1013
Anthracene	40	29		1	72	30-123	04/26/2019 1013
Benzo(a)anthracene	40	32		1	79	40-125	04/26/2019 1013
Benzo(a)pyrene	40	30		1	76	40-128	04/26/2019 1013
Benzo(b)fluoranthene	40	29		1	73	30-130	04/26/2019 1013
Benzo(g,h,i)perylene	40	30		1	75	30-130	04/26/2019 1013
Benzo(k)fluoranthene	40	29		1	74	30-130	04/26/2019 1013
Chrysene	40	31		1	78	30-130	04/26/2019 1013
Dibenzo(a,h)anthracene	40	25		1	64	30-130	04/26/2019 1013
Fluoranthene	40	32		1	81	40-128	04/26/2019 1013
Fluorene	40	23		1	56	30-124	04/26/2019 1013
Indeno(1,2,3-c,d)pyrene	40	27		1	67	30-130	04/26/2019 1013
Naphthalene	40	22		1	54	30-130	04/26/2019 1013
Phenanthrene	40	27		1	69	40-123	04/26/2019 1013
Pyrene	40	28		1	70	40-126	04/26/2019 1013

Surrogate	Q	% Rec	Acceptance Limit
Nitrobenzene-d5		43	38-127
2-Fluorobiphenyl		56	37-129
Terphenyl-d14		90	10-148

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - MB

Sample ID: UQ14244-001
Batch: 14244
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 925

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
1,2-Dibromoethane (EDB)	ND		1	0.020	0.020	ug/L	04/23/2019 1750

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		96	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

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EDB & DBCP by Microextraction - LCS

Sample ID: UQ14244-002
Batch: 14244
Analytical Method: 8011

Matrix: Aqueous
Prep Method: 8011
Prep Date: 04/23/2019 925

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
1,2-Dibromoethane (EDB)	0.25	0.24		1	95	60-140	04/23/2019 1801

Surrogate	Q	% Rec	Acceptance Limit
1,1,1,2-Tetrachloroethane		91	57-137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

ICP-AES Metals - MB

Sample ID: UQ14289-001
Batch: 14289
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.010	0.0047	mg/L	04/27/2019 1626

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Shealy Environmental Services, Inc.
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ICP-AES Metals - LCS

Sample ID: UQ14289-002
Batch: 14289
Analytical Method: 6010D

Matrix: Aqueous
Prep Method: 3005A
Prep Date: 04/24/2019 915

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	0.40	0.42		1	105	80-120	04/27/2019 1632

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

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

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 95164

Client: Carolina Technical Services, Inc.
Address: 7130 Broad River Rd
City: Irmo State: SC Zip Code: 29063
Project Name: Broad River Amoco
Project No.: 18-6580
P.O. No.:

Report to Contact: William Wood
Sampler's Signature: x Cody Alexander
Printed Name: Cody Alexander

Telephone No. / E-mail: (843) 610-1953
Analysis (Attach list if more space is needed)
Quote No.:
Page 1 of 2

UD18015

Sample ID / Description (Containers for each sample may be combined on one line)	Date	Time	Grab (G) or Composite (C)	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	HNO3	HCl	NaOH	H2SO4	Soil Jar	BTEX+MTBE+Naphthalene+EDB	PAH	LEAD	EDB
MW-1	4/17/19	1255	G	X			2		5				3	2	1	2
MW-2		1645														
MW-4		1440														
MW-5		1510														
MW-18A		1420														
MW-21B		0945														
MW-22A		1030														
MW-22B		1120														
MWR2-6		1415														
MW R2-7		1330														

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☒ Rush (Specify) 1 Week (Ask Lucas)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify):

	Date	Time
1. Relinquished by: Cody Alexander	4/17/19	1740
2. Relinquished by: William Wood	4/17/19	
3. Relinquished by		
4. Relinquished by		

	Date	Time
1. Received by: William Wood	4/17/19	1740
2. Received by		
3. Received by		
4. Laboratory received by	4.17.19	1812

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 3.5 °C
4.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

SHEALY Chain of Custody Record

Number 94876

Client: Carolina Technical Services Inc.	Report to Contact: William Wood	Telephone No. / E-mail: (843) 610-1953	Quote No.
Address: 7130 Broad River Rd	Sampler's Signature: X Cody Alexander	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Irmo	State: SC	Zip Code: 29063	Printed Name: Cody Alexander
Project Name: Broad River Amoco			
Project No.: 18-6580	P.O. No.		

UD18015

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	5035 kit	BTEX + MTBE + Naphthalene	PAHs	LEAD	EDB
MWR2-12	4/17/19	1345	G	X			2	1	5							
Dup H	↓	1025	↓	↓			↓	↓	↓							
Field Blank 9	↓	1230	↓	↓			↓	↓	↓							
Trip Blank																
Trip Blank																

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☒ Rush (Specify) 1 WEEK (Ask Lucas)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Cody Alexander	4/17/19	1740	1. Received by: William Wood	4/17/19	1740
2. Relinquished by: William Wood	4/17/19		2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by	4.17.19	1812

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack

Receipt Temp. 3.5 °C
4.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/9 2019
Field Personnel W. WOOD, C. ALEXANDER, K WEISSMAN
General Weather Conditions LT SLEET/FREEZING RAIN
Ambient Air Temp ~70

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. 906064 4/9 serial no. _____
pH = 4.0 4.0 Standard _____
pH = 7.0 7.0 Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____ _____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-1

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 7.15 ft.

Length of Water Column (LWC-TWD-DGW) 10.85 ft.

1 Csg. Volume (LWC*C) = 0.163 x 10.85 = 1.77 gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	2	3.8	5.4				
Time (military)								1400
pH (s.u.)	5.51	5.68	5.77	5.70				6.31
Specific Cond. (mS)	0.224	0.257	0.176	0.175				0.110
Water Temp (°C)	21.5	21.8	21.8	22.2				21.7
Turbidity (*)	4 red	2	2	2 80				33
PID Readings	–	–	–	–				–
DO (mg/L)	1.24	0.88	1.10	~~80~~ 075				2.79

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Purged @ pump sampled w bailer

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/9 2019
Field Personnel W. WOOD C ALEXANDER K. WEISSINGER
General Weather Conditions LT SC SCATTERED RAIN
Ambient Air Temp ~70

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2~~-2~~

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 8.04 ft.

Length of Water Column (LWC-TWD-DGW) 9.96 ft.

1 Csg. Volume (LWC*C) = 0.163 x 9.93 = 1.63 gals.
3 Csg. Volumes = 3 X 1.63 = 4.8 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.7	3.4	5.0				
Time (military)								1415
pH (s.u.)	6.02	5.79	5.75	5.63				5.78
Specific Cond. (mS)	0.063	0.125	0.084	0.076				0.110
Water Temp (°C)	21.3	21.7	21.6	22.0				22.2
Turbidity (*)	2	2	2	(2) 50				170
PID Readings	—	—	—	—				—
DO (mg/L)	3.11	1.13	0.79					3.03

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Purged w/ pump sampled w/ bailer v. Faint odor

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/9 2019
Field Personnel W. WOOD, C ALEXANDER, K WESSLUGER
General Weather Conditions Scattered LT rain
Ambient Air Temp 70

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-83

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18.9 ft.
Depth to GW (DGW) 10.40 ft.

Length of Water Column (LWC-TWD-DGW) 8.60 ft.

1 Csg. Volume (LWC*C) = 0.163 x 8.60 = 1.4 gals.
3 Csg. Volumes = 3 X 1.4 = 4.2 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.92	4	6				
Time (military)								1430
pH (s.u.)	4.97	4.98	4.57	4.61				5.03
Specific Cond. (mS)	0.157	0.068	0.071	0.069				0.065
Water Temp (°C)	22.2	21.8	22.1	22.5				22.3
Turbidity (*)	3	3	2	210				8.9
PID Readings	—	—	—	—				—
DO (mg/L)		1.22	1.07	3				1.86

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel CA WW KW
General Weather Conditions SUNNY BREEZY
Ambient Air Temp 80

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-4

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 8.33 ft.

Length of Water Column (LWC-TWD-DGW) 9.67 ft.

1 Csg. Volume (LWC*C) = 0.163 x 9.67 = 1.58 gals.
3 Csg. Volumes = 3 X 1.58 = 4.74 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.6	3.2					1635
Time (military)								
pH (s.u.)	5.55	5.74	5.23	5.25				
Specific Cond. (mS)	0.079	0.084	0.075	0.070				
Water Temp (°C)	25.0	24.9	24.2	23.6				
Turbidity (*)	750	31	4.4	3.4				
PID Readings	—	—	—	—				
DO (mg/L)	1.39	1.15	0.96	1.16				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Dup C @ 1640

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10/2019
Field Personnel N. WOOD, C ALEXANDER, K WESSINGER
General Weather Conditions SUNNY BREEZY
Ambient Air Temp 80

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-5

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 16 ft.
Depth to GW (DGW) 7.39 ft.

Length of Water Column (LWC-TWD-DGW) 8.61 ft.

1 Csg. Volume (LWC*C) = 0.163 x 8.61 = 1.4 gals.
3 Csg. Volumes = 3 X 1.4 = 4.2 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.4	2.8	4.2				
Time (military)								1555
pH (s.u.)	5.88	5.87	5.97	5.74				
Specific Cond. (mS)	0.151	0.154	0.130	0.140				
Water Temp (°C)	23.8	22.6	22.6	22.8				
Turbidity (*)	600	120	9.7	22				
PID Readings	-	-	-	-				
DO (mg/L)	1.91	1.27	1.14	1.20				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel KW/CA
General Weather Conditions CLEAR MILD
Ambient Air Temp 76

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-6

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 15 ft.
Depth to GW (DGW) 7.12 ft.

Length of Water Column (LWC-TWD-DGW) 7.88 ft.

1 Csg. Volume (LWC*C) = 0.163 x 7.88 = 1.28 gals.
3 Csg. Volumes = 3 X 1.28 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1415
pH (s.u.)	6.45	6.71	6.40	6.53				
Specific Cond. (mS)	0.367	0.380	0.386	0.387				
Water Temp (°C)	23.4	21.5	21.0	21.2				
Turbidity (*)	450	4.9	5.4	7.9				
PID Readings	-							
DO (mg/L)	1.41	1.35	1.25	1.32				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
ODOR; Free Product @ 7.07ft

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel RW/CA
General Weather Conditions CLEAR MILD
Ambient Air Temp 76°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-7

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 15 ft.
Depth to GW (DGW) 5.62 ft.

Length of Water Column (LWC-TWD-DGW) 9.38 ft.

1 Csg. Volume (LWC*C) = 0.163 x 9.38 = 1.53 gals.
3 Csg. Volumes = 3 X 1.53 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1330
pH (s.u.)	6.98	6.78	6.70	6.74				
Specific Cond. (mS)	0.436	0.408	0.394	0.391				
Water Temp (°C)	24.3	22.4	22.4	22.3				
Turbidity (*)	180	70	9.5	13				
PID Readings								
DO (mg/L)	0.40	1.03	1.11	1.00				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks ODOR

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel W.WOOD CARMANDER
General Weather Conditions SUNNY BREEZY
Ambient Air Temp 75

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-9

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 10.17 ft.

Length of Water Column (LWC-TWD-DGW) 7.83 ft.

1 Csg. Volume (LWC*C) = 0.163 x 7.83 = 1.3 gals.
3 Csg. Volumes = 3 X 1.3 = 3.9 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.3	2.6	3.9				
Time (military)								1245
pH (s.u.)	5.90	5.90	5.89	5.84				
Specific Cond. (mS)	0.206	0.200	0.199	0.188				
Water Temp (°C)	25.6	23.2	23.0	21.3				
Turbidity (*)	110	11	19	8.9				
PID Readings	—	—	—	—				
DO (mg/L)	2.96	2.54	1.47	1.34				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/11 2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions sunny warm
Ambient Air Temp 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. _____ serial no. _____
pH = 4.0 _____ Standard _____
pH = 7.0 _____ Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW12-10

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 17 ft.
Depth to GW (DGW) 7.93 ft.

Length of Water Column (LWC-TWD-DGW) 9.07 ft.

1 Csg. Volume (LWC*C) = 0.163 x 9.07 = 1.48 gals.
3 Csg. Volumes = 3 X 1.48 = 4.44 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.5	3.0	4.5				
Time (military)								1305
pH (s.u.)	5.22	5.38	5.64	5.50				
Specific Cond. (mS)	0.178	0.179	0.196	0.195				
Water Temp (°C)	24.9	24.1	23.6	24.3				
Turbidity (*)	7.2	7.6	4.9	8.7				
PID Readings	—	—	—					
DO (mg/L)	2.86	2.22	2.22	2.18				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Pump D/C
1310

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel HUWOOD C ALEXANDER
General Weather Conditions SUNNY Breezy
Ambient Air Temp 75

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW82-11

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 10.33 ft.

Length of Water Column (LWC-TWD-DGW) 7.67 ft.

1 Csg. Volume (LWC*C) = 0.163 x 7.67 = 1.25 gals.
3 Csg. Volumes = 3 X 1.25 = 3.75 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.25	2.50	3.75				4/10/19
Time (military)								1335
pH (s.u.)	5.64	5.43	5.37	5.41				
Specific Cond. (mS)	0.176	0.169	0.165	0.155				
Water Temp (°C)	23.0	21.8	21.9	21.6				
Turbidity (*)	2.6	3.7	4.8	2.1				
PID Readings	—	—	—	—				
DO (mg/L)	1.73	1.51	1.23	1.14				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel CA/KW/WN
General Weather Conditions CLEAR MILD
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW RZ-12

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 9.06 ft.

Length of Water Column (LWC-TWD-DGW) 8.94 ft.

1 Csg. Volume (LWC*C) = 0.163 x 8.94 = 1.46 gals.
3 Csg. Volumes = 3 X 1.46 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.5	3.0					
Time (military)								1345
pH (s.u.)	6.28	7.10	6.97	6.98				
Specific Cond. (mS)	0.518	0.602	0.597	0.600				
Water Temp (°C)	21.8	20.6	20.4	20.4				
Turbidity (*)	7.8	6.2	7.7	9.9				
PID Readings	—	—	—	—				
DO (mg/L)	1.89	1.40	1.20	1.40				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/12/2019
Field Personnel C. Alexander / K. Messinger
General Weather Conditions Overcast
Ambient Air Temp 80's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: serial no. _____
pH = 4.0 4.01
pH = 7.0 7.02
pH = 10.0 _____

Conductivity Meter serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-13

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 11 ft.
Depth to GW (DGW) 1.72 ft.

Length of Water Column (LWC-TWD-DGW) 9.28 ft.

1 Csg. Volume (LWC*C) = 0.163 x 9.28 = 1.51 gals.
3 Csg. Volumes = 3 X 1.51 = 4.53 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.6	3.2	4.8				
Time (military)								1335
pH (s.u.)	5.37	5.38	5.43	5.41				
Specific Cond. (mS)	0.274	0.234	0.262	0.274				
Water Temp (°C)	19.4	17.7	17.3	17.5				
Turbidity (*)	13	31	130	>1100				
PID Readings	/	—	/	—				
DO (mg/L)	3.67	3.66	4.04	4.07				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/2019
Field Personnel KEVIN WESSINGER
General Weather Conditions CLEAR GUSTY
Ambient Air Temp 68°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW R2-14

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 19 ft.
Depth to GW (DGW) 8.43 ft.

Length of Water Column (LWC-TWD-DGW) 10.57 ft.

1 Csg. Volume (LWC*C) = 0.163 x 10.57 = 1.72 gals.
3 Csg. Volumes = 3 X 1.72 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								13:30
pH (s.u.)	6.06	6.37	6.56	6.55				
Specific Cond. (mS)	0.434	0.555	0.549	0.556				
Water Temp (°C)	20.6	20.2	20.2	20.3				
Turbidity (*)	>1100	19	7.2	5.7				
PID Readings								
DO (mg/L)	21.0	13.8	10.3	9.8				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel W. WOOD, C ALEXANDER, K WESSINGER
General Weather Conditions SUNNY, BREEZY
Ambient Air Temp 80

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR2-~~R~~15

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 18 ft.
Depth to GW (DGW) 9.89 ft.

Length of Water Column (LWC-TWD-DGW) 8.11 ft.

1 Csg. Volume (LWC*C) = 0.163 x 8.11 = 1.32 gals.
3 Csg. Volumes = 3 X 1.32 = 3.97 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.2	2.6	4.0				
Time (military)								1510
pH (s.u.)	5.32	5.44	5.62	5.15				
Specific Cond. (mS)	0.271	0.270	0.265	0.253				
Water Temp (°C)	21.9	21.4	21.1	21.4				
Turbidity (*)	21.100	21	50	31				
PID Readings	—	—	—	—				
DO (mg/L)	1.31	1.16	1.18	1.04				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel W WOOD C. ALEXANDER K. WESSNOE
General Weather Conditions _____
Ambient Air Temp _____

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# ~~MW-2~~ MW12-16

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 19 ft.
Depth to GW (DGW) 10.51 ft.

Length of Water Column (LWC-TWD-DGW) 8.49 ft.

1 Csg. Volume (LWC*C) = 0.163 x 8.49 = 1.38 gals.
3 Csg. Volumes = 3 X 1.4 = 4.2 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.4	2.8	4.2				
Time (military)								1420
pH (s.u.)	5.43	5.68	5.73	5.38				
Specific Cond. (mS)	0.201	0.202	0.223	0.180				
Water Temp (°C)	23.4	22.5	22.7	22.8				
Turbidity (*)	71000	16	33	33				
PID Readings	—	—	—	—				
DO (mg/L)	1.60	1.50	1.38	1.39				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17 2019
Field Personnel W.WOOD, C.ALEXANDER, K.WESSEL
General Weather Conditions SUNNY MILD
Ambient Air Temp 70

Facility Name Broad River Amoco Site ID 11946

Quality Assurance
pH Meter: HORIBA D-24 Conductivity Meter
serial no. 906064 serial no. _____
pH = 4.0 4.01 Standard _____
pH = 7.0 7.00 Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW[redacted]-1

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40[redacted] ft.
Depth to GW (DGW) 10.53 ft.

Length of Water Column (LWC-TWD-DGW) 29.47 ft.

1 Csg. Volume (LWC*C) = 0.163 x 29.47 = 4.8 gals.
3 Csg. Volumes = 3 X 4.8 = 14.4 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 11.6 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		4.8	9.6					11.6
Time (military)		~~5:08~~						12.55
pH (s.u.)	5.24	~~5.24~~	4.93					4.93
Specific Cond. (mS)	0.193	0.064	0.069	~~0.069~~				0.069
Water Temp (°C)	22.8	~~23.4~~	23.5					23.5
Turbidity (*)	39	~~39~~ >1100	>1100					>1100
PID Readings								
DO (mg/L)	1.49	0.98	0.83					0.77

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Faint odor
drawdown TO 19.2 @ 3gal SAMPLED @ 11gal purged, SILTY

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel KW/CH
General Weather Conditions Clear Mild
Ambient Air Temp 78°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-2

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 28 ft.
Depth to GW (DGW) 10.34 ft.

Length of Water Column (LWC-TWD-DGW) 17.66 ft.

1 Csg. Volume (LWC*C) = 0.163 x 2.88 = _____ gals.
3 Csg. Volumes = 3 X 2.88 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	3						
Time (military)								
pH (s.u.)	5.39	5.48						1645
Specific Cond. (mS)	0.366	0.332						
Water Temp (°C)	24.7	24.3						
Turbidity (*)	700	55						
PID Readings								
DO (mg/L)	0.74	1.21						

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks 9.54 F.P. Dry @ 3 gal. Allowed Recharged

1/5 gall. FP Removed

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/11/2019
Field Personnel C. Alexander / Kevin Wessinger
General Weather Conditions Sunny Warm
Ambient Air Temp 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-3

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 31 ft.
Depth to GW (DGW) 9.95 ft.

Length of Water Column (LWC-TWD-DGW) 21.05 ft.

1 Csg. Volume (LWC*C) = 0.163 x 21.05 = 3.43 gals.
3 Csg. Volumes = 3 X 3.43 = 10.3 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	3.5	7.0					
Time (military)								1215
pH (s.u.)	5.66	5.72	5.65	5.52				
Specific Cond. (mS)	0.195	0.187	0.164	0.156				
Water Temp (°C)	22.2	21.8	22.6	22.1				
Turbidity (*)	71100	71100	~~71100~~ 270	71100				
PID Readings	—	—	—	—				
DO (mg/L)	2.30	1.95	1.76	1.82				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17 2019
Field Personnel W. WOOD, C. MOLNAR, K. WILSON
General Weather Conditions SUNNY WARM
Ambient Air Temp LO 80's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. _____ serial no. _____
pH = 4.0 _____ Standard _____
pH = 7.0 _____ Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW~~21~~-4

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) ~~25.15~~ ft.
Depth to GW (DGW) ~~8.24~~ ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x ~~8.29~~ = 1.35 gals.
3 Csg. Volumes = 3 X ~~8.29~~ = ~~4.05~~ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		~~2.72~~ 1.35	~~2.70~~	~~4.05~~				
Time (military)			5.5	8.2				1440
pH (s.u.)	6.06	6.30						6.61
Specific Cond. (mS)	0.323	0.321						0.439
Water Temp (°C)	23.5	22.1						25.0
Turbidity (*)	160	40						60
PID Readings	—	—						—
DO (mg/L)	0.75	0.39						2.05

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks ODOR, DRY @ ~3.5 gal, allow recharge + sample

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel KW/EA
General Weather Conditions Clear Mild
Ambient Air Temp 78°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-5

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 20 ft.
Depth to GW (DGW) 8.31 ft.

Length of Water Column (LWC-TWD-DGW) 11.69 ft.

1 Csg. Volume (LWC*C) = 0.163 x 11.69 = 1.90 gals.
3 Csg. Volumes = 3 X 1.90 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)	5.50	5.50						1510
Specific Cond. (mS)	0.773	0.773						
Water Temp (°C)	23.9	22.5						
Turbidity (*)	17	25						
PID Readings								
DO (mg/L)	1.06	1.28						

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
8.13 FP
FREE PRODUCT @ 2.9 GAL

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/10 2019
Field Personnel WINDOM C. ALEXANDER
General Weather Conditions SUNNY BREEZE
Ambient Air Temp 75

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. 812004 serial no. _____
pH = 4.0 4.01 Standard _____
pH = 7.0 7.01 Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MWR~~2-1~~ 6A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) ~~18~~ ft. 25.5
Depth to GW (DGW) 10.54 ft.

Length of Water Column (LWC-TWD-DGW) 14.96 ft.

1 Csg. Volume (LWC*C) = 0.163 x 14.96 = 2.44 gals.
3 Csg. Volumes = 3 X 2.44 = 7.32 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		2.4	5.2	7.6				
Time (military)								1150
pH (s.u.)		4.65	4.36	4.28				
Specific Cond. (mS)		0.039	0.056	0.042				
Water Temp (°C)		22.0	21.1	22.0				
Turbidity (*)		71100	71100	>1100				600
PID Readings								
DO (mg/L)		3.76	3.46	3.28				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/9/ 2019
Field Personnel W.WOOD, C.ALEXANDER, K.WESSINGER
General Weather Conditions CLDY, SCATTERED RAIN
Ambient Air Temp 70

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# ~~MW-24~~ GW13

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) ~~18~~ ft. 38.5
Depth to GW (DGW) 10.61 ft.

Length of Water Column (LWC-TWD-DGW) 27.85 ft.

1 Csg. Volume (LWC*C) = 0.163 x 27.85 = 4.54 gals.
3 Csg. Volumes = 3 X 4.54 = 13.62 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		4.5	9.0					4/10/19
Time (military)								1135
pH (s.u.)	4.11	4.10	4.12					4.26
Specific Cond. (mS)	0.079	0.085	0.080					0.071
Water Temp (°C)	23.3	24.4	24.5					23.7
Turbidity (*)	~~>1100~~	>1100	>1100					2.7
PID Readings	—	—	—					—
DO (mg/L)	2.75	3.08	2.30					3.36

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks V. dry TURBID muddy - SILTY on bottom TOO much SILT TO PUMP plus PVC shavings jam pump impellor

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel C. MOYNIER, K. WESNER
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-7A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 24 ft.
Depth to GW (DGW) 9.07 ft.

Length of Water Column (LWC-TWD-DGW) 14.93 ft.

1 Csg. Volume (LWC*C) = 0.163 x 14.93 = 2.43 gals.
3 Csg. Volumes = 3 X 2.43 = 7.29 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		2.5						4/9/19
Time (military)	15:20							1120
pH (s.u.)	5.93	5.08						5.80
Specific Cond. (mS)	0.044	0.029						0.034
Water Temp (°C)	25.5	23.7						20.6
Turbidity (*)	400	130						20
PID Readings	—	—						
DO (mg/L)	4.89	4.50						5.78

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 3 gal

Field Blank 3 @ 1050
4/9/19

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel C. Alexander, K. Wasswood
General Weather Conditions Sunny cool
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:	Conductivity Meter
serial no. _____	serial no. _____
pH = 4.0 _____	Standard _____
pH = 7.0 _____	Standard _____
pH = 10.0 _____	Standard _____

Chain of Custody

_____

_____

Relinquished by Date/Time Received by Date/Time

Well# MW-8A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 23.0 ft.
Depth to GW (DGW) 9.97 ft.

Length of Water Column (LWC-TWD-DGW) 13.03 ft.

1 Csg. Volume (LWC*C) = 0.163 x 13.03 = 2.12 gals.
3 Csg. Volumes = 3 X 2.12 = 6.36 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/9/19
Time (military)		1550						1145
pH (s.u.)	4.40	4.52						5.78
Specific Cond. (mS)	0.084	0.081						0.083
Water Temp (°C)	23.8	22.5						20.6
Turbidity (*)	850	71100						40
PID Readings	—	—						—
DO (mg/L)	2.32	2.49						3.68

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 2.5 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel C. ALEXANDER, K WESSELOFF
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:	Conductivity Meter
serial no. _____	serial no. _____
pH = 4.0 _____	Standard _____
pH = 7.0 _____	Standard _____
pH = 10.0 _____	Standard _____

Chain of Custody

_____

_____

Relinquished by Date/Time Received by Date/Time

Well# MW-8B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 31.5 ft.
Depth to GW (DGW) 9.67 ft.

Length of Water Column (LWC-TWD-DGW) 21.81 ft.

1 Csg. Volume (LWC*C) = 0.163 x 21.81 = 3.56 gals.
3 Csg. Volumes = 3 X 3.56 = 10.68 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/9/19
Time (military)								1200
pH (s.u.)	4.06	3.78						5.21
Specific Cond. (mS)	0.034	0.035						0.039
Water Temp (°C)	24.1	23.4						20.8
Turbidity (*)	180	>1100						6.5
PID Readings	—	—						—
DO (mg/L)	9.58	5.61						4.88

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 6 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/2019
Field Personnel KEVIN WESSINGER
General Weather Conditions CLEAR GUSTY
Ambient Air Temp 60°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 4.01
pH = 7.0 7.04
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-9A

Well Diameter (D) 2 inch or ~~23~~ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 23 ft.
Depth to GW (DGW) 10.17 ft.

Length of Water Column (LWC-TWD-DGW) 12.83 ft.

1 Csg. Volume (LWC*C) = 0.163 x 12.83 = 2.09 gals.
3 Csg. Volumes = 3 X 2.09 = 6.27 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 6.27 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)	4.82	4.55	4.45	4.11				11:35
Specific Cond. (mS)	0.119	0.087	0.076	0.072				
Water Temp (°C)	20.8	20.8	20.5	20.6				
Turbidity (*)	>1100	75	24	10				
PID Readings								
DO (mg/L)	21.2	19.4	20.8	21.2				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/16/2019
Field Personnel KEVIN WESSINGER
General Weather Conditions CLEAR GUSTY
Ambient Air Temp 65°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 4.03
pH = 7.0 7.03
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-9B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 31.5 ft.
Depth to GW (DGW) 10 ft.

Length of Water Column (LWC-TWD-DGW) 21.5 ft.

1 Csg. Volume (LWC*C) = 0.163 x 21.5 = 3.5 gals.
3 Csg. Volumes = 3 X 3.5 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								4/16/19
pH (s.u.)	4.63							1100
Specific Cond. (mS)	0.040							~~WNR~~ 3.63
Water Temp (°C)	21.6							0.043
Turbidity (*)	31							19.5
PID Readings								60
DO (mg/L)	38.7							—
* subjective (1) None (2) Faint (3) Moderate (4) Strong								3.87

Remarks DRY @ 2.8 GAL

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/11/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions Sunny Warm
Ambient Air Temp 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-10A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 17.5 ft.
Depth to GW (DGW) 3.52 ft.
Length of Water Column (LWC-TWD-DGW) 13.98 ft.

1 Csg. Volume (LWC*C) = 0.163 x 13.98 = 2.28 gals.
3 Csg. Volumes = 3 X 2.28 = 6.8 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

11:45
4/12/19

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)	5.80	5.83						4.51
Specific Cond. (mS)	0.090 ~~0.095~~	0.090 ~~0.096~~						0.078
Water Temp (°C)	21.5	21.0						18.9
Turbidity (*)	11	10						140
PID Readings								
DO (mg/L)	4.47	4.04						5.66

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 10 gal DUP E @ 11:50

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/12/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions Overcast / Showers
Ambient Air Temp 50's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: serial no. _____
pH = 4.0 4.01
pH = 7.0 7.02
pH = 10.0 _____

Conductivity Meter serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-10B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 37 ft.
Depth to GW (DGW) 6.43 ft.

Length of Water Column (LWC-TWD-DGW) 32.57 ft.

1 Csg. Volume (LWC*C) = 0.163 x 32.57 = 5.31 gals.
3 Csg. Volumes = 3 X 5.31 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

4/15

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								9:50
pH (s.u.)	4.85			5.87				
Specific Cond. (mS)	0.083			0.086				
Water Temp (°C)	23.9			17.1				DUP F
Turbidity (*)	71100			120				10:15
PID Readings								
DO (mg/L)	3.74			3.17				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 4 gal; Heavy Sediments + Mud in 5+ feet of well

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/11/2019
Field Personnel C. Alexander / M. Wessinger
General Weather Conditions Sunny, Warm
Ambient Air Temp 80's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-11A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DGW) Flowing ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x _____ = _____ gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 0 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1505
pH (s.u.)								4.67
Specific Cond. (mS)								0.128
Water Temp (°C)								20.4
Turbidity (*)								3.6
PID Readings								-
DO (mg/L)								3.53

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks water flowing above TOC; sampled

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/11/2019
Field Personnel C. Alexander / K. Wagginger
General Weather Conditions Sunny, Warm
Ambient Air Temp 80's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-11B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DGW) Flowing ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x _____ = _____ gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 0 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1515
pH (s.u.)								4.65
Specific Cond. (mS)								0.111
Water Temp (°C)								19.7
Turbidity (*)								5.7
PID Readings								—
DO (mg/L)								3.20

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
GW Flowing Above TOC

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K. WESSINGER, C. MCCLENDON
General Weather Conditions SUNNY CLOUDY
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-12A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 20 ft.
Depth to GW (DGW) 8.65 ft.

Length of Water Column (LWC-TWD-DGW) 11.35 ft.

1 Csg. Volume (LWC*C) = 0.163 x 11.35 = 1.85 gals.
3 Csg. Volumes = 3 X 1.85 = 5.55 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/9/19
Time (military)								1235
pH (s.u.)	4.85	4.52						5.42
Specific Cond. (mS)	0.059	0.061						0.061
Water Temp (°C)	23.7	23.0						20.7
Turbidity (*)	220	180						13
PID Readings	—	—						
DO (mg/L)	4.97	4.00						4.87

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 3.5 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K WESSNER, C ALEXANDER
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-12B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 36.5 ft.
Depth to GW (DGW) 10.58 ft.

Length of Water Column (LWC-TWD-DGW) 25.92 ft.

1 Csg. Volume (LWC*C) = 0.163 x 25.92 = 4.22 gals.
3 Csg. Volumes = 3 X 4.22 = 12.66 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling 4/9/19
Volume Purged (gallons)								12.55
Time (military)	1415							5.87
pH (s.u.)	4.41							0.067
Specific Cond. (mS)	0.069							2.7
Water Temp (°C)	25.6							2.80
Turbidity (*)	456							
PID Readings	-							4.01
DO (mg/L)	4.18							

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 4 gal

Dup BG 1300
4/9/19

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K. WESSINGER, C. ALEXANDER
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-13A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 22 ft.
Depth to GW (DGW) 10.06 ft.

Length of Water Column (LWC-TWD-DGW) 11.94 ft.

1 Csg. Volume (LWC*C) = 0.163 x 11.94 = 1.95 gals.
3 Csg. Volumes = 3 X 1.95 = 5.85 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

4/11/19	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling 4/12/19
Volume Purged (gallons)								
Time (military)								1350
pH (s.u.)	5.86	5.83						5.73
Specific Cond. (mS)	0.060	0.060						0.074
Water Temp (°C)	21.4	21.1						20.5
Turbidity (*)	260	130						31
PID Readings	—	—						—
DO (mg/L)	6.77	6.33						5.15

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Obstruction in well; Neither Pump nor Bailer can pass @ 10 ft
4/11/19 Peristaltic Pump used ≈ 3 gal. pumped until dry; heavy mud in well (bentonite?)
No Recharge
4/12/19 Field Blank 6 @ 1450

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K. WEBSTER, C. ALLISON
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-13B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 33.5 ft.
Depth to GW (DGW) 12.17 ft.

Length of Water Column (LWC-TWD-DGW) 21.33 ft.

1 Csg. Volume (LWC*C) = 0.163 x 21.33 = 3.48 gals.
3 Csg. Volumes = 3 X 3.48 = 10.44 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/4/19
Time (military)								1425
pH (s.u.)	5.38	6.38						5.73
Specific Cond. (mS)	0.113	0.134						0.124
Water Temp (°C)	24.3	22.4						21.6
Turbidity (*)	26	>1100						800
PID Readings	—	—						—
DO (mg/L)	5.26	5.16						3.71

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel KWESSWOER CRAWFORD
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-14A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 20.0 ft.
Depth to GW (DGW) 3.82 ft.

Length of Water Column (LWC-TWD-DGW) 16.18 ft.

1 Csg. Volume (LWC*C) = 0.163 x 16.18 = 2.64 gals.
3 Csg. Volumes = 3 X 2.64 = 7.92 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/4/19
Time (military)		1325						1255
pH (s.u.)	6.50	5.28						5.25
Specific Cond. (mS)	0.011	0.054						0.064
Water Temp (°C)	22.2	20.0						22.3
Turbidity (*)	16	210						40
PID Readings	—	—						—
DO (mg/L)	5.60	1.78						5.15

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 4gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/19 2019
Field Personnel K. WILLIAMSON C. ALEXANDER
General Weather Conditions SUNNY HOT
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-19B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 38.5 ft.
Depth to GW (DGW) 9.67 ft.

Length of Water Column (LWC-TWD-DGW) 28.83 ft.

1 Csg. Volume (LWC*C) = 0.163 x 28.83 = 4.70 gals.
3 Csg. Volumes = 3 X 4.70 = 14.1 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0							4/4/19
Time (military)								1320
pH (s.u.)	5.42	5.40						5.75
Specific Cond. (mS)	0.127	0.121						0.133
Water Temp (°C)	21.7	20.7						22.1
Turbidity (*)	600	600						16
PID Readings	—	—						—
DO (mg/L)	3.78	5.33						3.76

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 5 gal Dup A @ 1325

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel KWESSHAW C. ALEXANDER
General Weather Conditions SUNNY COOL
Ambient Air Temp 40's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. _____ serial no. _____
pH = 4.0 _____ Standard _____
pH = 7.0 _____ Standard _____
pH = 10.0 _____ Standard _____

Chain of Custody

_____

_____
Relinquished by Date/Time Received by Date/Time

Well# MW-15A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 17 ft.
Depth to GW (DGW) 9.64 ft.

Length of Water Column (LWC-TWD-DGW) 7.36 ft.

1 Csg. Volume (LWC*C) = 0.163 x 7.36 = 1.20 gals.
3 Csg. Volumes = 3 X 1.20 = 3.60 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/4/19
Time (military)								1200
pH (s.u.)	5.15	5.50	5.70					5.58
Specific Cond. (mS)	0.306	0.317	0.279					0.267
Water Temp (°C)	19.6	19.2	19.2					20.8
Turbidity (*)	81	34	45					8.6
PID Readings								—
DO (mg/L)	1.60	1.50	1.60					2.89

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks DRY @ 3 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K WESSINGER, C ALEXANDER
General Weather Conditions SUNNY COOL
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:	Conductivity Meter
serial no. _____	serial no. _____
pH = 4.0 _____	Standard _____
pH = 7.0 _____	Standard _____
pH = 10.0 _____	Standard _____

Chain of Custody

_____

_____

Relinquished by Date/Time Received by Date/Time

Well# MW-15B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40 ft.
Depth to GW (DGW) 10.09 ft.

Length of Water Column (LWC-TWD-DGW) 29.91 ft.

1 Csg. Volume (LWC*C) = 0.163 x 29.91 = 4.88 gals.
3 Csg. Volumes = 3 X 4.88 = 14.64 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		5 gal						4/4/19
Time (military)								1215
pH (s.u.)	5.87	5.37						5.64
Specific Cond. (mS)	0.117	0.111						0.114
Water Temp (°C)	20.3	20.5						20.7
Turbidity (*)	7.7	450						210
PID Readings	—	—						—
DO (mg/L)	3.42	3.82						3.73

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 8 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions Sunny, Warm
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-16A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 16 ft.
Depth to GW (DGW) 11.38 ft.

Length of Water Column (LWC-TWD-DGW) 4.62 ft.

1 Csg. Volume (LWC*C) = 0.163 x 4.62 = 0.75 gals.
3 Csg. Volumes = 3 X 0.75 = 2.25 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/4/19
Time (military)								1130
pH (s.u.)	5.62	5.43						4.87
Specific Cond. (mS)	0.785	0.303						0.286
Water Temp (°C)	21.9	20.3						20.2
Turbidity (*)	11	150						10
PID Readings	—	—						—
DO (mg/L)	3.60	3.87						3.83

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 1 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/3/2019
Field Personnel K. WESSINGER, C ALEXANDER
General Weather Conditions SUNNY COOL
Ambient Air Temp 60'S

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-16B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DGW) 9.59 ft.

Length of Water Column (LWC-TWD-DGW) 20.41 ft.

1 Csg. Volume (LWC*C) = 0.163 x 20.41 = 3.33 gals.
3 Csg. Volumes = 3 X 3.33 = 9.99 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								4/4/19
Time (military)								1140
pH (s.u.)	6.24	6.09						5.29
Specific Cond. (mS)	0.189	0.196						0.194
Water Temp (°C)	22.4	21.3						20.0
Turbidity (*)	130	550						70
PID Readings	—	—						—
DO (mg/L)	3.67	2.88						3.86

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
Dry @ 6 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/16/2019
Field Personnel KW/CA
General Weather Conditions CLEAR Mild
Ambient Air Temp 61

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-17B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 39.5 ft.
Depth to GW (DGW) 5.05 ft.

Length of Water Column (LWC-TWD-DGW) 34.45 ft.

1 Csg. Volume (LWC*C) = 0.163 x 34.45 = 5.6 gals.
3 Csg. Volumes = 3 X 5.6 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1235
pH (s.u.)	4.95	4.84	4.70	5.09				
Specific Cond. (mS)	0.139	0.157	0.156	0.199				
Water Temp (°C)	22.2	21.9	23.3	24.2				
Turbidity (*)	20	M	85	170				
PID Readings	—	—	—	—				
DO (mg/L)	3.18	1.51	2.41	2.35				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks
FIELD BLANK @ 1250

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions sunny warm
Ambient Air Temp 80

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-18A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 13 ft.
Depth to GW (DGW) 0.70 ft.

Length of Water Column (LWC-TWD-DGW) 12.30 ft.

1 Csg. Volume (LWC*C) = 0.163 x 12.30 = 2.00 gals.
3 Csg. Volumes = 3 X 2.00 = 6.00 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1420
pH (s.u.)	6.53	5.98						
Specific Cond. (mS)	0.129	0.264						
Water Temp (°C)	19.5	18.1						
Turbidity (*)	5.3	>1100						
PID Readings								
DO (mg/L)	1.90	2.37						

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks DRY @ 3 gAL

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/16/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions CLEAR MILD
Ambient Air Temp 60°F

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-16B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DGW) _____ ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x _____ = _____ gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1210
pH (s.u.)								5.01
Specific Cond. (mS)								0.140
Water Temp (°C)								18.3
Turbidity (*)								4.0
PID Readings								—
DO (mg/L)								1.97

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks GW Flowing Above TOC Dup G @ 1220

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/2019
Field Personnel KW/WW
General Weather Conditions CLEAR/BREEZE
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-19B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 34 ft.
Depth to GW (DGW) 4.77 ft.

Length of Water Column (LWC-TWD-DGW) 29.23 ft.

1 Csg. Volume (LWC*C) = 0.163 x 4.76 = _____ gals.
3 Csg. Volumes = 3 X 4.76 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		4.76						
Time (military)								17:45
pH (s.u.)	6.23	6.45		6.34				
Specific Cond. (mS)	0.127	0.152		0.206				
Water Temp (°C)	26.1	23.7		21.8				
Turbidity (*)	2.6	>1100		>1100				
PID Readings								
DO (mg/L)	5.15 ~~6.46~~	2.04		0.60				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks DRY @ 1 Vol MUCKY TOTAL DEPTH 33.5' 1' OF MUCK
CASING KINKED

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/2019
Field Personnel KW / WW
General Weather Conditions CLEAR BREEZE
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-20A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 15 ft.
Depth to GW (DGW) 1.12 ft.

Length of Water Column (LWC-TWD-DGW) 13.88 ft.

1 Csg. Volume (LWC*C) = 0.163 x 13.88 = 2.26 gals.
3 Csg. Volumes = 3 X 2.26 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		2.26	4.52					
Time (military)								15:30
pH (s.u.)	4.70	5.17	4.97					
Specific Cond. (mS)	0.0872	0.0931	0.0874					
Water Temp (°C)	20.0	19.9	20.4					
Turbidity (*)	> 1100	> 1100	650					
PID Readings								
DO (mg/L)	1.76	1.50	1.52					

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

DRY @ 2 VOL. ALLOW TO RECHARGE AND SAMPLE

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/2019
Field Personnel KEVIN WESSINGER
General Weather Conditions CLEAR GUSTY
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-20B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DGW) 1.77 ft.

Length of Water Column (LWC-TWD-DGW) 33.23 ft.

1 Csg. Volume (LWC*C) = 0.163 x 33.23 = 5.4 gals.
3 Csg. Volumes = 3 X 5.4 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		5.4	10.8	16.2				
Time (military)								15:45
pH (s.u.)	4.94	4.92	5.16	5.54				
Specific Cond. (mS) 0.0644 → 0.0644		0.0982	0.0928	0.0905				
Water Temp (°C)	25.3	21.9	23.0	23.3				
Turbidity (*)	8.9	230	45	8.9				
PID Readings	3.68							
DO (mg/L)	1.38.2	2.47	1.53	1.50				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/16/2019
Field Personnel CA/KW
General Weather Conditions Clear Mild
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-21A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 12 ft.
Depth to GW (DGW) 0.28 ft.

Length of Water Column (LWC-TWD-DGW) 11.72 ft.

1 Csg. Volume (LWC*C) = 0.163 x 11.72 = 1.91 gals.
3 Csg. Volumes = 3 X 1.91 = 5.73 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	2	4	6				
Time (military)								1430
pH (s.u.)	5.58	5.65	5.74	5.54				
Specific Cond. (mS)	0.117	0.111	0.109	0.104				
Water Temp (°C)	19.4	19.0	19.0	19.2				
Turbidity (*)	180	28	26	390				
PID Readings	—	—	—	—				
DO (mg/L)	1.75	1.56	1.39	1.91				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/16 2019
Field Personnel KW/CA
General Weather Conditions CLEAR MILD
Ambient Air Temp 72°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 4.00
pH = 7.0 7.02
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-213

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DGW) 0.40 ft.

Length of Water Column (LWC-TWD-DGW) 34.60 ft.

1 Csg. Volume (LWC*C) = 0.163 x 34.60 = 5.64 gals.
3 Csg. Volumes = 3 X 5.64 = 16.92 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

4/17/19

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								9:45
pH (s.u.)	6.06	5.90	4.84	4.80				
Specific Cond. (mS)	0.083	0.082	0.0770	0.076				5.49
Water Temp (°C)	21.6	19.9	20.3	20.3				0.077
Turbidity (*)	8.2	230	800	600				19.0
PID Readings								8.6
DO (mg/L)	1.94	1.55	2.59	3.49				
* subjective (1) None (2) Faint (3) Moderate (4) Strong								2.65

Remarks DRY @ END OF 3RD VOL. BEFOR SAMPLES

4/17/19 Dup H @ 1025

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel KEVIN WESSINGER
General Weather Conditions CLEAR MILD
Ambient Air Temp 68°

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-22A

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 8 ft.
Depth to GW (DGW) 0.45 ft.

Length of Water Column (LWC-TWD-DGW) 7.55 ft.

1 Csg. Volume (LWC*C) = 0.163 x 7.55 = 1.23 gals.
3 Csg. Volumes = 3 X 1.23 = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0							
Time (military)								
pH (s.u.)	5.22	5.19	5.15					1030
Specific Cond. (mS)	0.190	0.179	0.194					
Water Temp (°C)	18.3	17.9	17.0					
Turbidity (*)	2.2	29	800					
PID Readings	-	-	-					
DO (mg/L)	2.15	1.99	2.06					

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Dry @ 2 Vol. Allow Recharge.

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/17/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions Sunny, Warm
Ambient Air Temp 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# MW-22B

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DGW) 0.91 ft.

Length of Water Column (LWC-TWD-DGW) 34.09 ft.

1 Csg. Volume (LWC*C) = 0.163 x 34.09 = 5.56 gals.
3 Csg. Volumes = 3 X 5.56 = 16.7 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1120
pH (s.u.)	5.72	5.73	5.78	5.84				
Specific Cond. (mS)	0.150	0.151	0.151	0.151				
Water Temp (°C)	20.1	19.1	19.1	19.2				
Turbidity (*)	60	450	75	30				
PID Readings	—	—						
DO (mg/L)	1.89	1.34	1.30	1.35				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/1/2019
Field Personnel C. Alexander, K. Wessinger
General Weather Conditions Sunny cool
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# DMW-1

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 65 ft.
Depth to GW (DGW) 10.79 ft.

Length of Water Column (LWC-TWD-DGW) 54.21 ft.

1 Csg. Volume (LWC*C) = 0.163 x 54.21 = 8.84 gals.
3 Csg. Volumes = 3 X 8.84 = 26.5 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 8 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0							
Time (military)	1433							1540
pH (s.u.)	6.74							6.77
Specific Cond. (mS)	0.403							0.319
Water Temp (°C)	22.1							21.5
Turbidity (*)	27							0.5
PID Readings								
DO (mg/L)	1.57							3.75
* subjective (1) None (2) Faint (3) Moderate (4) Strong								

Remarks
Dry @ 8 gal

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/1/2019
Field Personnel C. Alexander, K. Wessinger
General Weather Conditions Sunny Cool
Ambient Air Temp 60's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# DMW-2

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 65 ft.
Depth to GW (DGW) 5.35 ft.

Length of Water Column (LWC-TWD-DGW) 59.65 ft.

1 Csg. Volume (LWC*C) = 0.163 x 59.65 = 9.72 gals.
3 Csg. Volumes = 3 X 9.72 = 29.2 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling 10 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	10 gal						
Time (military)	1415	1430						1610
pH (s.u.)	6.77	6.66						6.66
Specific Cond. (mS)	0.373	0.251						0.290
Water Temp (°C)	21.7	14.4						22.9
Turbidity (*)	75	>1100						320
PID Readings	—	—						—
DO (mg/L)	1.74	3.59						3.74

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/1/2019
Field Personnel C. Alexander, K Wessinger
General Weather Conditions Sunny, Breezy, cool
Ambient Air Temp 50's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter: Conductivity Meter
serial no. ____ serial no. ____
pH = 4.0 4.04 Standard ____
pH = 7.0 7.03 Standard ____
pH = 10.0 ____ Standard ____

Chain of Custody

____
____
Relinquished by Date/Time Received by Date/Time

Well# DMW-3

Well Diameter (D) 2 inch or ____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 65 ft.
Depth to GW (DGW) 1.33 ft.

Length of Water Column (LWC-TWD-DGW) 63.67 ft.

1 Csg. Volume (LWC*C) = 0.163 x 63.67 = 10.37 gals.
3 Csg. Volumes = 3 X 10.37 = 31.11 gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling ~~no~~ 13 gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	10.4 gal							
Time (military)	1330							1630
pH (s.u.)	5.05							6.24
Specific Cond. (mS)	0.283							0.267
Water Temp (°C)	18.1							19.2
Turbidity (*)	65							5.0
PID Readings	—							—
DO (mg/L)	5.35							2.88
* subjective (1) None (2) Faint (3) Moderate (4) Strong								

Remarks
Dry @ 13 gal
Field Blank 1 @ 1640

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/15/19 2019
Field Personnel K. WEESNER, W. WOOD
General Weather Conditions SUNNY, BREEZY
Ambient Air Temp 10 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# FIELD BLANK 7

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DGW) _____ ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x _____ = _____ gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1615
pH (s.u.)								
Specific Cond. (mS)								
Water Temp (°C)								
Turbidity (*)								
PID Readings								
DO (mg/L)								

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks COLLECTED @ MW-20, LAB SUPPLIED WATER

CTSI

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 4/4/2019
Field Personnel C. Alexander / K. Wessinger
General Weather Conditions Sunny, Warm
Ambient Air Temp 70's

Facility Name Broad River Amoco Site ID 11946

Quality Assurance

pH Meter:
serial no. _____
pH = 4.0 _____
pH = 7.0 _____
pH = 10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

_____
_____
Relinquished by Date/Time Received by Date/Time

Well# Field Blank 2

Well Diameter (D) 2 inch or _____ feet
conversion factor (C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DGW) _____ ft.

Length of Water Column (LWC-TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C) = 0.163 x _____ = _____ gals.
3 Csg. Volumes = 3 X _____ = _____ gals (Standard Purge Volume)

Total Volume of Water Purged Before Sampling _____ gallons

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								1240
pH (s.u.)								
Specific Cond. (mS)								
Water Temp (°C)								
Turbidity (*)								
PID Readings								
DO (mg/L)								

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks

Appendix C
Tax Map Information

CTSI
Geotechnical Engineering and Environmental Services
IRMO, SOUTH CAROLINA

Date: 5/13/19 | SCALE:SEE GRAPHIC | Dwg: TAX MAP

TAX MAP
BROAD RIVER AMOCO
UST ID#11946
CTSI PROJ. 18-6580
COLUMBIA, SC

TAX MAP INFORMATION
Broad River Amoco, UST Site 11946
Columbia SC

MAP ID	Parcel Number	Owner Name	Owner Address
S	R06108-04-69	Broad River C-Store LLC	41 Cromwell Ct., Irmo, SC 29063
1	R06200-03-02	State of South Carolina	Columbia, SC 29201
2	R06108-05-01	State of South Carolina	Columbia, SC 29201
3	R06108-04-70	Herteline Lowman	4315 Broad River Rd., Columbia, SC 29210
4	R06108-04-68	William & Bonnie Saville	Columbia, SC 29210
5	R06108-04-67	William & Bonnie Saville	Columbia, SC 29210
6	R06108-04-27	James & Wendy Rice	22 Caddis Creek Ct., Irmo, SC 29063
7	R06108-04-26	MDC Associates	4403 Broad River Rd., Columbia, SC 29210
8	R06108-04-25	MDC Associates	4403 Broad River Rd., Columbia, SC 29210
9	R06108-04-82	OPTED OUT	
10	R06108-04-74	Rolling Pines Horizontal	PO Box 290189, Columbia, SC 29229
11	R06108-04-66	Wesley Gray	141 Turnberry Ln., Lexington, SC 29210
12	R06108-04-28	Janice Bernice Amaker Lucke	1251 Dothan Rd., Columbia, SC 29210

Appendix D
Soil Boring Logs and Well Record 1903 Forms

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 1

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	24.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	HA	15.1		3" Asphalt
	2	HA	75		Brown Silty SAND with trace gravel - FILL
2					
3	3	HA	77.4		Tan and Red Mottled Clayey Silty SAND
4					
5					
6	4	MC	21.5	4.9	Gray and Brown Mottled Clayey Silty Fine SAND Soft, Faint Odor, Moist
7					
8	5	MC	6.7		Red, Tan, and Gray Mottled Clayey Silty SAND
9					
10	6	MC	16.9	4.8	Dark Red with Light Gray Clayey Silty SAND Dry
11					
12	7	MC	12.3		Light Gray and Pale Red Silty Fine SAND with Whitish Clay Zone Relict, Vertical Foliation, Dry
13					
14	8	MC	19.4	2 ft	Light Gray and Brown Silty Fine SAND Very Hard, Core Jammed in Tube Liner
15					
16	9	MC			
17					
18	10	MC	40.4		Gray Clayey SILT with Coarse Quartz near base Dry, Small Shoe
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 24 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 2

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		2.4		5" Asphalt, angular rock to 9"
	2		5		9"-16" Silty Clayey Sand, FILL
2	3		120		16'-26" Brownish black relict silty SAND topsoil, odor
3	4		132		26"-40" Light greyish brown silty SAND, trace clay, soft
4	5		120		40"-48"
5	6	MC	407	5.0	Red, Light Brown , Grey mottled Clayey Silty Fine SAND few black streaks, trace 1/4" angular quartz
7	7		445		
9	8	MC	62	5.0	SAA with brighter red and orange mottles, increased angular quartz to 1/2 "
12	9		373		
14	10	MC	207	4.7	Whitish clayey SILT to silty CLAY with relict vertical foliation, Dry
17	11		193		
19	12	MC	257	3.6	
23					Refusal @ 23 ft.
24					
25					

COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 3

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	24.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0-4	1		2.0		2" Asphalt, angular rock to 10", hand auger refusal Grey fine-medium silty Sand, FILL Greyish brown silty SAND, (relict subsoil?)
5-6	2	MC	144	5.0	Mottled red, brown, grey silty fine SAND, cohesive, becomes lighter with depth
7-8	3		310		
9-11	4	MC	771	5.0	
12-14	5		744		Vertically foliated light yellowish grey silty CLAY to clayey SILT
15-16	6	MC	524	5.0	
17-19	7		674		
20-21	8	MC	551	5.0	Vertically foliated dark red clayey SILT
22-24	9		409		Boring terminated @ 24 ft.
25					

COMMENTS:

Boring Terminated at 24 ft.
Hand auger refusal @10 inches
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 4

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	24.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0	1		2.6		5" Asphalt, angular rock to 9"
1					
	2		6.6		9"-16" coarse Gravel, FILL
2	3		16.4		16"-26" gravel and orange and grey silty Clay, FILL
	4		102		26"-28" yellowish grey silty Clay, FILL
3	5		64.2		28"-36" yellowish grey clayey Sand, FILL
4	6		72.7		40"-48" orange mottled silty Clay, FILL
5					
	7		61.2		Red, Light Brown mottled Clayey Silty Fine SAND
6		MC		5.0	trace 1/4" angular quartz
7					
	8		140		
8					
9					Red, white, brown hard clayey SILT, dry
10					
	9		51.1		
11		MC		5.0	
12					
	10		40.4		
13					
14					
15					
	11		28.3		Red and grey clayey SILT with very fine vertical foliation, dry
16		MC		5.0	with occasional rust colored vertical fracture planes.
17					
	12		42.1		
18					
19					
20					
	13		50.4		
21		MC		5.0	
22					
	14		30.5		
23					
24					
25					

COMMENTS:

Boring Terminated at 24 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 5

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	24.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		2.6		4" Asphalt,
	2		30.2		6"-10" Sand and Gravel, FILL
2	3		137		10"-17" Grey and orange silty Clay, FILL
	4		114		17"-22" Grey and orange silty Sand, FILL
3	5		60.1		22"-30" Grey silty Clay, FILL
	6		35.3		30"-36" Mottled orange Clay, FILL
4					36"-48" Orange Clay, FILL
5					
6	7		61.2		Red, Brown mottled Clayey Silty Fine SAND, dry
7		MC		5.0	
8	8		140		
9					
10					Medium grey clayey SILT, dry
11	9		51.1		
12		MC		5.0	Moderate red and grey clayey SILT with very fine vertical foliation, dry
13	10		40.4		
14					
15					
16	11		28.3		
17		MC		5.0	Grey silty CLAY with few red streaks, platey texture, dry
18	12		42.1		
19					
20					
21	13		50.4		
22		MC		5.0	Red, pink, and grey clayey SILT, little fine Sand
23	14		30.5		
24					Boring terminated @ 24 feet
25					

COMMENTS:

Boring Terminated at 24 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 6

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					6" Asphalt
	1		2.4		6"-10" Sand and Gravel, F orange Clay, FILL
	2		3.2		10"-14" Sand and Gravel, FILL
2	3		15.5		14"-25" Grey silty Clay, FILL
	4		25.36		25"-34" Grey and orange silty Clay, FILL
3					
	5		13.1		34"-48" orange Clay, FILL
4					
5					
	6		2.8		Red, Light Brown, Grey mottled Silty Fine SAND
6					with scattered small-medium angular quartz, vertical foliation
		MC		5.0	
7					
	7		1.8		Grey clayey SILT, with vertical foliation and healed iron stained fracture traces
8					
9					
10					
	8		1.5		
11		MC		5.0	
12					
	9		1.4		Pale red, orange and yellowish grey clayey SILT, little fine Sand,
13					0.5 foot thick sandy zone at 13 feet
14					
15					
	10		0.6		Grey silty CLAY with iron stained fracture traces
16		MC		4.8	
17					
	11		0.7		Red and grey clayey SILT, trace fine Sand, with vertical foliation, dry
18					
19					
20					
	12		0.6		
21					
		MC		4.0	Pale greyish red clayey silty SAND
22	13		1.1		
23					Boring terminated at 23 feet
24					
25					

COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 7

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		361		0.5-1.0 Brown fine Sand, FILL
	2		189		1.0-2.0 Orange very fine silty Sand, FILL
2					
	3		153		2.0-2.8 Brown to light brown very fine silty Sand, FILL
3					
	4		401		2.8-3.3 Orange very fine silty Sand, FILL
4	5		444		3.3-4.5 FMC Sand, (UST Pit backfill stringer?)
5	6		101		4.5-4.8 Brown CLAY
6					
	7		786		
7		MC		5.0	Red, grey, light brown mottled silty fine SAND with scattered quartz gravel to 1"
8					odor, dry
9	8		686		
10					
11					
	9		846		
12		MC		5.0	
13					
14	10		807		
15					
16	11		649		
17		MC		4.0	
18	12		1096		
19					Very light grey and light brown silty SAND with quartz gravel
20	13		847		
21		MC		4.0	
22	14		836		
23					Boring terminated @ 23 feet
24					
25					

COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4.8 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 8

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		3.1		6" Asphalt 0.5-0.9 Dark grey SAND and GRAVEL
2	2		9.8		0.9-3.0 Red and Brown clayey silty Sand, FILL
3	3		71.6		3.0-3.5 Gravel and Sand, FILL
4	4		437		Dark brown silty SAND with roots (relict topsoil)
5	5	MC	724	5.0	Light Brown Silty Fine SAND
6					
7	6		610		Light Brown and Red mottled clayey silty SAND with large angular quartz Gravel, odor
8					
9					
10	7	MC	563	5.0	Red, brown , and grey mottled clayey SILT, little sand, trace Gravel, odor
11					
12	8		713		
13					
14					
15	9	MC	552	4.0	
16					
17	10		768		
18					
19	11	MC	465	3.0	Light grey clayey SILT, scattered quartz gravel, hard
20					
21					Refusal at 21 feet
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Overdrilled by RW-B

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 9A

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	3.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		381		6" Concrete 0.5-1.0 black SAND and GRAVEL FILL
2	2		275		1.0-3.0 Brown and red clayey silty Sand, FILL
3					3.0 hit 2" diameter fiberglass pipeline (ventline)
4					Boring terminated at 3 feet

COMMENTS:

Boring Terminated at 3 ft.
Hand auger to 3 ft bgs
Abandoned

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 9B

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/4/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/4/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					6" Asphalt
1	1		215		0.5-1.0 Black Sand and Gravel, FILL
	2		464		1.0-1.5 Brown clayey silty Sand, FILL
2	3		480		1.5-2.0 Fine-Medium SAND, FILL
3	4		337		Brown and red clayey silty SAND, FILL
4					
5	5		528		Dark brown silty SAND with roots (relict topsoil)
6		MC		3.9	Light Brown Silty Fine SAND
7	6		489		
8					
9					
10	7		627		Brown and Red mottled clayey silty SAND with large angular quartz Gravel to 1"
11		MC		4.2	
12	8		835		
13					
14					
15	9		823		
16		MC		4.9	
17	10		798		Red and Grey silty SAND with quartz gravel
18					
19					
20	11		832	3.0	Grey clayey SILT
21		MC		4.0	
22	12		142		
23					
24					Boring Terminated at 23 feet
25					

COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-10A

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	4.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)	ft-bgs
1					6" Asphalt	1
2						2
3						3
4					Hit obstruction at 4 feet	4
5					Boring terminated at 4 feet	5
6						6
7						7
8						8
9						9
10						10
11						11
12						12
13						13
14						14
15						15
16						16
17						17
18						18
19						19
20						20
21						21
22						22
23						23
24						24
25						25

COMMENTS:

Boring Terminated at 4 ft.
Hand auger to 4 ft bgs
Abandoned

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-10B

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		201		6" Asphalt 0.5-1.0 Brown very fine Sand, FILL
2	2		26.5		1.0-3.0
3					Orange and light brown clayey Silt, cohesive, FILL
4	3		26.7		3.0-4.0
5	4	MC	397	4.2	
6					Dark brown silty SAND with roots (relict topsoil)
7	5		630		Reddish brown clayey silty SAND with scattered quartz gravel, moderate odor
9					
10	6	MC	625	5.0	Brown, red, grey mottled clayey silty fine SAND with angular quartz Gravel
12	7		755		
14					
15	8	MC	506	4.1	White and brown to red and grey with depth clayey SILT, little Sand, trace gravel
17	9		755		
19					
20	11		628	3.0	refusal at 20 feet
21					Boring Terminated at 20 feet
25					

COMMENTS:

Boring Terminated at 20 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-11

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	15.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					6" Concrete
1	1		440		0.5-1.0 Grey silty Sand, FILL
2	2		532		1.0-2.0 Grey and orange silty clayey Sand FILL
3	3		636		2.0-3.0 Grey and orange silty clayey Sand FILL
4	4		619		3.5-4.0 Grey and orange silty clayey Sand FILL
5	5		620		4.0-5.0 Grey and orange silty clayey Sand FILL
6	6	MC	452	3.0	Fine-medium Sand, FILL (UST pit backfill)
7					
8	7		NM		free product present
9					
10					
11	8	MC	NM	5.0	free product present
12					
13					
14	9		885		Red, grey, ornage mottled silty clayey SAND
15					
16					Boring terminated at 15 feet
17					
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 15 ft.
Hand auger to 4 ft bgs
Boring located within UST pit area
Overdrilled by RW-A

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

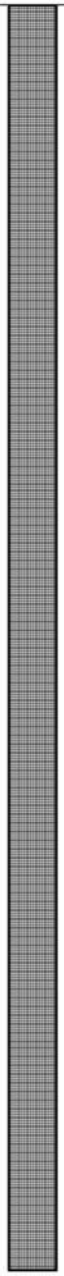
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-12

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	23.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		104		3" Asphalt 0.3-1.5 Brownish grey Sand and Gravel, FILL
2	2		212		1.5-2.5
3	3		35.7		2.5-3.5 Grey clayey Sand and Gravel, FILL, odor
4	4		80.8		3.5-4
5	5	MC	662	4.3	Dark brown relict topsoil Brown clayey silty SAND, soft, odor
6					
7	6		604		Red, grey, orange mottled clayey silty SAND
8					
9					
10	7		730		
11					
12	8		553	5.0	
13					
14					
15	9		607		Red and grey clayey SILT, little sand
16		MC		5.0	
17	10		62.4		
18					
19					
20	11		4.6		
21		MC		4.0	
22	12		12.6		
23					
24					Boring Terminated at 23 feet
25					



COMMENTS:

Boring Terminated at 23 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-13

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		3.0		6" Asphalt, 0.5-1.0 Black sandy Silt, FILL
2	2		16.0		1.0-3.0 Orange mottled Clay, FILL
3					
4			153		3.0-4.0 Brown silty SAND relict topsoil
5	4		294		4.0-5.0 Light grey silty SAND
6	5	MC	700	5.0	Red, light brown mottled silty clayey fine SAND with scattered quartz gravel, odor
7					
8	6		798		
9					
10					
11	7		771		
12					
13		MC		5.0	
14	8		734		
15					Pale red and white clayey SILT
16	9		426		
17		MC		5.0	
18					
19	10		108		Light brown and white silty, clayey fine SAND
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 20 ft.
Hand auger to 4.8 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 14

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		59.4		3" Asphalt 0.3-1.0 Brownish grey SAND and GRAVEL with grey silty Clay FILL
2	2		18.3		1.0-3.0
3	3		12.8		3.0-4.0
5	4	MC	816	5.0	Brown clayey silty SAND, FILL, odor
8	5		51		Dark brown relict topsoil ?, strong odor
10	6	MC	860	5.0	Light brown and red mottled silty fine SAND
13	7		110		
15	8	MC	221	5.0	Red and light grey clayey SILT
17	9		9.2		
19					Boring Terminated at 19 feet

COMMENTS:

Boring Terminated at 19 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

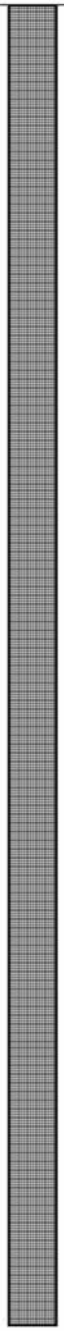
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 15

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	24.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		4.8		3" Asphalt 0.3-1.0
2	2		0.41		1.0-2.0 Orange Sand, FILL
3	3		1.6		2.0-3.0 Dark grey Sand and Gravel, FILL Brown silty , clayey Sand, FILL
4	4		0.0		3.0-4.0 Grey clayey silty sand, FILL Pale brown silty Sand with gravel and rock fragments, FILL
5	5	MC	1.2	5.0	
6					
7	6		48.1		
8					
9					Brown silty clayey Sand with Gravel, FILL, soft, easy probing
10	7	MC	10.3	3.5	
11					
12	8		47.6		
13					
14					
15	9	MC	4.1	3.0	
16					
17					
18					
19					
20	10	MC	6.5	5.0	Beverage can fragment
21					
22	11		10.0		White and red silty Clay, vertical foliation.
23					
24					Boring terminated at 24 feet
25					



COMMENTS:

Boring Terminated at 24 ft.
Hand auger to 4 ft bgs
Temporary 1-inch PVC well, 10-ft screen installed.
Abandoned 4/29/2019

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 16

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	22.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/5/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/5/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					3" Asphalt,
2	1		0.4		0.3-2.5 Orange and grey silty Sand, trace clay, FILL
3		MC		5.0	
4	2		10.5		2.5-5.0
5					
6					
7		MC	11.6	3.0	Pale greenish grey weathered fine grained sandstone, FILL
8					
9					
10					
11					
12		MC	842	3.2	Grey, silty, clayey Sand, FILL
13					
14					
15					
16					
17		MC	1052	1.5	Grey fine, medium, coarse Sand with rock fragments, FILL
18					
19					
20					
21			830		Dark reddish brown silty Clay, soft, FILL
22		MC	741	2.0	Light Brown clayey SILT, trace fine Sand Refusal at 22 feet
23					
24					
25					

COMMENTS:

Boring Terminated at 22 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB- 17

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/6/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/6/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	2.6	3.4	3" Asphalt, 0.3-2.5 Brown silty Sand, little gravel, FILL
3-5	2		9.3		2.5-5.0
6-7	3		118	3.2	Light greenish grey highly weathered rock, FILL
8-10	4		526		
11-12	5		568	3.2	Light brown silty clayey Sand, FILL
13-15	6		598		
16-17	7		NM	4.2	Dark red clayey silty Sand, soft, FILL Free product present
18-20	8		NM		Red and grey clayey SILT, foliated Free product present
21-25					Boring terminated at 20 feet

COMMENTS:

Boring Terminated at 20 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-18

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/6/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/6/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1		3.4		3" Asphalt, Brownish grey clayey, silty Sand, FILL
3-5	2	MC	32.6	3.8	Brown silty Sand, FILL
6-7	3		18.6		Brown silty SAND, rooted, relict topsoil
8-10	4	MC	122	4.9	Red, grey, orange mottled silty fine SAND
11-12	5		4.7		Grey and red clayey SILT,little fine Sand
13-15	6	MC	2.8	5.0	
16-17	7		9		
18-19	8	MC	4.5	5.0	
20-25					Boring terminated at 20 feet

COMMENTS:

Boring Terminated at 20 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-19

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/7/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/7/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	0.5	4.1	3" Asphalt, Brown, red, grey silty Sand, FILL
3-5	2		1.1		
6-7	3		1	3.3	Brown and grey silty Sand, FILL
8-10	4		9.9		Soft at 9 feet
11-12	5		1.2	3.6	
13-15	6		38.4		White and grey clayey SILT
16-17	7		39.7	4.0	
18-19	8		16.1		reddish brown silty SAND refusal at 19 feet
20-25					Boring terminated at 19 feet

COMMENTS:

Boring Terminated at 19 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-20

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/7/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/7/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	0.3	4.0	3" Asphalt,
3-5	2		0.4		Orangish brown silty Sand and yellowish grey highly weathered rock, FILL
6-7	3		1.3	3.2	1/2 inch thick black gravelly layer at 7 feet
8-10	4		0.9		Greenish to brownish grey clayey silty Sand, FILL
11-12	5		0.9	3.6	
13-15	6		0.8		Soft at 14 feet
16-17	7		3.1	5.0	White and grey clayey SILT
18-20	8		2.7		
21-25					Boring terminated at 20 feet

COMMENTS:

Boring Terminated at 20 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

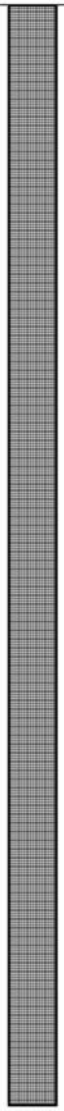
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-21

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/7/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/7/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	0.3	4.3	3" Asphalt,
3-5	2		0.4		Reddsh brown silty Sand, FILL
6-7	3		0.8	3.6	Dark greyish brown silty SAND, trace gravel and organics, Relict topsoil?
8-10	4		1.7		Greyish brown clayey silty Sand with two black gravelly zones at ~11 feet
11-12	5		1.3	3.1	
13-14	6		1.4		
15					Dark red silty SAND
16-17	7		3.5	3.7	Red and brown mottled silty SAND
18-19	8		24.3		White and grey clayey SILT
20					Boring terminated at 20 feet



COMMENTS:

Boring Terminated at 20 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

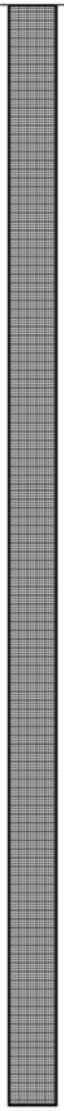
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-22

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	20.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	MC	15.7	5.0	4" Asphalt, 0.5-2.0 Red and orange mottled silty Sand, FILL
2	2		17.6		2.0-3.0
3	3		289		Grey Sand and Gravel, FILL 3.0-5.0 Dark brown clayey silty SAND, relict topsoil
4					
5					
6	4		310		Light brown clayey silty SAND, strong odor
7					
8	5	MC	591	4.7	
9					
10					Red and grey silty Sand
11	6		584		
12					
13	7	MC	434	4.7	
14					
15					White and light brown clayey SILT, foliated
16	8		410		
17					
18	9	MC	93.6	nm	Macrocore liner stuck in sampler, Same as above
19					
20					
21					Boring terminated at 20 feet
22					
23					
24					
25					



COMMENTS:

Boring Terminated at 20ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-23A

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	2.5
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)	ft-bgs
1					6" Asphalt, Orange Clay, Fill	1
2					Grey silty Sand Obstruction at 2.5 feet, boring terminated	2
3						3
4						4
5						5
6						6
7						7
8						8
9						9
10						10
11						11
12						12
13						13
14						14
15						15
16						16
17						17
18						18
19						19
20						20
21						21
22						22
23						23
24						24
25						25

COMMENTS:

Boring Terminated at 2.5 ft.
Abandoned

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-23B

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		7.9		4" Asphalt, Red and Orange clayey silty Sand, FILL 4"-20"
2	2		120		Grey silty Sand, roots, relict topsoil 20"-36"
3	3		313		3.0-4.0'
4	4	MC	224	4.9	Brownish grey silty SAND, odor.
5	5		422		
6	6		431		Orange and red mottled silty SAND, trace fine to medium gravel
7	7		396		
8	8	MC	456	41.0	Light brownish grey sandy SILT, vertical foliation, fracture traces
9	9		242		
19					White silty CLAY
20					Boring terminated at 19 feet.

COMMENTS:

Boring Terminated at 19 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-24

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1		44.9		6" Asphalt, 0.5-3.0 Brown and dark grey silty Clay, FILL
3-4	2		202		Grey silty CLAY 3.0-4.0'
5-6	3	MC	55	4.9	Red, grey, brown mottled sandy SILT, trace fine to medium gravel, gravel larger with depth
7-8	4		49		
9-10	5	MC	43	4.8	
11-12	6		67.5		
13-14	7	MC	72.8	nm	Red, brown, grey sandy SILT, trace Clay, vertical foliation
15-16					Macrocore tube stuck in sampler
17-18	8		48.4		White and brown silty clayey SAND
19					Boring terminated at 19 feet.
20-25					

COMMENTS:

Boring Terminated at 19 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

LOG OF BORING: SB-25

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	16.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		19.3		4" Concrete 0.33-1.5 Sand and Gravel, FILL
2	2		59.3		Brown sandy Silt, FILL
3	3		223		Dark brown silty Sand, FILL
4	4	MC	264	2.6	Grey crushed rock and Brown and red silty Sand, FILL
5					
6	5		336		Light brown clayey silty Sand
7		MC		4.4	Mottled red, brown, grey silty SAND, faint odor.
8	6		282		
9					
10	7		33.6		
11		MC		nm	Light grey and red to white and brown sandy SILT, vertical foliation, brown zones very fine silty Sand
12	8		26.8		
13					
14	9	MC	30	nm	
15					
16					
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 16 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

LOG OF BORING: SB-26

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	16.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	MC	41.3	3.5	4" Concrete 0.33-1.5 Sand and Gravel, FILL
2	2		196		Grey crushed rock and brown and red silty Sand, FILL
5					Brown clayey silty Sand
6	3		368	4.5	Mottled red, brown, grey silty SAND, trace gravel.
8	4		163		
10	5		158	5.0	Light grey and red to white and brown sandy SILT, vertical foliation, brown zones very fine silty Sand
13	6		76.6		
15	7	MC	7.9	3.0	Grey and pale red silty SAND, vertically foliated
17					Boring terminated at 16 feet.

COMMENTS:

Boring Terminated at 16 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

LOG OF BORING: SB-27

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	16.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/31/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/31/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0	1		11.3		0.2 Asphalt, 0.2-0.5 dark organic sand, FILL
1	2		168		0.5-2.0 Grey silty Clay, FILL
2					Grey crushed rock, FILL
3	2	MC	235	2.0	
4					Grey silty Sand, FILL
5					
6	3		398		Light brown clayey, silty SAND, soft
7		MC		3.1	Mottled red, brown, silty SAND, with angular quartz gravel.
8	4		245		Brown and pale red sandy SILT, vertical foliation,
9					
10	5		329		
11		MC		3.1	Light grey and brown clayey SILT, possible free phase petroleum product present.
12	6		307		
13					
14	7	MC	444	3.1	
15					
16					
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 16 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Overdrilled by RW-D

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

LOG OF BORING: SB-28

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	16.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/2/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/2/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		8.6		0.5 Asphalt 0.5-1.0 Grey sand and Gravel, FILL
2	2		0.0		1.0-2.5 Light greyish brown silty Sand and Gravel, FILL, wet at 2.5, roots at 2.5
3	3		0.0		2.5-3.0 Dark grey Sand and Gravel, FILL
4	4	MC	0.0	1.5	3.0-4.0 Greenish grey weathered rock, FILL
5	5		0.0		Red and grey silty clayey Sand, FILL
6		MC		3.5	
7	6		18.5		
8					
9					
10	7	MC	0	2.5	Dark brown and red silty Sand with organics and charcoal, FILL
11					
12					
13					
14	8	MC	5.3	2.5	
15					
16					Mottled red and grey silty fine SAND
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 16 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Overdrilled by MWR2-6

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

LOG OF BORING: SB-29

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	16.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/2/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/2/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
					0.25 Asphalt over 0.25 concrete
1-2	1	MC	12.3	2.0	0.5-2.5 Grey silty Sand and angular Gravel, FILL
3-4	2		310		2.5-4.5 Dark brown to brownish red silty Sand, FILL
5-8	3	MC	235	2.0	Brown and red clayey sandy Silt, trace large gravel, FILL, moderate odor.
9-10	4	MC	297	3.5	Possible relict topsoil
11-12	5		449		Mottled red, orange, grey silty fine SAND
13-14	6	MC	36.6	3.5	Light brown and white clayey sandy SILT
15-16	7		333		
17					Boring terminated at 16 feet.

COMMENTS:

Boring Terminated at 16 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-30

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/5/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/5/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					4" Asphalt, over concrete?
1	1		0.0		
2					Light brown silty Sand, FILL
3		MC		4.6	
4	2		0.0		
5					
6	3		0.0		Brown silty Sand, little gravel, trace organics, FILL
7					
8		MC		4.2	
9	4		124		
10					
11					
12					
13	6	MC	9.6	2.6	Brown to greenish grey silty Sand, trace clay, gravel, wet , FILL?
14					~0.1 thick coarse black Sand lense.
15					
16	7		33.7		
17		MC		3.2	
18	8		0.0		
19					Grey silty SAND, vertical foliation.
20					Boring terminated at 19 feet
21					
22					
23					
24					
25					

COMMENTS:

Boring terminated at 19 feet

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-31

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	25.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/5/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/5/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2					4" Asphalt, over concrete?
3-5	1	MC	0.0	3.1	Brown silty Sand with gravel, FILL
6-7	2		0.0		
8-9	3	MC	0.0	3.0	Concrete rubble, FILL
10					Greenish grey silty Sand and weathered rock fragments, FILL
11-15	4	MC	0.0	2.0	Reddish brown to greenish brown with depth sandy Silt, trace clay and organics wet, soft, FILL
16-19	5	MC	0.0	2.9	
20					Brown fine to medium Sand, FILL
21-24	6	MC	0.0	1.2	Red and White clayey SILT, vertical foliation
25					Boring terminated at 25 feet

COMMENTS:

Boring Terminated at 25 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

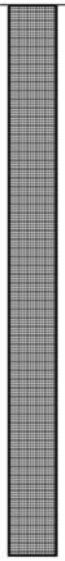
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-32

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	MC	0.0	3.9	Brown silty SAND with organics, topsoil Brown silty SAND
2					
3	2		0.0		Orange silty SAND
4					
5					
6	3		0.0	4.5	
7					
8	4	MC	0.0		Mottled grey and brown silty SAND
9					
10					
11					Boring terminated at 10 feet
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					



COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

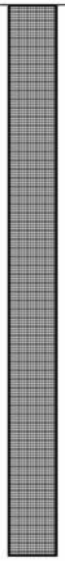
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-33

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0-1	1	MC	0.0	3.8	Brown silty SAND with organics, topsoil Brown silty SAND
1-3					
2-4	2		0.0		Orange silty SAND, very moist
4-6					
5-7	3		0.0	4.3	Mottled orange and grey sandy SILT
7-9	4		0.0		
9-10					Boring terminated at 10 feet



COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

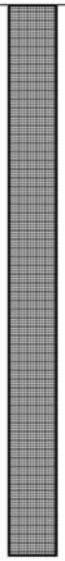
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-34

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0-2	1	MC	0.0	4.2	Brown silty SAND with organics, topsoil Brown silty SAND
2-4	2		0.0		Orange silty SAND
4-6	3		0.0	4.7	Mottled orange and grey sandy SILT
6-8	4		0.0		
10					Boring terminated at 10 feet



COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

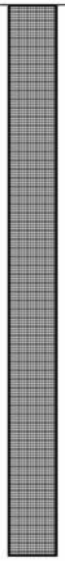
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-35

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					Dark brown silty SAND with organics, topsoil
1	1	MC	0.0	4.3	Brown silty SAND
2					Orange silty clayey SAND
3					
4	2		8.6		
5					Mottled red and grey silty SAND
6	3		0.0	4.2	
7					
8					Grey and pale red silty SAND with faint vertical foliation
9	4		0.0		
10					
11					Boring terminated at 10 feet
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					



COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-36

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					Brown silty SAND with organics and asphalt fragments, topsoil
1-2	1	MC	42.5	4.1	Yellowish brown silty SAND
3-4	2		3.0		
5-6	3		0.0	4.6	Mottled red and grey sandy SILT
7-9	4		0.0		Grey and brown silty SAND with vertical foliation and large quartz gravel.
10					Boring terminated at 10 feet

COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-37

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	93.2	3.3	Brown silty SAND with organics and asphalt fragments, topsoil Yellowish brown silty SAND, trace quartz gravel, cohesive
3-4	2		10.8		
5-6	3		22.6	4.4	Mottled red brown and grey silty SAND, faint vertical foliation Grey and brown sandy clayey SILT with vertical foliation.
7-9	4		9.9		
10					Boring terminated at 10 feet

COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-38

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	5.0
Project Number:	18-6580	Sampling Method:	Hand Auger	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:		Latitude	34.0654
Date/Time Started:	1/9/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/9/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	HA	39.9		Brown silty SAND with organics, topsoil
2					
3	2	HA	8.7		Orangish brown silty SAND
4					
5	3	HA	3.4		Light brown and white CLAY, wet
6					Boring terminated at 5 feet
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
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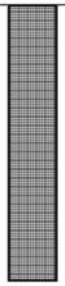
25					



COMMENTS:

Boring Terminated at 5 ft.

Temporary 1-inch PVC well, 5-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-39

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	5.0
Project Number:	18-6580	Sampling Method:	Hand Auger	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:		Latitude	34.0654
Date/Time Started:	1/9/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/9/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	HA	1.3		Brown silty SAND with organics, topsoil
2					
3	2	HA	23.6		Orangish brown clayey SILT
4					
5	3	HA	0.3		Orange and brown clayey SILT
6					Boring terminated at 5 feet
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 5 ft.

Temporary 1-inch PVC well, 5-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

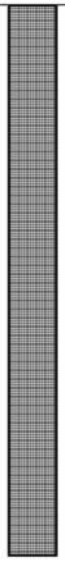
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-40

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	0.0	3.0	Brown silty SAND with organics, topsoil Yellowish brown clayey silty SAND, cohesive
3-4	2		0.0		
5-6	3		0.0	4.4	Mottled red brown and grey silty SAND, faint vertical foliation
7-8	4		0.0		
9-10					Boring terminated at 10 feet



COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-41

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	10.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					Brown silty SAND with organics, topsoil
1	1		0.0		Brown silty SAND
2					
3	2	MC	0.0	3.7	Yellowish brown clayey silty SAND, cohesive
4					
5					Mottled red brown and grey silty SAND
6	3		nm		
7					tube stuck in sampler, no sample
8		MC		0.0	
9	4		nm		
10					
11					Boring terminated at 10 feet
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Boring Terminated at 10 ft.

Temporary 1-inch PVC well, 10-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

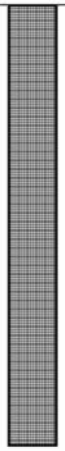
C T S I

Carolina Technical Services, Inc.

LOG OF BORING: SB-42

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe	Total Boring Depth (ft):	8.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/6/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/6/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1	MC	0.0	4.2	Brown silty SAND with organics, topsoil
3-5	2		0.0		Yellowish brown and grey mottled silty SAND, trace gravel
6-8	3	MC	0	3.5	Yellowish brown and grey clayey sandy SILT, vertical foliation
	4		0.0		
9					Boring terminated at 8 feet



COMMENTS:

Boring Terminated at 8 ft.

Temporary 1-inch PVC well, 8-ft screen installed.

Abandoned 4/29/2019

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-1 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☒ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-1
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☑ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/4/2018
24 ft. Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 14 ft. and 24 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 2.66 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-2 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☒ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-2
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 23 ft. Date Started: 12/4/2018 Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.53 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-3 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-3
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored
☐ Dug ☐ Air Rotary ☐ Driven
☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/4/2018
24 ft. Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft.
Set Between: 14 ft. and 24 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.98 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-482-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

dhec

Water Well Record
Bureau of Water

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-4 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
SB-4
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Dug ☐ Cable tool ☐ Jetted ☐ Air Rotary ☑ Other ☐ Bored ☐ Driven

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Irrigation ☐ Test Well ☐ Public Supply ☐ Air Conditioning ☑ Monitor Well ☐ Process ☐ Emergency ☐ Replacement

9. WELL DEPTH (completed) 24 ft. Date Started: 12/4/2018 Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
___ in. to ___ ft. depth
___ in. to ___ ft. depth
Height: Above/Below Surface ___ ft.
Weight ___ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 14 ft. and 24 ft. **NOTE: MULTIPLE SCREENS USE SECOND SHEET**
___ ft. and ___ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 10.03 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
___ ft. after ___ hrs. Pumping ___ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from ___ ft. to ___ ft.
Effective size ___ Uniformity Coefficient ___

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ___ ft ___ direction
Type ___
Well Disinfected ☐ Yes ☐ No Type: ___ Amount: ___

18. PUMP: Date installed ___ Not installed ☐
Mfr. Name: ___ Model No.: ___
H.P. ___ Volts ___ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: [signature] Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-5 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-5
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/4/2018
24 ft. Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 14 ft. and 24 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 10.03 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Deanal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-6 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-6
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/4/2018
23 ft. Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb/ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 10.12 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-7 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-7
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 23 ft. **Date Started:** 12/4/2018 **Date Completed:** 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.10 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (09/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-8 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: SB-8 **PUBLIC SYSTEM NUMBER:** 11946

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-8, Installed by Geoprobe Over Drilled and Replaced by RW-B

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 23 ft. Date Started: 12/4/2018 Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 12/7/18

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-9A **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 3 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-9A, Installed by Hand Auger
Hit Fiberglass Pipeline, Boring Terminated

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/4/2018
3 ft. Date Completed: 12/4/2018

10. CASING: ☐ Threaded ☐ Welded
Diam.: _____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: _____ Diam.: _____
Slot/Gauge: _____ Length: _____
Set Between: _____ ft. and _____ ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ GPM.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 3 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 12/7/18

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-9B **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-9B
Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 23 ft. Date Started: 12/4/2018 Date Completed: 12/4/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No
NOTE: MULTIPLE SCREENS USE SECOND SHEET

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan King (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-10A **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 4 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-10A Installed by Hand Auger
Hit Obstruction, Boring Terminated

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 4 ft. **Date Started:** 12/5/2018 **Date Completed:** 12/5/2018

10. CASING: ☐ Threaded ☐ Welded
Diam.: ____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
____ in. to ____ ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: ____ Diam.: ____
Slot/Gauge: ____ Length: ____
Set Between: ____ ft. and ____ ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL ____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
____ ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from ____ ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ____
Depth: From 0 ft. to 4 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type ____
Well Disinfected ☐ Yes ☐ No Type: ____ Amount: ____

18. PUMP: Date installed: ____ Not installed ☐
Mfr. Name: ____ Model No.: ____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-432-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan King (Well Driller) Date: 12/7/18

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-10B **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
SB-10B, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft. Date Started: 12/5/2018 Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.25 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan King (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-11 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 15 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-11, Installed by Geoprobe Overdrilled and Replaced by RW-A

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15 ft. Date Started: 12/5/2018 Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 5 ft. and 15 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☑ No
☐ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From _____ ft. to _____ ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 12/7/18

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (First)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-12 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-12, installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 23 ft. Date Started: 12/5/2018 Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 7.01 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-1529 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan Kyle King Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-13 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 23 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-13, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/5/2018
23 ft. Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 13 ft. and 23 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 7.12 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 23 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-14 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-14, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. Date Started: 12/5/2018 Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.85 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan Kyle King Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearel Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-15 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116758

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 24 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
SB-15, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/5/2018
24 ft. Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 14 ft. and 24 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.93 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 24 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1900 (05/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-16 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 22 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
SB-16, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/5/2018
22 ft. Date Completed: 12/5/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 12 ft. and 22 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.62 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 22 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) **Level:** A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan Kyle King Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-17 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-17, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft. Date Started: 12/6/2018 Date Completed: 12/6/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
_____ ft. and _____ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No
NOTE: MULTIPLE SCREENS USE SECOND SHEET

12. STATIC WATER LEVEL 9.73 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-18 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

5. REMARKS:
SB-18, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft.
Date Started: 12/6/2018
Date Completed: 12/6/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
___ in. to ___ ft. depth
___ in. to ___ ft. depth
Height: Above/Below
Surface ___ ft.
Weight ___ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
___ ft. and ___ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.84 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
___ ft. after ___ hrs. Pumping ___ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from ___ ft. to ___ ft.
Effective size ___ Uniformity Coefficient ___

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ___
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ___ ft. ___ direction
Type ___
Well Disinfected ☐ Yes ☐ No Type: ___ Amount: ___

18. PUMP: Date installed: ___ Not installed ☐
Mfr. Name: ___ Model No.: ___
H.P. ___ Volts ___ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one) [D checked]
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: [signature] Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-19 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-19, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/7/2018
19 ft. Date Completed: 12/7/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 7.13 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan Kyle King Date: 4/29/19
Well Driller

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-20 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-20, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft. **Date Started:** 12/7/2018 **Date Completed:** 12/7/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.69 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-21 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-21, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 20 ft. **Date Started:** 12/7/2018 **Date Completed:** 12/7/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.79 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7528 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-22 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 20 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-22, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/31/2018
20 ft. Date Completed: 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb/ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 10 ft. and 20 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 5.93 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-23A **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 2.5 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-23A, Installed by Hand Auger
Hit Obstruction, Boring
Terminated at 2.5 ft.

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/31/2018
2.5 ft. Date Completed: 12/31/2018

10. CASING: ☐ Threaded ☐ Welded
Diam.: _____
Type: ☐ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: _____ Diam.: _____
Slot/Gauge: _____ Length: _____
Set Between: _____ ft. and _____ ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 2.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Driller) Date: 1/1/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-23B **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-23B, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. Date Started: 12/31/2018 Date Completed: 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.20 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-24 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
SB-24, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. Date Started: 12/31/2018 Date Completed: 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 7.71 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface:
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearsl Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-25 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 16 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-25, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 16 ft. **Date Started:** 12/31/2018 **Date Completed:** 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 6 ft. and 16 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.31 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 16 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one) ✓
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-26 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116764

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 16 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-26, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/31/2018
16 ft. Date Completed: 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 6 ft. and 16 ft.
_____ ft. and _____ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No
NOTE: MULTIPLE SCREENS USE SECOND SHEET

12. STATIC WATER LEVEL 6.80 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 16 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: [signature] Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Deasral Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-27 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from 0 ft. to 16 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-27, Installed by Geoprobe Overdrilled and Replaced by RW-D

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/31/2018
16 ft. Date Completed: 12/31/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 6 ft. and 16 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 16 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1328 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 1/1/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 1 TO WELL DRILLER**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-28 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 16 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-28, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/2/2019
16 ft. Date Completed: 1/2/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 6 ft. and 16 ft.
_____ ft. and _____ ft.
Sieve Analysis: ☐ Yes (please enclose) ☐ No
NOTE: MULTIPLE SCREENS USE SECOND SHEET

12. STATIC WATER LEVEL 8.00 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 16 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Brian Randall Eddings (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-29 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 16 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-29, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 16 ft. Date Started: 1/2/2019 Date Completed: 1/2/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 6 ft. and 16 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 5.96 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 16 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (well driller) Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-30 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 19 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-30, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. Date Started: 1/5/2019 Date Completed: 1/5/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 11.93 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 19 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ Date: 4/29/19
Well Driller
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-31 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 25 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-31, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 25 ft. Date Started: 1/5/2019 Date Completed: 1/5/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 15 ft. and 25 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 12.64 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 25 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (09/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-32 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-32, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 4.28 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Deseral Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-33 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SWB-33, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 3.30 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/8/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-34 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-34, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 4.26 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size: _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-35 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-35, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 10 ft. Date Started: 1/6/2019 Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 3.55 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (09/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC
(last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-36 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

5. REMARKS:
SB-36, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
___ in. to ___ ft. depth
___ in. to ___ ft. depth
Height: Above/Below
Surface ___ ft.
Weight ___ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft. **NOTE: MULTIPLE SCREENS**
___ ft. and ___ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 3.47 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
___ ft. after ___ hrs. Pumping ___ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from ___ ft. to ___ ft.
Effective size ___ Uniformity Coefficient ___

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other ___
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ___ ft. ___ direction
Type ___
Well Disinfected ☐ Yes ☐ No Type: ___ Amount: ___

18. PUMP: Date installed: ___ Not installed ☐
Mfr. Name: ___ Model No.: ___
H.P. ___ Volts ___ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: [signature] Date: 4/29/19
Well Driller

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-37 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-37, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 10 ft. Date Started: 1/6/2019 Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 2.35 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (fiber pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (06/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-38 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 5 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-38, Installed by Hand Auger
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/9/2019
5 ft. Date Completed: 1/9/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 5 ft
Set Between: 0 ft. and 5 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 2.43 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No. 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Deeral Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-39 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 5 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-39, Installed by Hand Auger
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 5 ft. Date Started: 1/9/2019 Date Completed: 1/9/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 5 ft
Set Between: 0 ft. and 5 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis: ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 3.10 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface:
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-40 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-40, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 1.79 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan Kyle King Well Driller Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-41 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116751

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 10 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-41, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/6/2019
10 ft. Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 0 ft. and 10 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 1.89 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 10 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: SB-42 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☑ Yes ☐ No
Give Details Below
Grouted Depth: from 0 ft. to 8 ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
SB-42, Installed by Geoprobe
Abandoned 4/29/2019

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 8 ft. Date Started: 1/6/2019 Date Completed: 1/6/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 1
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
_____ in. to _____ ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 1 in.
Slot/Gauge: 0.010 Length: 8 ft
Set Between: 0 ft. and 8 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 3.32 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
Installed from _____ ft. to _____ ft.
Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 8 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 4/29/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Appendix E
Well Logs and Well Record 1903 Forms

Monitoring Well Construction Summary
Broad River Amoco, UST Site 11946
Columbia SC

Well ID	Date Installed	Top of Casing Elevation	Nominal Screened Interval	Comments
MWR2-1	1/2/2019	101.01	8-18	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-2	1/3/2019	101.32	8-18	7-inch OD solid auger, Elite Techniques
MWR2-3	1/3/2019	101.47	9-19	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-4	1/3/2019	100.31	8-18	7-inch OD solid auger, Elite Techniques
MWR2-5	1/3/2019	100.24	5-15	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-6	1/5/2019	98.41	5-15	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-7	1/5/2019	96.39	5-15	7-inch OD solid auger, Elite Techniques
MWR2-8	1/21/2019	99.86	2.5-12.5	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-9	1/21/2019	101.55	8-18	4.25-inch ID, Hollow stem auger, Elite Techniques
MWR2-10	1/25/2019	99.48	7-17	7-inch OD solid auger, Elite Techniques
MWR2-11	1/25/2019	101.58	8-18	7-inch OD solid auger, Elite Techniques
MWR2-12	1/25/2019	99.45	8-18	7-inch OD solid auger, Elite Techniques
MWR2-13	2/7/2019	92.94	1-11	4.25-inch ID, Hollow stem auger, Walker Environmental
MWR2-14	2/7/2019	98.77	9-19	4.25-inch ID, Hollow stem auger, Walker Environmental
MWR2-15	2/8/2019	101.87	8-18	4.25-inch ID, Hollow stem auger, Walker Environmental
MWR2-16	2/8/2019	101.84	9-19	4.25-inch ID, Hollow stem auger, Walker Environmental
RW-A	12/6/2018	100.73	4-14	6.25-inch ID, Hollow stem auger, Elite Techniques
RW-B	12/7/2018	101.26	4-14	6.25-inch ID, Hollow stem auger, Elite Techniques
RW-C	1/21/2019	99.66	3-13	6.25-inch ID, Hollow stem auger, Elite Techniques
RW-D	2/7/2019	95.73	5-15	6.25-inch ID, Hollow stem auger,Walker Environmental

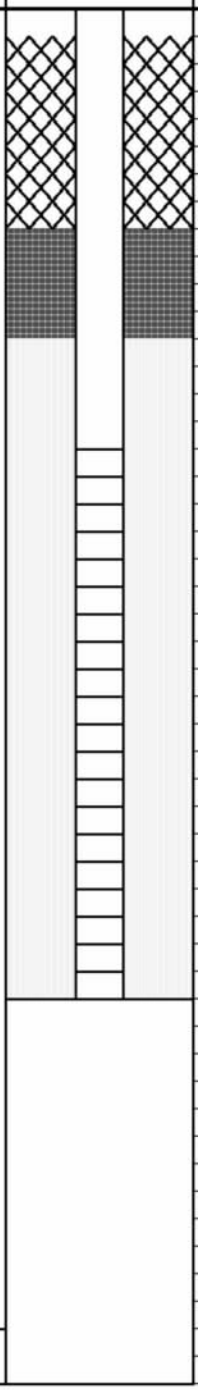
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-1

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25 ID	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/2/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/2/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		15.1		3" Asphalt
	2		75		Brown Silty SAND with trace gravel - FILL
2					
3	3		77.4		Tan and Red Mottled Clayey Silty SAND
4					
5					
6	4	MC	21.5	4.9	Grey and Brown Mottled Clayey Silty Fine SAND Soft, Faint Odor, Moist
7					
8	5	MC	6.7		Red, Tan, and Grey Mottled Clayey Silty SAND
9					
10					
11	6	MC	16.9	4.8	Dark Red with Light Grey Clayey Silty SAND Dry
12					
13	7	MC	12.3		Light Grey and Pale Red Silty Fine SAND with Whitish Clay Zone Relict, Vertical Foliation, Dry
14					
15					
16	8	MC	19.4	2 ft	Light Grey and Brown Silty Fine SAND Very Hard, Core liner jammed in Tube
17					
18	9	MC			
19					
20					
21	10	MC	40.4		Grey Clayey SILT with Coarse Quartz near base Dry, Small Shoe
22					
23					
24					
25					



COMMENTS:

Soil descriptions based on adjacent boring SB-1
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

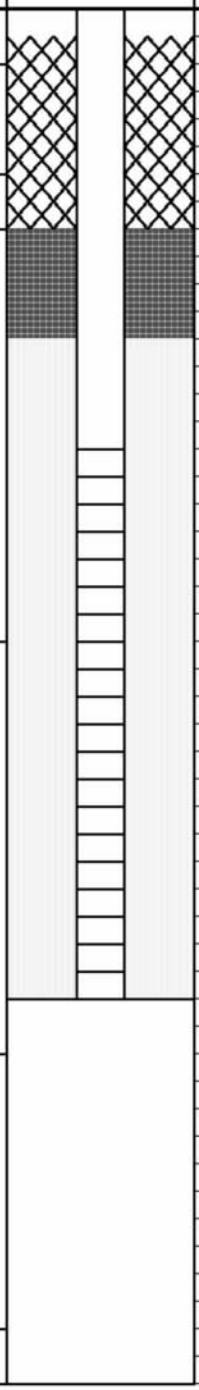
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-2

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/3/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/3/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-4	1		2.0		2" Asphalt, angular rock to 10", hand auger refusal Grey fine-medium silty Sand, FILL Greyish brown silty SAND, (relict subsoil?)
5-6	2	MC	144	5.0	Mottled red, brown, grey silty fine SAND, cohesive, becomes lighter with depth
7-9	3		310		
10-11	4	MC	771	5.0	
12-14	5		744		Vertically foliated light yellowish grey silty CLAY to clayey SILT
15-16	6	MC	524	5.0	
17-19	7		674		
20-21	8	MC	551	5.0	Vertically foliated dark red clayey SILT
22-24	9		409		Boring terminated @ 24 ft.
25					



COMMENTS:

Soil descriptions based on adjacent boring SB-3
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-3

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ 4.25" HSA	Total Well Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/3/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/3/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		2.6		5" Asphalt, angular rock to 9"
	2		6.6		9"-16" coarse Gravel, FILL
2	3		16.4		16"-26" gravel and orange and grey silty Clay, FILL
	4		102		26"-28" yellowish grey silty Clay, FILL
3	5		64.2		28"-36" yellowish grey clayey Sand, FILL
4	6		72.7		40"-48" orange mottled silty Clay, FILL
5	7	MC	61.2	5.0	Red, Light Brown mottled Clayey Silty Fine SAND trace 1/4" angular quartz
6					
7	8		140		
8					
9					Red, white, brown hard clayey SILT, dry
10	9	MC	51.1	5.0	
11					
12	10		40.4		
13					
14					
15	11	MC	28.3	5.0	Red and grey clayey SILT with very fine vertical foliation, dry with occasional rust colored vertical fracture planes.
16					
17	12		42.1		
18					
19					
20	13	MC	50.4	5.0	
21					
22	14		30.5		
23					
24					
25					

COMMENTS:

Soil descriptions based on nearby boring SB-4
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

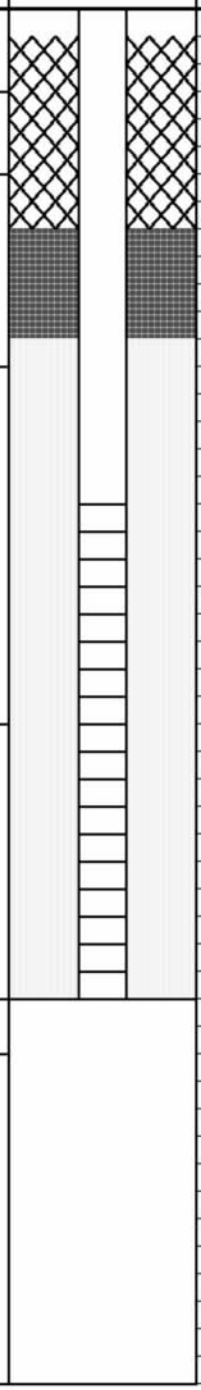
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-4

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/3/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/3/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		7.9		4" Asphalt, Red and Orange clayey silty Sand, FILL 4"-20"
2	2		120		Grey silty Sand, roots, relict topsoil 20"-36"
3	3		313		3.0-4.0'
4					Brownish grey silty SAND, odor.
5	4		224		
6		MC		4.9	
7	5		422		
8					
9					
10	6		431		Orange and red mottled silty SAND, trace fine to medium gravel
11		MC		4.8	
12	7		396		
13					
14					
15	8		456		Light brownish grey sandy SILT, vertical foliation, fracture traces
16		MC		41.0	
17	9		242		
18					White silty CLAY
19					
20					
21					
22					
23					
24					
25					



COMMENTS:

Soil descriptions based on adjacent boring SB-23B
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-5

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ 4.25" HSA	Total Well Depth (ft):	15.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/3/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/3/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William D Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					4" Asphalt,
2	1		15.7		0.5-2.0 Red and orange mottled silty Sand, FILL
3	2	MC	17.6	5.0	2.0-3.0
4	3		289		Grey Sand and Gravel, FILL 3.0-5.0 Dark brown clayey silty SAND, relict topsoil
5					
6	4		310		Light brown clayey silty SAND, stong odor
7					
8		MC		4.7	
9	5		591		
10					Red and grey silty Sand
11	6		584		
12					
13		MC		4.7	
14	7		434		
15					White and light brown clayey SILT, foliated
16	8		410		
17					
18		MC		nm	Macrocore liner stuck in sampler
19	9		93.6		
20					
21					Boring terminated at 20 feet
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-22
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-6

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ 4.25" HSA	Total Well Depth (ft):	15.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/5/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/5/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0					0.5 Asphalt
1	1		8.6		0.5-1.0 Grey sand and Gravel, FILL
2	2		0.0		1.0-2.5 Light greyish brown silty Sand and Gravel, FILL, wet at 2.5, roots at 2.5
3	3		0.0		2.5-3.0 Dark grey Sand and Gravel, FILL
4	4	MC	0.0	1.5	3.0-4.0 Greenish grey weathered rock, FILL
5	5		0.0		Red and grey silty clayey Sand, FILL
6		MC		3.5	
7	6		18.5		
8					
9					
10	7	MC	0	2.5	Dark brown and red silty Sand with organics and charcoal, FILL
11					
12					
13					
14	8	MC	5.3	2.5	
15					
16					Mottled red and grey silty fine SAND
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-28

10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-7

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	15.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/5/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/5/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0	1		11.3		0.2 Asphalt, 0.2-0.5 dark organic sand, FILL
1	2		168		0.5-2.0 Grey silty Clay, FILL
2					Grey crushed rock, FILL
3	2	MC	235	2.0	
4					Grey silty Sand, FILL
5					
6	3		398		Light brown clayey, silty SAND, soft
7		MC		3.1	Mottled red, brown, silty SAND, with angular quartz gravel.
8	4		245		Brown and pale red sandy SILT, vertical foliation,
9					
10	5		329		
11		MC		3.1	Light grey and brown clayey SILT, possible free phase petroleum product present.
12	6		307		
13					
14	7	MC	444	3.1	
15					
16					
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-27
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

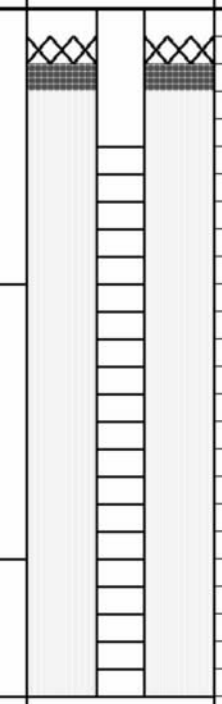
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-8

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	12.5
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/21/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/21/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		16.3		3" Asphalt,
2					Orange and grey silty Sand, trace clay, FILL
3	2		5		
4					
5	3		4.8		
6					
7	4		35.8		Pale greenish grey weathered fine grained sandstone, FILL
8					
9	5		74.5		
10					
11	6		810		Grey, silty, clayey Sand,FILL
12					
	7		1039		Auger refusal
13					Boring terminated at 12.5 feet.
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					



COMMENTS:

Soil descriptions based on adjacent boring SB-16
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

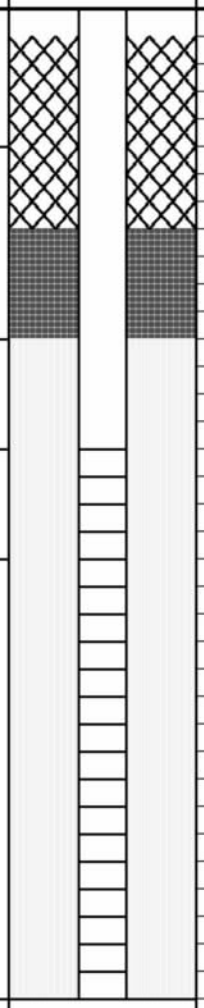
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-9

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/21/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/21/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1		9.2		3" Asphalt, Brownish grey clayey, silty Sand, FILL
3-4	2		2		Brown silty Sand, FILL
5-6	3		80.6		
7-8	4		116		Brown silty SAND, rooted, relict topsoil
9-10	5		34.6		Red, grey, orange mottled silty fine SAND
11-12	6		12.7		Grey and red clayey SILT,little fine Sand
13-14	7		2.6		
15-16	8		2.4		
17-18	9		1		
19-25					Boring terminated at 18 feet.



COMMENTS:

Soil descriptions based on adjacent boring SB-18
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-10

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	17.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/25/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/25/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		70.5		3" Asphalt 0.3-1.5 Brownish grey Sand and Gravel, FILL
2					1.5-2.5
3	2		174		2.5-3.5 Grey clayey Sand and Gravel, FILL, odor
4					3.5-4
5	3		156		Dark brown relict topsoil Brown clayey silty SAND, soft, odor
6					
7	4		690		Red, grey, orange mottled clayey silty SAND
8					
9	5		690		
10					
11	6		660		
12					Red and grey clayey SILT, little sand
13	7		535		
14					
15	8		444		
16					
17	9		213		
18					Boring terminated at 17 feet.
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-12
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

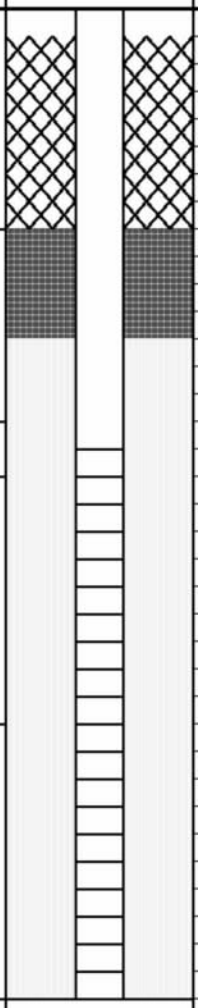
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-11

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/25/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/25/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1-2	1		43.8		3" Asphalt 0.3-1.0 Brownish grey SAND and GRAVEL with grey silty Clay FILL
2-4	2		49		1.0-3.0 3.0-4.0
5-6	3		33.5		Brown clayey silty SAND, FILL, odor
7-8	4		743		Dark brown relict topsoil ?, strong odor
9-10	5		847		
11-12	6		752		Light brown and red mottled silty fine SAND
13-14	7		785		
15-16	8		284		Red and light grey clayey SILT
17-18	9		48.1		
19-25					Boring terminated at 18 feet.



COMMENTS:

Soil descriptions based on adjacent boring SB-14
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-12

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ Solid stem auger, 7"	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/25/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/25/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		5.5		3" Asphalt 0.3-1.0 1.0-2.0 Orange Sand, FILL
2					
3	2		3.9		2.0-3.0 Dark grey Sand and Gravel, FILL Brown silty , clayey Sand, FILL 3.0-4.0 Grey clayey silty sand, FILL Pale brown silty Sand with gravel and rock fragments, FILL
4					
5	3		10		
6					
7	4		336		
8					
9	5		630		Brown silty Sand with Gravel, FILL, soft, easy probing
10					
11	6		562		
12					
13	7		670		
14					
15	8		292		
16					
17	9		648		
18					
19					Boring terminated at 18 feet.
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-15
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-13

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	11.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Walker Environmental	Latitude	34.0654
Date/Time Started:	2/7/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	2/7/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					Topsoil and organic detritus
2	1	MC	37.7	3.4	Dark brown silty very fine SAND with organics
4	2		3.5		Light grey and brown clayey SILT
7	3	MC	16.1	5.0	Orange and light brown clayey silty SAND, trace gravel
9	4		4.7		Grey and orange SAND, trace clay
12					Boring terminated at 11 feet.

COMMENTS:

Soil descriptions based on adjacent boring SB-16
10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-14

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Walker Environmental	Latitude	34.0654
Date/Time Started:	2/7/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	2/7/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	HA	1.7		4" Asphalt, Gravel, FILL
2					Light brown Clay and Silt, FILL
3	2	HA	1.5		Light brown and grey silty Clay, trace gravel and coarse sand, FILL
4					
5					
6	3		1.5		Light brown and orangish red silt with gravel and coarse sand, FILL
7					
8		MC		4.6	
9	4		44.3		Grey and orangish red Sand with gravel, brick, asphalt, concrete, FILL
10					
11	5		19.7		Brown silty very fine Sand with gravel and brick, FILL
12					
13		MC		3.3	wet
14	6		2.6		
15					
16	7		4.3		Brown Clay, brick at 16 feet, FILL
17					
18		MC		2.5	Mottled white, brown, orange Silt and Sand, brick at 18 feet, FILL
19	8		14.6		
20					Boring terminated at 19 feet
21					
22					
23					
24					
25					

COMMENTS:

10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

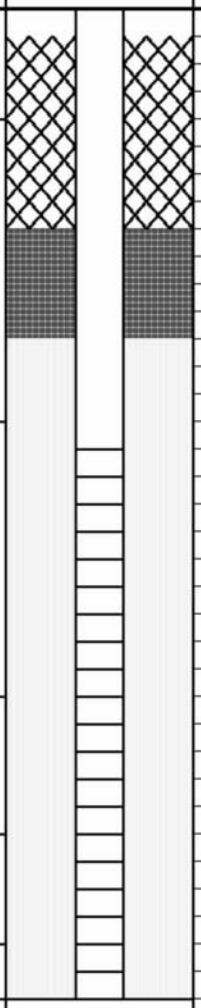
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-15

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	18.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Walker Environmental	Latitude	34.0654
Date/Time Started:	2/8/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	2/8/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1	HA	56.2		6" Asphalt, Light brown and grey silty very fine SAND, trace clay, FILL?
3	2	HA	51.3		Orange and light brown mottled CLAY, trace gravel, FILL
4	3	MC	30	1.0	
6	4		1.5		
8	5	MC	44.3	4.5	Light brown and orange CLAY with quartz gravel
11	6		19.7		
13	6	MC	2.6	4.7	Light grey and orangish red clayey Silt, hard
16	7		4.3		Red and light grey mottled SILT
18		MC		2.5	Light grey SILT
19					Boring terminated at 18 feet



COMMENTS:

10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: MWR2-16

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 4.25" ID	Total Well Depth (ft):	19.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Walker Environmental	Latitude	34.0654
Date/Time Started:	2/8/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	2/8/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					6" Asphalt,
2	1	HA	32.8		Light Tan and Brown, Orange Silt - FILL Concrete at 2 feet
3	2	MC	10.6	1.3	Light Gray and Tan SILT w/Gravel - FILL
5					
6	3	MC	130	4.5	Relict Topsoil w/Organics
7					Orange, Tan, and Red Mottled CLAY w/Trace Gravel
8					
9	4		431		
10					
11				0.0	No Recovery
12					
13					
14					
15					
16	5	MC	119	3.2	Light Tan, Orange, and Red Mottled CLAY - No Gravel
17					
18	6		9		Tan and Red Mottled SILT
19					
20					Boring terminated at 19 feet
21					
22					
23					
24					
25					

COMMENTS:

10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface

ft-msl - indicates feet above mean sea level

N/A - indicates not applicable to this boring

MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

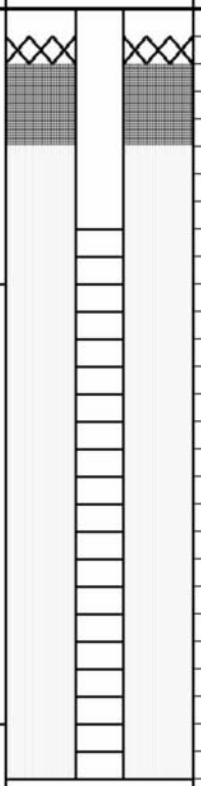
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: RW-A

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 6.25" ID	Total Well Depth (ft):	14.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/6/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/6/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
					6" Concrete
1	1		440		0.5-1.0 Grey silty Sand, FILL
2	2		532		1.0-2.0 Grey and orange silty clayey Sand FILL
3	3		636		2.0-3.0 Grey and orange silty clayey Sand FILL
4	4		619		3.5-4.0 Grey and orange silty clayey Sand FILL
5	5		620		4.0-5.0 Grey and orange silty clayey Sand FILL
6	6	MC	452	3.0	Fine-medium Sand, FILL (UST pit backfill)
7	7		NM		free product present
8	8	MC	NM	5.0	free product present
9	9		885		Red, grey, ornage mottled silty clayey SAND
10					Boring terminated at 15 feet



COMMENTS:

Soil descriptions based on overdrilled boring SB-11
4-inch ID,10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

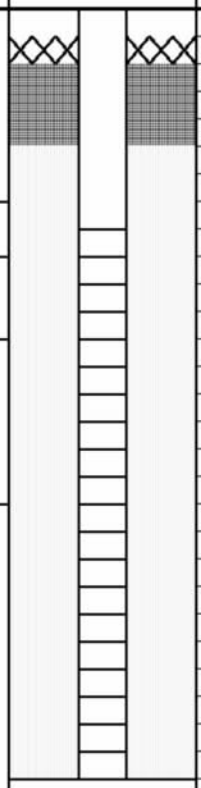
C T S I

Carolina Technical Services, Inc.

LOG OF WELL: RW-B

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 6.25" ID	Total Well Depth (ft):	14.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	12/7/2018	SC Registration		Longitude	-81.1168
Date/Time Completed:	12/7/2018	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	William Wood

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1	1		3.1		6" Asphalt 0.5-0.9 Dark grey SAND and GRAVEL
2	2		9.8		0.9-3.0 Red and Brown clayey silty Sand, FILL
3	3		71.6		3.0-3.5 Gravel and Sand, FILL
4	4		437		Dark brown silty SAND with roots (relict topsoil)
5	5	MC	724	5.0	Light Brown Silty Fine SAND
6					
7	6		610		Light Brown and Red mottled clayey silty SAND with large angular quartz Gravel, odor
8					
9					
10	7	MC	563	5.0	Red, brown , and grey mottled clayey SILT, little sand, trace Gravel, odor
11					
12	8		713		
13					
14					
15	9	MC	552	4.0	
16					
17	10		768		
18					
19	11	MC	465	3.0	Light grey clayey SILT, scattered quartz gravel, hard
20					
21					Refusal at 21 feet
22					
23					
24					
25					



COMMENTS:

Soil descriptions based on overdrilled boring SB-8
4-inch ID,10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: RW-C

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 6.25" ID	Total Well Depth (ft):	13.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech./	Latitude	34.0654
Date/Time Started:	1/21/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	1/21/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
1					3" Asphalt,
2	1		0.4		0.3-2.5 Orange and grey silty Sand, trace clay, FILL
3		MC		5.0	
4	2		10.5		2.5-5.0
5					
6					
7		MC	11.6	3.0	Pale greenish grey weathered fine grained sandstone, FILL
8					
9					
10					
11					
12		MC	842	3.2	Grey, silty, clayey Sand,FILL
13					
14					Refusal at 13 feet
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-16
4-inch ID,10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

C T S I

Carolina Technical Services, Inc.

LOG OF WELL: RW-D

Site Name:	Broad River Amoco	Drilling/Boring Method:	Geoprobe/ HSA 6.25" ID	Total Well Depth (ft):	15.0
Project Number:	18-6580	Sampling Method:	5-foot Macrocore	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Walker Environmental	Latitude	34.0654
Date/Time Started:	2/7/2019	SC Registration		Longitude	-81.1168
Date/Time Completed:	2/7/2019	Monitoring Equipment:	Photovac MiniRae 2000 PID	Geologist	Cody Alexander

ft-bgs	Sample No.	Sample Method	OVA	Recovery (ft.)	SOIL DESCRIPTION (color, texture, moisture, etc.)
0	1		11.3		0.2 Asphalt, 0.2-0.5 dark organic sand, FILL
1	2		168		0.5-2.0 Grey silty Clay, FILL
2					Grey crushed rock, FILL
3	2	MC	235	2.0	
4					Grey silty Sand, FILL
5					
6	3		398		Light brown clayey, silty SAND, soft
7		MC		3.1	Mottled red, brown, silty SAND, with angular quartz gravel.
8	4		245		Brown and pale red sandy SILT, vertical foliation,
9					
10	5		329		
11		MC		3.1	Light grey and brown clayey SILT, possible free phase petroleum product present.
12	6		307		
13					
14	7	MC	444	3.1	
15					
16					
17					Boring terminated at 16 feet.
18					
19					
20					
21					
22					
23					
24					
25					

COMMENTS:

Soil descriptions based on adjacent boring SB-27
4-inch ID,10-foot SCH 40 PVC screen, 0.010-inch slot

NOTES:

ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - Macrocore sampler, SS - Split Spoon sampler, HA - Hand Auger

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: RW-D **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
RW-D, Installed with 6.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2/7/2019
15 ft. Date Completed: 2/7/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 5 ft. and 15 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.66 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 3 ft. to 15 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 3 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe_____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tyler Felder **CERT. NO.:** 1864
Address: (Print) Level: A B C D ✓ (circle one)
1317 Hummingbird Dr.
West Columbia, SC 29169
Telephone No.: 803-351-7956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Digitally signed by William Walker
DN: cn=William Walker, o=W Walker Environmental Services, LLC, email=wwenvironmental@gmail.com, c=US
Date: 2019.04.23 07:52:52 -04'00'

Signed: _____ Date: 4/23/19
Well Driller

If D Level Driller, provide supervising driller's name:
William Walker

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-13 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-13, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2/7/2019
11 ft. Date Completed: 2/7/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 1 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 1 ft. and 11 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 1.62 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 0.5 ft. to 11 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 0.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tyler Felder **CERT. NO.:** 1864
Address: (Print) Level: A B C D ✓ (circle one)
1317 Hummingbird Dr.
West Columbia, SC 29169
Telephone No.: 803-351-7956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Digitally signed by William Walker
DN: cn=William Walker, o=W Walker Environmental Services, ou, email=wwenvironmental@gmail.com, c=US
Date: 2019.04.23 07:52:35 -04'00'
Signed: _____ Date: 4/23/19
Well Driller

If D Level Driller, provide supervising driller's name:
William Walker

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-14 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-14, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2/7/2019
19 ft. Date Completed: 2/7/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 9 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.58 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 7 ft. to 19 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 7 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tyler Felder **CERT. NO.:** 1864
Address: (Print) Level: A B C D ✓ (circle one)
1317 Hummingbird Dr.
West Columbia, SC 29169
Telephone No.: 803-351-7956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Digitally signed by William Walker
DN: cn=William Walker, o=W Walker Environmental Services, ou, email=wwenvironmental@gmail.com, c=US
Date: 2019.04.23 07:52:17 -04'00'

Signed: _____ Date: 4/23/19
Well Driller

If D Level Driller, provide supervising driller's name:
William Walker

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-15 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-15, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 2/8/2019
18 ft. Date Completed: 2/8/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.68 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tyler Felder **CERT. NO.:** 1864
Address: (Print) Level: A B C D ✓ (circle one)
1317 Hummingbird Dr.
West Columbia, SC 29169
Telephone No.: 803-351-7956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Digitally signed by William Walker DN: cn=William Walker, o=Walker Environmental Services, ou, email=wenvironmental@gmail.com, c=US Date: 2019.04.23 07:52:01 -04'00'
Signed: _____ Date: 4/23/19
Well Driller

If D Level Driller, provide supervising driller's name:
William Walker

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-16 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-16, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. Date Started: 2/8/2019 Date Completed: 2/8/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 9 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 10.22 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 7 ft. to 19 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 7 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tyler Felder **CERT. NO.:** 1864
Address: (Print) Level: A B C D ✓ (circle one)
1317 Hummingbird Dr.
West Columbia, SC 29169
Telephone No.: 803-351-7956 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Digitally signed by William Walker
DN: cn=William Walker, o=W Walker Environmental Services, ou, email=wwenvironmental@gmail.com, c=US
Date: 2019.04.23 07:51:46 -04'00'

Signed: _____ Date: 4/23/19
Well Driller

If D Level Driller, provide supervising driller's name:
William Walker

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-1 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-1,
Installed with 4.25 HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored
☐ Dug ☐ Air Rotary ☐ Driven
☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. **Date Started:** 1/2/2019 **Date Completed:** 1/2/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.53 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface,
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed: ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings **CERT. NO.:** 2216
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 1/9/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-2 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-2, Installed with 7-in auger

6. TYPE: ☐ Mud Rotary ☐ Dug ☐ Cable tool ☐ Jetted ☐ Air Rotary ☑ Other ☐ Bored ☐ Driven

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. **Date Started:** 1/3/2019 **Date Completed:** 1/3/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.66 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1328 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 1/9/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-3 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-3, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 19 ft. **Date Started:** 1/3/2019 **Date Completed:** 1/3/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 9 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 9 ft. and 19 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.29 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 7 ft. to 19 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 7 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 1/9/19
If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-4 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-4, Installed 7 in auger

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. **Date Started:** 1/3/2019 **Date Completed:** 1/3/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 8.09 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed _____ (Well Driller) Date: 1/9/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) **COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-5 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-5, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15 ft. Date Started: 1/3/2019 Date Completed: 1/3/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 5 ft. and 15 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.73 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 3 ft. to 15 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 3 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-482-1348 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/9/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-6 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-6, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 15 ft. Date Started: 1/3/2019 Date Completed: 1/3/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 5 ft. and 15 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 7.43 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 3 ft. to 15 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 3 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/9/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (06/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-7 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-7, Installed with 7 in auger

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/5/2019
15 ft. Date Completed: 1/5/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 5 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 5 ft. and 15 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 5.91 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 3 ft. to 15 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 3 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/9/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-8 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Only Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-8, Installed by 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 12.5 ft. Date Started: 1/21/2019 Date Completed: 1/21/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 2.5 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 2.5 ft. and 12.5 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface:
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 1.5 ft. to 12.5 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 1.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) **Level:** A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/22/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-9 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-9, Installed with 8.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. Date Started: 1/21/2019 Date Completed: 1/21/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.86 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D ✓ (circle one)
Telephone No.: 803-425-7324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/22/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-1 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-10, Installed with 7 in auger

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 1/25/2019
17 ft. Date Completed: 1/25/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 7 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 7 ft. and 17 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.22 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 5 ft. to 17 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-1324 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-1 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-11, Installed with 7 in auger

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. Date Started: 1/25/2019 Date Completed: 1/25/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight: _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 9.47 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date Installed: _____ Not Installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden, SC
Level: A B C D (circle one)
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: MWR2-12 **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MWR2-12, Installed with 7 in auger

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 18 ft. Date Started: 1/25/2019 Date Completed: 1/25/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 8 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 8 ft. and 18 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 10.04 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 6 ft. to 18 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 6 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King CERT. NO.: 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden, SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/29/19

If D Level Driller, provide supervising driller's name:
Dearal Rodgers

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: RW-A **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
RW-A, Installed with 6.25 In HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 14 ft. Date Started: 12/6/2018 Date Completed: 12/6/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 4 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 4 ft. and 14 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.19 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.5 ft. to 14 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 2.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden SC
Telephone No.: 803-423-1328 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Nathan King Well Driller Date: 12/7/18

If D Level Driller, provide supervising driller's name:
William Walker

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: RW-B **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Free Product Present		
*indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
RW-B, Installed with 6.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 12/7/2018
14 ft. Date Completed: 12/7/2018

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 4 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 4 ft. and 14 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL 6.91 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ GPM.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.5 ft. to 14 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 2.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) Level: A B C D (circle one)
1817 Bishopville Hwy, Camden SC
Telephone No.: 803-425-7524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 12/7/18

If D Level Driller, provide supervising driller's name:
William Walker

DHEC 1903 (08/2017) COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Water Well Record
Bureau of Water

dhec

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

Note: *Personal information provided on this document is subject to public scrutiny or release.*

1. WELL OWNER INFORMATION:
Name: Broad River C Store LLC (last) (first)
Address: 41 Cromwell Ct.
City: Irmo State: SC Zip: 29063-0000
Telephone: Work: (803) 798-3051 Home:

2. LOCATION OF WELL: RW-C **COUNTY:** Richland
Name: Broad River Amoco
Street Address: 4335 Broad River Rd.
City: Columbia Zip: 29210-0000
Latitude: 34.065333 Longitude: -81.116754

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Give Details Below
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
See Attached Well Boring Log		
Only Free Product Present		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
RW-C, Installed with 6.25 in HSA

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other

7. PERMIT NUMBER: UMW-272777

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13 ft. Date Started: 1/21/2019 Date Completed: 1/21/2019

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above/Below Surface _____ ft.
Weight: _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4 in.
Slot/Gauge: 0.010 Length: 10 ft
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ GPM
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2 ft. to 13 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 2 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Nathan King **CERT. NO.:** 2148
Address: (Print) 1817 Bishopville Hwy, Camden SC
Level: A B C D (circle one)
Telephone No.: 803-425-1524 Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 1/22/19

If D Level Driller, provide supervising driller's name:
William Walker

DHEC 1903 (06/2017)

COPY 1 MAIL TO SCDHEC, COPY 2 TO WELL OWNER, COPY 3 TO WELL DRILLER

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: 1/9/19 Field Personnel: C. Alexander

Drilling Company: Elite Techniques Driller's Name: Broadus Randall Eddings

Driller's Certification Number: 2216 Weather Conditions: Sunny, Cool

Well Development Method

Surge Block ○ Submersible Pump ⊗ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter serial no. 812004
pH=4.0 4.00
pH=7.0 7.02
pH=10.0 ____

Conductivity meter serial no. 812004
standard ____

Temperature meter serial no. 812004

Turbidity meter serial no. 1334-3499
NTU=0.0 ____
NTU=1.0 0.95
NTU=10.0 ____

Drilling Method

Hollow Stem Augers ⊗ Solid Flight Augers ○ Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-1 Well Casing Diameter 2 inches Borehole Diameter ____ inches

Depth to Ground Water (DGW) 6.07 ft. Screen Length/Slot Size 10FT ft./ ____ in.

Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.

Length of water column (LWC=TWD-DGW) 11.93 ft. Type of Drilling Fluids used: ____

Total Gallons of Water Removed: 10 gals. Drilling Fluids recovered ____ gals.

Time (military)	1400	1404	1410				
pH (s.u.)*	5.62	5.52	5.22				
Specific Conductivity (mmhos/cm)*	0.089	0.078	0.074				
Water Temperature (C)*	21.0	23.2	14.0				
Turbidity (NTU) *	140	200	30				
Physical Characteristics (color/odor)	Orange cloudy	Orange cloudy	Fairly cloudy				
Water Level Measurement (ft) from TOC	8.10	11.38	16.32				
Total Well Depth (ft) from TOC	18	18	18				
Cumulative Gallons Removed	2 gals	5 gals	10 gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump w/ Periodic Surging Well Dry @ 10 gal. Allow Recharge & Resume

Driller Signature: [signature] Date: 1/9/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 1/9/19
Field Personnel: C. Alexander
Drilling Company: Elite Techniques
Driller's Name: Nathan King
Driller's Certification Number: 2148
Weather Conditions: Sunny, Cool

Well Development Method

Surge Block ○ Submersible Pump ⊗ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter
serial no. 812004
pH=4.0 4.00
pH=7.0 7.02
pH=10.0

Conductivity meter
serial no. 812004
standard

Temperature meter
serial no. 812004

Turbidity meter
serial no. B34.3599
NTU=0.0
NTU=1.0 0.95
NTU=10.0

Drilling Method

Hollow Stem Augers ~~⊗~~ N/A Solid Flight Augers ● Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW22-2 Well Casing Diameter 2 inches Borehole Diameter ____ inches
Depth to Ground Water (DGW) 8.74 ft. Screen Length/Slot Size 10 ft./ ____ in.
Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.
Length of water column (LWC=TWD-DGW) 9.26 ft. Type of Drilling Fluids used: ____
Total Gallons of Water Removed: 7 gals. Drilling Fluids recovered ____ gals.

Time (military)	1440	1445					
pH (s.u.)*	5.67	6.04					
Specific Conductivity (mmhos/cm)*	0.113	0.105					
Water Temperature (C)*	22.2	22.6					
Turbidity (NTU) *	>1100	>1100					
Physical Characteristics (color/odor)	orange cloudy	cloudy orange					
Water Level Measurement (ft) from TOC	10.43	15.67					
Total Well Depth (ft) from TOC	18	18					
Cumulative Gallons Removed	2 gals	5 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump with Aeriodic Purging
Dry @ 7 gal

Driller Signature: [signature] Date: 1/9/19

dhec

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 1/9/19
Field Personnel: C. Alexander
Drilling Company: Elite Techniques
Driller's Name: Nathan King
Driller's Certification Number: 2148
Weather Conditions: Sunny, Cool

Well Development Method

Surge Block ○ Submersible Pump ⊘ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.02				NTU=1.0	0.95
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊘ Solid Flight Augers ○ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW2-3 Well Casing Diameter 2 inches Borehole Diameter ____ inches
Depth to Ground Water (DGW) 9.40 ft. Screen Length/Slot Size 10 ft./ ____ in.
Total Well Depth (TWD) 19 ft. Screen Interval 9 ft. to 19 ft.
Length of water column (LWC=TWD-DGW) 9.60 ft. Type of Drilling Fluids used: ____
Total Gallons of Water Removed: 8 gals. Drilling Fluids recovered ____ gals.

Time (military)	1507	1518					
pH (s.u.)*	4.92	5.07					
Specific Conductivity (mmhos/cm)*	0.086	0.076					
Water Temperature (C)*	23.0	23.0					
Turbidity (NTU) *	>1100	320					
Physical Characteristics (color/odor)	Orange/ Cloudy	Orange/ Cloudy					
Water Level Measurement (ft) from TOC	10.26	14.81					
Total Well Depth (ft) from TOC	19	19					
Cumulative Gallons Removed	2 gals	5 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump with Periodic Purging Dry @ 8 gal

Driller Signature: [signature] Date: 1/9/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: 1/9/19 Field Personnel: C. Alexander

Drilling Company: Elite Technologies Driller's Name: Nathan King

Driller's Certification Number: 2148 Weather Conditions: Sunny, cool

Well Development Method

Surge Block ○ Submersible Pump ⊘ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.02				NTU=1.0	0.95
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊘ Solid Flight Augers ● Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MwR2-4 Well Casing Diameter 2 inches Borehole Diameter _____ inches

Depth to Ground Water (DGW) 8.61 ft. Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.

Length of water column (LWC=TWD-DGW) 9.39 ft. Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 7 gals. Drilling Fluids recovered _____ gals.

Time (military)	1543	1548					
pH (s.u.)*	5.37	5.68					
Specific Conductivity (mmhos/cm)*	0.160	0.139					
Water Temperature (C)*	22.0	23.4					
Turbidity (NTU) *	140	>1100					
Physical Characteristics (color/odor)	Slightly Cloudy	Orange Cloudy					
Water Level Measurement (ft) from TOC	10.60	14.82					
Total Well Depth (ft) from TOC	18	18					
Cumulative Gallons Removed	2 gals	5 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump with Periodic Surging

Dry @ 7 gal

Driller Signature: [signature] Date: 1/9/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 1/9/19
Field Personnel: C. Alexander
Drilling Company: Elite Techniques
Driller's Name: Nathan King
Driller's Certification Number: 2148
Weather Conditions: Sunny, cool

Well Development Method

Surge Block ○ Submersible Pump Ø Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter
serial no. 812004
pH=4.0 4.00
pH=7.0 7.02
pH=10.0

Conductivity meter
serial no. 812004
standard

Temperature meter
serial no. 812004

Turbidity meter
serial no. 1334-3599
NTU=0.0
NTU=1.0 0.95
NTU=10.0

Drilling Method

Hollow Stem Augers Ø Solid Flight Augers ○ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW2-5 Well Casing Diameter 2 inches Borehole Diameter inches
Depth to Ground Water (DGW) 6.48 ft. Screen Length/Slot Size 10 ft./ in.
Total Well Depth (TWD) 16 ft. Screen Interval 6.5 ft. to 16.5 ft.
Length of water column (LWC=TWD-DGW) 9.52 ft. Type of Drilling Fluids used:
Total Gallons of Water Removed: 7 gals. Drilling Fluids recovered gals.

Time (military)	1607	1611					
pH (s.u.)*	6.24	6.14					
Specific Conductivity (mmhos/cm)*	0.150	0.159					
Water Temperature (C)*	21.5	22.2					
Turbidity (NTU) *	>1100	>1100					
Physical Characteristics (color/odor)	orange cloudy	orange cloudy					
Water Level Measurement (ft) from TOC	8.38	11.40					
Total Well Depth (ft) from TOC	16	16					
Cumulative Gallons Removed	2 gals	5 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump with Periodic Surging

Dry @ 7 gall

Driller Signature: Nathan King Date: 1/9/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: 1/22/19 Field Personnel: C Alexander

Drilling Company: Elite Techniques Driller's Name: Nathan King

Driller's Certification Number: 2148 Weather Conditions: Fair/Cool

Well Development Method

Surge Block ○ Submersible Pump ◉ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	8/2004	serial no.	8/2004	serial no. 8/2004	serial no.	1334-3589
pH=4.0	4.01	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ◉ Solid Flight Augers ○ Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW2-6 Well Casing Diameter 2 inches Borehole Diameter _____ inches

Depth to Ground Water (DGW) 7.94 ft. Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 15 ft. Screen Interval 5 ft. to 15 ft.

Length of water column (LWC=TWD-DGW) 7.06 ft. Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 8 gals. Drilling Fluids recovered _____ gals.

Time (military)							
pH (s.u.)*	4.91	5.80	6.03	6.27			
Specific Conductivity (mmhos/cm)*	0.290	0.324	0.369	0.410			
Water Temperature (C)*	19.1	20.3	20.7	20.9			
Turbidity (NTU) *	50	38	450	800			
Physical Characteristics (color/odor)	white cloudy	white cloudy	white cloudy	white cloudy			
Water Level Measurement (ft) from TOC	9.62	11.34	13.58	13.78			
Total Well Depth (ft) from TOC	15	15	15	15			
Cumulative Gallons Removed	2 gals	4 gals	6 gals	8 gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump w/ Periodic Surging

Allow Recharge @ 6 gal when dry

Dry @ 8gal

Driller Signature: [signature] Date: 1/22/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 16946

Date: 2/13/19 Field Personnel: C. Alexander

Drilling Company: Elite Techsigns Driller's Name: Nathan King

Driller's Certification Number: 2148 Weather Conditions: Sunny, Cool

Well Development Method

Surge Block ○ Submersible Pump ⊗ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3499
pH=4.0	4.01	standard			NTU=0.0	
pH=7.0	7.00				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊗ MW Solid Flight Augers ● Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-1 Well Casing Diameter 2 inches Borehole Diameter _____ inches

Depth to Ground Water (DGW) 7.61 ft. Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 15 ft. Screen Interval 5 ft. to 15 ft.

Length of water column (LWC=TWD-DGW) 7.39 ft. Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 2 gals. Drilling Fluids recovered _____ gals.

Time (military)							
pH (s.u.)*							
Specific Conductivity (mmhos/cm)*							
Water Temperature (C)*							
Turbidity (NTU) *							
Physical Characteristics (color/odor)							
Water Level Measurement (ft) from TOC							
Total Well Depth (ft) from TOC							
Cumulative Gallons Removed	gals	gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Well was pumped approx. 2 gal. Free Product was entering well and development was halted.

Driller Signature: [signature] Date: 2/13/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 1/22/19
Field Personnel: C. Alexander
Drilling Company: Elite Technicians
Driller's Name: Nathan King
Driller's Certification Number: 2148
Weather Conditions: Fair / cool

Well Development Method

Surge Block ○ Submersible Pump ⊘ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-35 99
pH=4.0	4.01	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊘ Solid Flight Augers ○ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-8 Well Casing Diameter 2 inches Borehole Diameter _____ inches
Depth to Ground Water (DGW) _____ ft. Screen Length/Slot Size 10 ft./ _____ in.
Total Well Depth (TWD) 12.5 ft. Screen Interval 2.5 ft. to 12.5 ft.
Length of water column (LWC=TWD-DGW) _____ ft. Type of Drilling Fluids used: _____
Total Gallons of Water Removed: 0 gals. Drilling Fluids recovered _____ gals.

Time (military)							
pH (s.u.)*							
Specific Conductivity (mmhos/cm)*							
Water Temperature (C)*							
Turbidity (NTU) *							
Physical Characteristics (color/odor)							
Water Level Measurement (ft) from TOC							
Total Well Depth (ft) from TOC							
Cumulative Gallons Removed	gals	gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Only FP Present.
FP 10.83

Driller Signature: _____ Date: 1/22/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco | Site ID#: 11946

Date: 2/12/19 | Field Personnel: C. Alexander

Drilling Company: Elite Technicians | Driller's Name: Nathan King

Driller's Certification Number: 2148 | Weather Conditions: Sunny, warm

Well Development Method

Surge Block ○ | Submersible Pump ◉ | Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.00
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ◉ | Solid Flight Augers ○ | Direct Push ○

Air Rotary ○ | Mud Rotary ○ | Sonic ○

Monitoring Well ID# MW22-9 | Well Casing Diameter 2 inches | Borehole Diameter _____ inches

Depth to Ground Water (DGW) 10.40 ft. | Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 18 ft. | Screen Interval 8 ft. to 18 ft.

Length of water column (LWC=TWD-DGW) 7.60 ft. | Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 4 gals. | Drilling Fluids recovered _____ gals.

Time (military)	1210						
pH (s.u.)*	5.10	4.74					
Specific Conductivity (mmhos/cm)*	0.118	0.134					
Water Temperature (C)*	21.0	21.1					
Turbidity (NTU) *	500	600					
Physical Characteristics (color/odor)	white cloudy	white cloudy					
Water Level Measurement (ft) from TOC	13.56	17.64					
Total Well Depth (ft) from TOC	~~13.56~~ 18	18					
Cumulative Gallons Removed	2 gals	4 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible pump with periodic surging Dry @ 4gal

Driller Signature: _____ Date: 2/12/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco | Site ID#: 11946

Date: 2/12/19 | Field Personnel: C. Alexander

Drilling Company: Elite Techniques | Driller's Name: Nathan King

Driller's Certification Number: 2148 | Weather Conditions: Sunny/warm

Well Development Method

Surge Block ○ | Submersible Pump ⊗ | Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊗ NW | Solid Flight Augers ● | Direct Push ○

Air Rotary ○ | Mud Rotary ○ | Sonic ○

Monitoring Well ID# MWR2-D | Well Casing Diameter 2 inches | Borehole Diameter _____ inches

Depth to Ground Water (DGW) 8.44 ft. | Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 17 ft. | Screen Interval 7 ft. to 17 ft.

Length of water column (LWC=TWD-DGW) 8.56 ft. | Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 6 gals. | Drilling Fluids recovered _____ gals.

Time (military)							
pH (s.u.)*	7.08	5.63	5.47				
Specific Conductivity (mmhos/cm)*	0.184	0.177	0.124				
Water Temperature (C)*	23.1	23.0	23.5				
Turbidity (NTU) *	130	22	55				
Physical Characteristics (color/odor)	sl. cloudy	sl. cloudy	sl. cloudy				
Water Level Measurement (ft) from TOC	11.11	15.70	16.80				
Total Well Depth (ft) from TOC	17	17	17				
Cumulative Gallons Removed	2 gals	4 gals	6 gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible pump w/ periodic surging

Dry @ 6 gal

Driller Signature: [signature] | Date: 2/12/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: 2/12/19 Field Personnel: C. Alexander

Drilling Company: Elite Techniques Driller's Name: Nathan King

Driller's Certification Number: 2148 Weather Conditions: Shady, warm

Well Development Method

Surge Block ○ Submersible Pump ● Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ● Solid Flight Augers ● Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-11 Well Casing Diameter 2 inches Borehole Diameter _____ inches

Depth to Ground Water (DGW) 10.09 ft. Screen Length/Slot Size 10 ft./ _____ in.

Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.

Length of water column (LWC=TWD-DGW) 7.91 ft. Type of Drilling Fluids used: _____

Total Gallons of Water Removed: 6 gals. Drilling Fluids recovered _____ gals.

Time (military)							
pH (s.u.)*	6.02	6.75	7.00				
Specific Conductivity (mmhos/cm)*	0.592	0.602	0.476				
Water Temperature (C)*	21.3	21.1	21.7				
Turbidity (NTU) *	45	37	230				
Physical Characteristics (color/odor)	Sl. Cloudy	Sl. cloudy	Sl. cloudy				
Water Level Measurement (ft) from TOC	12.87	15.96	17.70				
Total Well Depth (ft) from TOC	18	18	18				
Cumulative Gallons Removed	2 gals	4 gals	6 gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump w/ Periodic Surging Dry @ 6gal

Driller Signature: [signature] Date: 2/12/19

dhec

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 2/12/19
Field Personnel: C. Alexander
Drilling Company: Elite Techniques
Driller's Name: Nathan King
Driller's Certification Number: 248
Weather Conditions: Sunny, warm

Well Development Method

Surge Block ○ Submersible Pump ⊘ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers ⊘ Solid Flight Augers ● Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-12 Well Casing Diameter 2 inches Borehole Diameter ____ inches
Depth to Ground Water (DGW) 10.49 ft. Screen Length/Slot Size 10 ft./ ____ in.
Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.
Length of water column (LWC=TWD-DGW) 7.51 ft. Type of Drilling Fluids used: ____
Total Gallons of Water Removed: 5 gals. Drilling Fluids recovered ____ gals.

Time (military)							
pH (s.u.)*	5.32	5.43					
Specific Conductivity (mmhos/cm)*	0.183	0.174					
Water Temperature (C)*	22.4	22.5					
Turbidity (NTU) *	50	600					
Physical Characteristics (color/odor)	lt. cloudy	orange cloudy					
Water Level Measurement (ft) from TOC	13.55	17.50					
Total Well Depth (ft) from TOC	18	18					
Cumulative Gallons Removed	2 gals	4 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible pump w/ periodic surging
Dry @ 5 gals

Driller Signature: Nathan King Date: 2/12/19

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco Site ID#: 11946

Date: 2/13/19 Field Personnel: C. Alexander

Drilling Company: W. Walker Environmental Driller's Name: Tyler Felder

Driller's Certification Number: 1864 Weather Conditions: Sunny, cool

Well Development Method

Surge Block ○ Submersible Pump ○ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter
serial no. 812004
pH=4.0 4.01
pH=7.0 7.00
pH=10.0 ____

Conductivity meter
serial no. 812004
standard ____

Temperature meter
serial no. 812004

Turbidity meter
serial no. 1334-3549
NTU=0.0 ____
NTU=1.0 1.0
NTU=10.0 ____

Drilling Method

Hollow Stem Augers ● Solid Flight Augers ○ Direct Push ○

Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW22-13 Well Casing Diameter 2 inches Borehole Diameter ____ inches

Depth to Ground Water (DGW) 2.76 ft. Screen Length/Slot Size 10 ft./ ____ in.

Total Well Depth (TWD) 11 ft. Screen Interval 1 ft. to 11 ft.

Length of water column (LWC=TWD-DGW) 8.24 ft. Type of Drilling Fluids used: ____

Total Gallons of Water Removed: 5 gals. Drilling Fluids recovered ____ gals.

Time (military)							
pH (s.u.)*	4.69	4.82					
Specific Conductivity (mmhos/cm)*	0.264	0.248					
Water Temperature (C)*	15.2	15.0					
Turbidity (NTU) *	50	24					
Physical Characteristics (color/odor)	sl. cloudy	sl. cloudy					
Water Level Measurement (ft) from TOC	4.72	6.45					
Total Well Depth (ft) from TOC	11	11					
Cumulative Gallons Removed	2 gals	4 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible pump w/ periodic surging

Dry @ 5 gal

Driller Signature: Robert L. Felder Date: 04/26/2019

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Road Amoco | Site ID#: 11946

Date: 2/12/19 | Field Personnel: C. Alexander

Drilling Company: W. Walker Environmental | Driller's Name: Tyler Felder

Driller's Certification Number: 1864 | Weather Conditions: Sunny, warm

Well Development Method

Surge Block ○ | Submersible Pump Ⓜ | Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter		Conductivity meter		Temperature meter	Turbidity meter	
serial no.	812004	serial no.	812004	serial no. 812004	serial no.	1334-3599
pH=4.0	4.00	standard			NTU=0.0	
pH=7.0	7.01				NTU=1.0	1.0
pH=10.0					NTU=10.0	

Drilling Method

Hollow Stem Augers Ⓜ | Solid Flight Augers ○ | Direct Push ○

Air Rotary ○ | Mud Rotary ○ | Sonic ○

Monitoring Well ID# MWR2-14 | Well Casing Diameter 2 inches | Borehole Diameter ____ inches

Depth to Ground Water (DGW) 9.81 ft. | Screen Length/Slot Size 10 ft./ ____ in.

Total Well Depth (TWD) 19 ft. | Screen Interval 9 ft. to 19 ft.

Length of water column (LWC=TWD-DGW) 9.19 ft. | Type of Drilling Fluids used: ____

Total Gallons of Water Removed: 13 gals. | Drilling Fluids recovered ____ gals.

Time (military)							
pH (s.u.)*	8.01	7.43	7.27	7.29	7.05	7.17	
Specific Conductivity (mmhos/cm)*	0.684	0.627	0.626	0.610	0.619	0.593	
Water Temperature (C)*	22.4	21.0	21.0	21.0	21.2	21.3	
Turbidity (NTU) *	>1100	>1100	>1100	>1100	>1100	>1100	
Physical Characteristics (color/odor)	muddy	Muddy	cloudy	cloudy	muddy	muddy	
Water Level Measurement (ft) from TOC	10.99	12.27	13.54	14.75	15.84	17.17	
Total Well Depth (ft) from TOC	19	19	19	19	19	19	
Cumulative Gallons Removed	2 gals	4 gals	6 gals	8 gals	10 gals	12 gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump w/ Periodic Surging

Dry @ 13 gal

Driller Signature: Robert L Felder | Date: 04.26.2019

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 2/13/19
Field Personnel: C. Alexander
Drilling Company: W. Walker Environmental
Driller's Name: Tyler Felder
Driller's Certification Number: 1864
Weather Conditions: Sunny, cool

Well Development Method

Surge Block ○ Submersible Pump ◉ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter
serial no. 812004
pH=4.0 4.01
pH=7.0 7.00
pH=10.0

Conductivity meter
serial no. 812004
standard

Temperature meter
serial no. 812004

Turbidity meter
serial no. 1334-2599
NTU=0.0
NTU=1.0 1.0
NTU=10.0

Drilling Method

Hollow Stem Augers ◉ Solid Flight Augers ○ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MW2-15 Well Casing Diameter 2 inches Borehole Diameter ____ inches
Depth to Ground Water (DGW) 10.31 ft. Screen Length/Slot Size 10 ft./ ____ in.
Total Well Depth (TWD) 18 ft. Screen Interval 8 ft. to 18 ft.
Length of water column (LWC=TWD-DGW) 7.69 ft. Type of Drilling Fluids used: ____
Total Gallons of Water Removed: 6 gals. Drilling Fluids recovered ____ gals.

Time (military)							
pH (s.u.)*	6.07	4.67	4.17				
Specific Conductivity (mmhos/cm)*	0.244	0.255	0.198				
Water Temperature (C)*	19.3	20.3	20.6				
Turbidity (NTU) *	37	40	330				
Physical Characteristics (color/odor)	sl. cloudy	sl. cloudy	cloudy				
Water Level Measurement (ft) from TOC	11.98	16.04	Dry				
Total Well Depth (ft) from TOC	18	18	18				
Cumulative Gallons Removed	2 gals	4 gals	6 gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process: Submersible Pump w/ Periodic surging
Dry @ 6 gal

Driller Signature: [signature] Date: 04/26/2019

Well Development Data Verfication Form
Underground Storage Tank Management Division

Facility Name: Broad River Amoco
Site ID#: 11946
Date: 2/13/19
Field Personnel: C. Alexander
Drilling Company: W. Walker Environmental
Driller's Name: Tyler Felder
Driller's Certification Number: 1864
Weather Conditions: Sunny / cool

Well Development Method

Surge Block ○ Submersible Pump ⊗ Air Lifting ○

* Bailing can be combined with any of the above methods, but not utilized alone for development.

Quality Assurance

pH meter
serial no. 812004
pH=4.0 4.01
pH=7.0 7.00
pH=10.0

Conductivity meter
serial no. 812004
standard

Temperature meter
serial no. 812004

Turbidity meter
serial no. 1334-3599
NTU=0.0
NTU=1.0 1.0
NTU=10.0

Drilling Method

Hollow Stem Augers ○ Solid Flight Augers ○ Direct Push ○
Air Rotary ○ Mud Rotary ○ Sonic ○

Monitoring Well ID# MWR2-16 Well Casing Diameter 2 inches Borehole Diameter ____ inches
Depth to Ground Water (DGW) 10.90 ft. Screen Length/Slot Size 10 ft./ ____ in.
Total Well Depth (TWD) 19 ft. Screen Interval 9 ft. to 19 ft.
Length of water column (LWC=TWD-DGW) 8.10 ft. Type of Drilling Fluids used: ____
Total Gallons of Water Removed: 5 gals. Drilling Fluids recovered ____ gals.

Time (military)							
pH (s.u.)*	4.67	4.58					
Specific Conductivity (mmhos/cm)*	0.213	0.178					
Water Temperature (C)*	21.9	22.5					
Turbidity (NTU) *	120	85					
Physical Characteristics (color/odor)	sl. cloudy	sl. cloudy					
Water Level Measurement (ft) from TOC	12.94	17.78					
Total Well Depth (ft) from TOC	19	19					
Cumulative Gallons Removed	2 gals	4 gals	gals	gals	gals	gals	gals

* Development is completed once groundwater turbidity is ≤ 10 NTU and all parameters are ± 10%.

Detailed description of Well Development process:
Dry @ 5 gal

Driller Signature: Robert L Field Date: 04/26/2019

Appendix F
Aquifer Evaluation Data

Summary of Slug Test
Underground Storage Tank Management Division

Site Data

UST Permit #: 11946 County: Richland

Facility Name: Broad River Amoco Date Performed: 4/23, 4/25 2019

Slug Data

See Appendix F Table _____ Figure _____ for a list of all data measurements. [water level logs, etc. (complete as appropriate)].

Water Level Recovery Data was measured by Hermit 1000C
[Hermit Data Logger, Manually with Water Level Indicator, etc. (list method)].

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in Well(s) Number	MWR2-1	MWR2-10	MWR2-11	MWR2-12
Time Performed (military)	1223	1129	1405	1230
Static Water Level (feet)	7.00	8.19	10.62	9.39
Initial Rise/Drawdown in Well (+/- feet)	0.871	1.621	1.438	2.044
Radius of Well Casing (feet)	0.083	0.083	0.083	0.083
Effective Radius of Well (feet)	0.75	0.67	0.67	0.67
Static Saturated Aquifer Thickness (feet)	30	30	30	30
Length of Well Screen (feet)	10	10	10	10

Calculations

See Appendix F Table _____ Figure _____ for calculations (complete as appropriate).

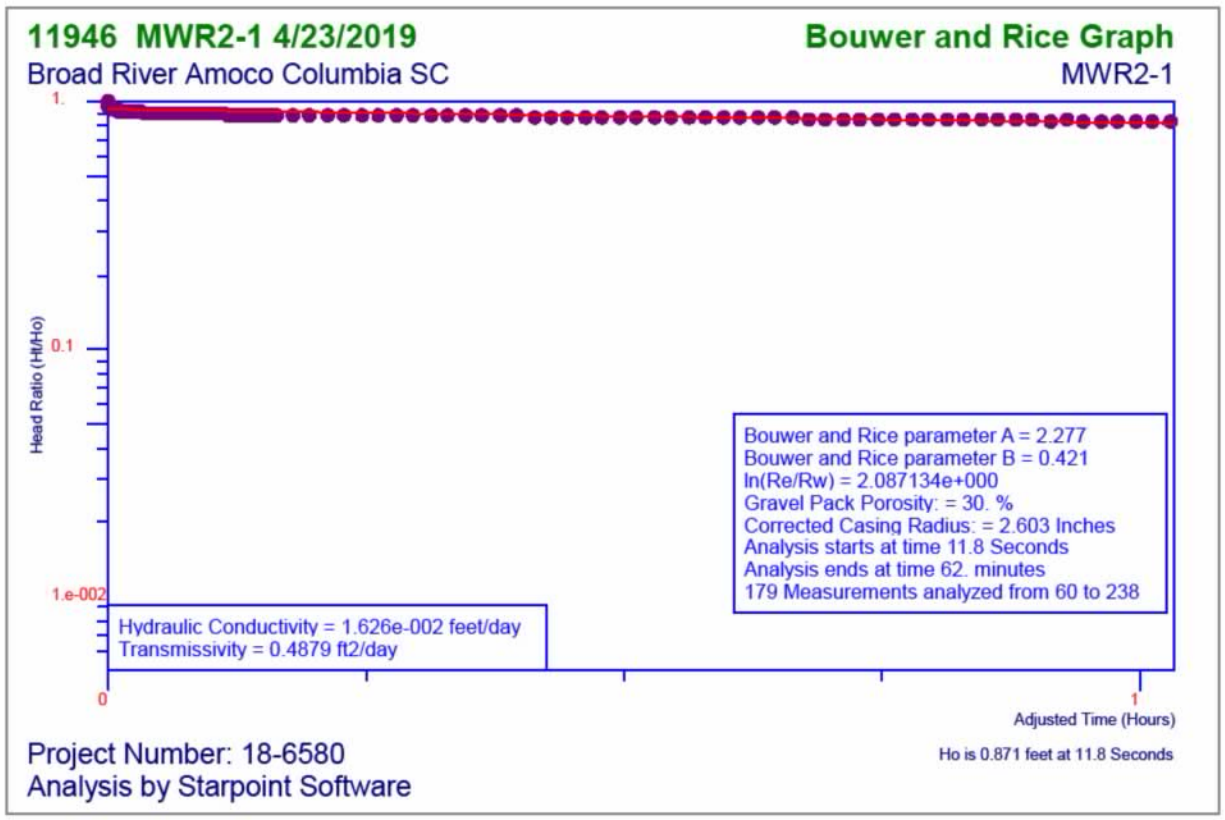
The method for Aquifer calculations was Bouwer-Rice (i.e. Bouwer-Rice, Cooper, etc.).

The Aquifer is ☐ confined ☐ semi-confined ☑ water table (check as appropriate).

A hydraulic gradient of 0.0184,

Calculated values by well were as follows:

Slug Test Conducted in Well(s) Number	MWR2-1	MWR2-10	MWR2-11	MWR2-12
Thickness of Aquifer (feet)	30	30	30	30
Hydraulic Conductivity (feet/ year)	5.93	21.15	31.15	8.62
Effective Porosity (%)	50	50	50	50
Soil Type (i.e., silty sand, clay, etc.)	Silty Sand	Sandy Silt	Silty Sand	Silty Sand
Seepage Velocity (feet/ year)	0.2182	0.7783	1.146	0.3172


11946 MWR2-1 4/23/2019
Bouwer and Rice Graph
Broad River Amoco Columbia SC
MWR2-1
1.
0.1
1.e-002
Head Ratio (Ht/Ho)
Bouwer and Rice parameter A = 2.277
Bouwer and Rice parameter B = 0.421
ln(Re/Rw) = 2.087134e+000
Gravel Pack Porosity: = 30. %
Corrected Casing Radius: = 2.603 Inches
Analysis starts at time 11.8 Seconds
Analysis ends at time 62. minutes
179 Measurements analyzed from 60 to 238
Hydraulic Conductivity = 1.626e-002 feet/day
Transmissivity = 0.4879 ft2/day
0
1
Adjusted Time (Hours)
Project Number: 18-6580
Analysis by Starpoint Software
Ho is 0.871 feet at 11.8 Seconds

11946 MWR2-1

Site Name:	Broad River Amoco
Location:	Columbia SC
Test Date:	4/23/2019
Project Number:	18-6580
Import File:	F:\Broad River Amoco 18-6580\SLUG TESTS\BRAmwr2-1

Well Label:	MWR2-1
Aquifer Thickness:	30. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	4.5 Inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	2.603 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	10.38 feet
Anisotropy Ratio:	1.
Time Adjustment:	11.8 Seconds

Test starts with trial 2
There are 238 time and drawdown measurements
Maximum head is 3.584 feet
Minimum head is 0. feet

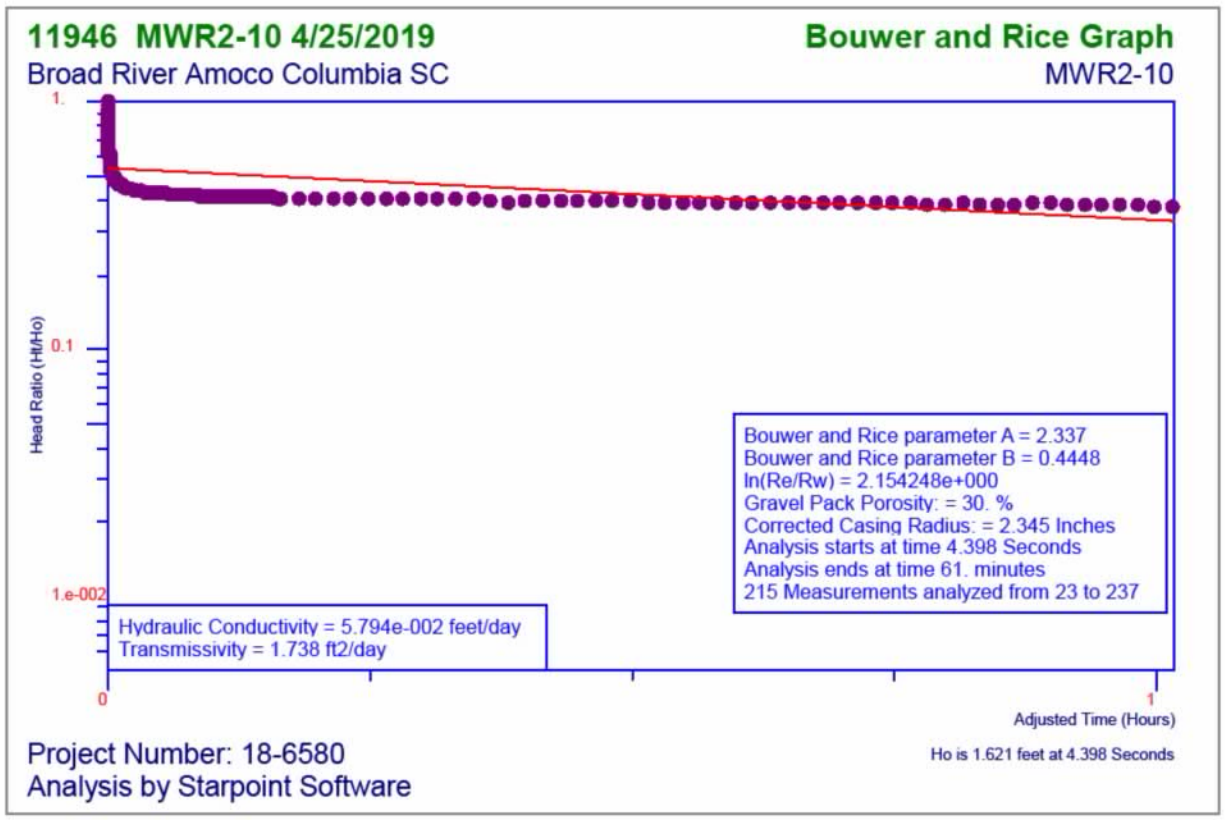
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-0.1966	1.121	1.121	0.3128
2	3.3e-003	-0.1933	3.536	3.536	0.9866
3	6.6e-003	-0.19	3.584	3.584	1.
4	1.e-002	-0.1866	0.303	0.303	8.454e-002
5	1.33e-002	-0.1833	0.207	0.207	5.776e-002
6	1.66e-002	-0.18	2.141	2.141	0.5974
7	2.e-002	-0.1766	2.814	2.814	0.7852
8	2.33e-002	-0.1733	1.703	1.703	0.4752
9	2.66e-002	-0.17	0.505	0.505	0.1409
10	3.e-002	-0.1666	1.063	1.063	0.2966
11	3.33e-002	-0.1633	2.03	2.03	0.5664
12	3.66e-002	-0.16	1.963	1.963	0.5477
13	4.e-002	-0.1566	1.102	1.102	0.3075
14	4.33e-002	-0.1533	0.755	0.755	0.2107
15	4.66e-002	-0.15	1.284	1.284	0.3583
16	5.e-002	-0.1466	1.708	1.708	0.4766
17	5.33e-002	-0.1433	1.448	1.448	0.404
18	5.66e-002	-0.14	0.938	0.938	0.2617
19	6.e-002	-0.1366	0.899	0.899	0.2508
20	6.33e-002	-0.1333	1.256	1.256	0.3504
21	6.66e-002	-0.13	1.405	1.405	0.392
22	7.e-002	-0.1266	1.164	1.164	0.3248
23	7.33e-002	-0.1233	0.895	0.895	0.2497
24	7.66e-002	-0.12	0.948	0.948	0.2645
25	8.e-002	-0.1166	1.159	1.159	0.3234
26	8.33e-002	-0.1133	1.193	1.193	0.3329
27	8.66e-002	-0.11	1.015	1.015	0.2832
28	9.e-002	-0.1066	0.88	0.88	0.2455
29	9.33e-002	-0.1033	0.948	0.948	0.2645
30	9.66e-002	-0.1	1.063	1.063	0.2966
31	0.1	-9.66e-002	1.058	1.058	0.2952
32	0.1033	-9.33e-002	0.943	0.943	0.2631

33	0.1066	-9.e-002	0.88	0.88	0.2455
34	0.11	-8.66e-002	0.933	0.933	0.2603
35	0.1133	-8.33e-002	0.996	0.996	0.2779
36	0.1166	-8.e-002	0.976	0.976	0.2723
37	0.12	-7.66e-002	0.904	0.904	0.2522
38	0.1233	-7.33e-002	0.88	0.88	0.2455
39	0.1266	-7.e-002	0.914	0.914	0.255
40	0.13	-6.66e-002	0.948	0.948	0.2645
41	0.1333	-6.33e-002	0.928	0.928	0.2589
42	0.1366	-6.e-002	0.885	0.885	0.2469
43	0.14	-5.66e-002	0.875	0.875	0.2441
44	0.1433	-5.33e-002	0.899	0.899	0.2508
45	0.1466	-5.e-002	0.919	0.919	0.2564
46	0.15	-4.66e-002	0.899	0.899	0.2508
47	0.1533	-4.33e-002	0.875	0.875	0.2441
48	0.1566	-4.e-002	0.875	0.875	0.2441
49	0.16	-3.66e-002	0.89	0.89	0.2483
50	0.1633	-3.33e-002	0.895	0.895	0.2497
51	0.1666	-3.e-002	0.885	0.885	0.2469
52	0.17	-2.66e-002	0.871	0.871	0.243
53	0.1733	-2.33e-002	0.871	0.871	0.243
54	0.1766	-2.e-002	0.88	0.88	0.2455
55	0.18	-1.66e-002	0.88	0.88	0.2455
56	0.1833	-1.33e-002	0.871	0.871	0.243
57	0.1866	-1.e-002	0.866	0.866	0.2416
58	0.19	-6.6e-003	0.866	0.866	0.2416
59	0.1933	-3.3e-003	0.871	0.871	0.243
60	0.1966	0.	0.871	0.871	0.243
61	0.2	3.4e-003	0.866	0.866	0.2416
62	0.2033	6.7e-003	0.861	0.861	0.2402
63	0.2066	1.e-002	0.861	0.861	0.2402
64	0.21	1.34e-002	0.861	0.861	0.2402
65	0.2133	1.67e-002	0.861	0.861	0.2402
66	0.2166	2.e-002	0.856	0.856	0.2388
67	0.22	2.34e-002	0.856	0.856	0.2388
68	0.2233	2.67e-002	0.856	0.856	0.2388
69	0.2266	3.e-002	0.856	0.856	0.2388
70	0.23	3.34e-002	0.856	0.856	0.2388
71	0.2333	3.67e-002	0.851	0.851	0.2374
72	0.2366	4.e-002	0.851	0.851	0.2374
73	0.24	4.34e-002	0.851	0.851	0.2374
74	0.2433	4.67e-002	0.851	0.851	0.2374
75	0.2466	5.e-002	0.851	0.851	0.2374
76	0.25	5.34e-002	0.851	0.851	0.2374
77	0.2533	5.67e-002	0.851	0.851	0.2374
78	0.2566	6.e-002	0.851	0.851	0.2374
79	0.26	6.34e-002	0.847	0.847	0.2363
80	0.2633	6.67e-002	0.847	0.847	0.2363
81	0.2666	7.e-002	0.847	0.847	0.2363
82	0.27	7.34e-002	0.847	0.847	0.2363
83	0.2733	7.67e-002	0.847	0.847	0.2363
84	0.2766	8.e-002	0.847	0.847	0.2363
85	0.28	8.34e-002	0.847	0.847	0.2363
86	0.2833	8.67e-002	0.842	0.842	0.2349
87	0.2866	9.e-002	0.842	0.842	0.2349
88	0.29	9.34e-002	0.842	0.842	0.2349
89	0.2933	9.67e-002	0.842	0.842	0.2349

90	0.2966	1.e-001	0.842	0.842	0.2349
91	0.3	0.1034	0.842	0.842	0.2349
92	0.3033	0.1067	0.842	0.842	0.2349
93	0.3066	0.11	0.842	0.842	0.2349
94	0.31	0.1134	0.842	0.842	0.2349
95	0.3133	0.1167	0.837	0.837	0.2335
96	0.3166	0.12	0.837	0.837	0.2335
97	0.32	0.1234	0.837	0.837	0.2335
98	0.3233	0.1267	0.837	0.837	0.2335
99	0.3266	0.13	0.837	0.837	0.2335
100	0.33	0.1334	0.837	0.837	0.2335
101	0.3333	0.1367	0.837	0.837	0.2335
102	0.35	0.1534	0.837	0.837	0.2335
103	0.3666	0.17	0.832	0.832	0.2321
104	0.3833	0.1867	0.832	0.832	0.2321
105	0.4	0.2034	0.827	0.827	0.2307
106	0.4166	0.22	0.827	0.827	0.2307
107	0.4333	0.2367	0.823	0.823	0.2296
108	0.45	0.2534	0.823	0.823	0.2296
109	0.4666	0.27	0.823	0.823	0.2296
110	0.4833	0.2867	0.823	0.823	0.2296
111	0.5	0.3034	0.818	0.818	0.2282
112	0.5166	0.32	0.818	0.818	0.2282
113	0.5333	0.3367	0.818	0.818	0.2282
114	0.55	0.3534	0.818	0.818	0.2282
115	0.5666	0.37	0.818	0.818	0.2282
116	0.5833	0.3867	0.818	0.818	0.2282
117	0.6	0.4034	0.813	0.813	0.2268
118	0.6166	0.42	0.813	0.813	0.2268
119	0.6333	0.4367	0.813	0.813	0.2268
120	0.65	0.4534	0.813	0.813	0.2268
121	0.6666	0.47	0.813	0.813	0.2268
122	0.6833	0.4867	0.813	0.813	0.2268
123	0.7	0.5034	0.813	0.813	0.2268
124	0.7166	0.52	0.813	0.813	0.2268
125	0.7333	0.5367	0.813	0.813	0.2268
126	0.75	0.5534	0.808	0.808	0.2254
127	0.7666	0.57	0.808	0.808	0.2254
128	0.7833	0.5867	0.808	0.808	0.2254
129	0.8	0.6034	0.808	0.808	0.2254
130	0.8166	0.62	0.808	0.808	0.2254
131	0.8333	0.6367	0.808	0.808	0.2254
132	0.85	0.6534	0.808	0.808	0.2254
133	0.8666	0.67	0.808	0.808	0.2254
134	0.8833	0.6867	0.808	0.808	0.2254
135	0.9	0.7034	0.803	0.803	0.2241
136	0.9166	0.72	0.803	0.803	0.2241
137	0.9333	0.7367	0.803	0.803	0.2241
138	0.95	0.7534	0.803	0.803	0.2241
139	0.9666	0.77	0.803	0.803	0.2241
140	0.9833	0.7867	0.803	0.803	0.2241
141	1.	0.8034	0.803	0.803	0.2241
142	1.2	1.003	0.798	0.798	0.2227
143	1.4	1.203	0.794	0.794	0.2215
144	1.6	1.403	0.794	0.794	0.2215
145	1.8	1.603	0.794	0.794	0.2215
146	2.	1.803	0.794	0.794	0.2215

147	2.2	2.003	0.794	0.794	0.2215
148	2.4	2.203	0.789	0.789	0.2201
149	2.6	2.403	0.789	0.789	0.2201
150	2.8	2.603	0.789	0.789	0.2201
151	3.	2.803	0.789	0.789	0.2201
152	3.2	3.003	0.784	0.784	0.2188
153	3.4	3.203	0.784	0.784	0.2188
154	3.6	3.403	0.784	0.784	0.2188
155	3.8	3.603	0.789	0.789	0.2201
156	4.	3.803	0.784	0.784	0.2188
157	4.2	4.003	0.784	0.784	0.2188
158	4.4	4.203	0.779	0.779	0.2174
159	4.6	4.403	0.779	0.779	0.2174
160	4.8	4.603	0.784	0.784	0.2188
161	5.	4.803	0.779	0.779	0.2174
162	5.2	5.003	0.779	0.779	0.2174
163	5.4	5.203	0.779	0.779	0.2174
164	5.6	5.403	0.779	0.779	0.2174
165	5.8	5.603	0.779	0.779	0.2174
166	6.	5.803	0.779	0.779	0.2174
167	6.2	6.003	0.779	0.779	0.2174
168	6.4	6.203	0.779	0.779	0.2174
169	6.6	6.403	0.779	0.779	0.2174
170	6.8	6.603	0.779	0.779	0.2174
171	7.	6.803	0.779	0.779	0.2174
172	7.2	7.003	0.774	0.774	0.216
173	7.4	7.203	0.774	0.774	0.216
174	7.6	7.403	0.774	0.774	0.216
175	7.8	7.603	0.774	0.774	0.216
176	8.	7.803	0.774	0.774	0.216
177	8.2	8.003	0.774	0.774	0.216
178	8.4	8.203	0.774	0.774	0.216
179	8.6	8.403	0.774	0.774	0.216
180	8.8	8.603	0.774	0.774	0.216
181	9.	8.803	0.774	0.774	0.216
182	9.2	9.003	0.774	0.774	0.216
183	9.4	9.203	0.774	0.774	0.216
184	9.6	9.403	0.774	0.774	0.216
185	9.8	9.603	0.774	0.774	0.216
186	10.	9.803	0.774	0.774	0.216
187	11.	10.8	0.77	0.77	0.2148
188	12.	11.8	0.774	0.774	0.216
189	13.	12.8	0.774	0.774	0.216
190	14.	13.8	0.77	0.77	0.2148
191	15.	14.8	0.774	0.774	0.216
192	16.	15.8	0.765	0.765	0.2134
193	17.	16.8	0.765	0.765	0.2134
194	18.	17.8	0.765	0.765	0.2134
195	19.	18.8	0.765	0.765	0.2134
196	20.	19.8	0.765	0.765	0.2134
197	21.	20.8	0.765	0.765	0.2134
198	22.	21.8	0.765	0.765	0.2134
199	23.	22.8	0.765	0.765	0.2134
200	24.	23.8	0.765	0.765	0.2134
201	25.	24.8	0.76	0.76	0.2121
202	26.	25.8	0.76	0.76	0.2121
203	27.	26.8	0.76	0.76	0.2121

204	28.	27.8	0.76	0.76	0.2121
205	29.	28.8	0.755	0.755	0.2107
206	30.	29.8	0.755	0.755	0.2107
207	31.	30.8	0.755	0.755	0.2107
208	32.	31.8	0.755	0.755	0.2107
209	33.	32.8	0.755	0.755	0.2107
210	34.	33.8	0.75	0.75	0.2093
211	35.	34.8	0.755	0.755	0.2107
212	36.	35.8	0.755	0.755	0.2107
213	37.	36.8	0.75	0.75	0.2093
214	38.	37.8	0.75	0.75	0.2093
215	39.	38.8	0.75	0.75	0.2093
216	40.	39.8	0.75	0.75	0.2093
217	41.	40.8	0.745	0.745	0.2079
218	42.	41.8	0.741	0.741	0.2068
219	43.	42.8	0.745	0.745	0.2079
220	44.	43.8	0.745	0.745	0.2079
221	45.	44.8	0.745	0.745	0.2079
222	46.	45.8	0.741	0.741	0.2068
223	47.	46.8	0.736	0.736	0.2054
224	48.	47.8	0.736	0.736	0.2054
225	49.	48.8	0.736	0.736	0.2054
226	50.	49.8	0.741	0.741	0.2068
227	51.	50.8	0.741	0.741	0.2068
228	52.	51.8	0.741	0.741	0.2068
229	53.	52.8	0.736	0.736	0.2054
230	54.	53.8	0.736	0.736	0.2054
231	55.	54.8	0.731	0.731	0.204
232	56.	55.8	0.736	0.736	0.2054
233	57.	56.8	0.731	0.731	0.204
234	58.	57.8	0.731	0.731	0.204
235	59.	58.8	0.731	0.731	0.204
236	60.	59.8	0.726	0.726	0.2026
237	61.	60.8	0.726	0.726	0.2026
238	62.	61.8	0.721	0.721	0.2012


11946 MWR2-10 4/25/2019
Bouwer and Rice Graph
Broad River Amoco Columbia SC
MWR2-10
1.
0.1
1.e-002
Head Ratio (Ht/Ho)
Bouwer and Rice parameter A = 2.337
Bouwer and Rice parameter B = 0.4448
ln(Re/Rw) = 2.154248e+000
Gravel Pack Porosity: = 30. %
Corrected Casing Radius: = 2.345 Inches
Analysis starts at time 4.398 Seconds
Analysis ends at time 61. minutes
215 Measurements analyzed from 23 to 237
Hydraulic Conductivity = 5.794e-002 feet/day
Transmissivity = 1.738 ft2/day
0
1
Adjusted Time (Hours)
Project Number: 18-6580
Analysis by Starpoint Software
Ho is 1.621 feet at 4.398 Seconds

11946 MWR2-10

Site Name:	Broad River Amoco
Location:	Columbia SC
Test Date:	4/25/2019
Project Number:	18-6580
Import File:	F:\Broad River Amoco 18-6580\SLUG TESTS\R2-10

Well Label:	MWR2-10
Aquifer Thickness:	30. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	4. Inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	2.345 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	9.79 feet
Anisotropy Ratio:	1.
Time Adjustment:	4.398 Seconds

Test starts with trial 1
There are 237 time and drawdown measurements
Maximum head is 4.962 feet
Minimum head is 0. feet

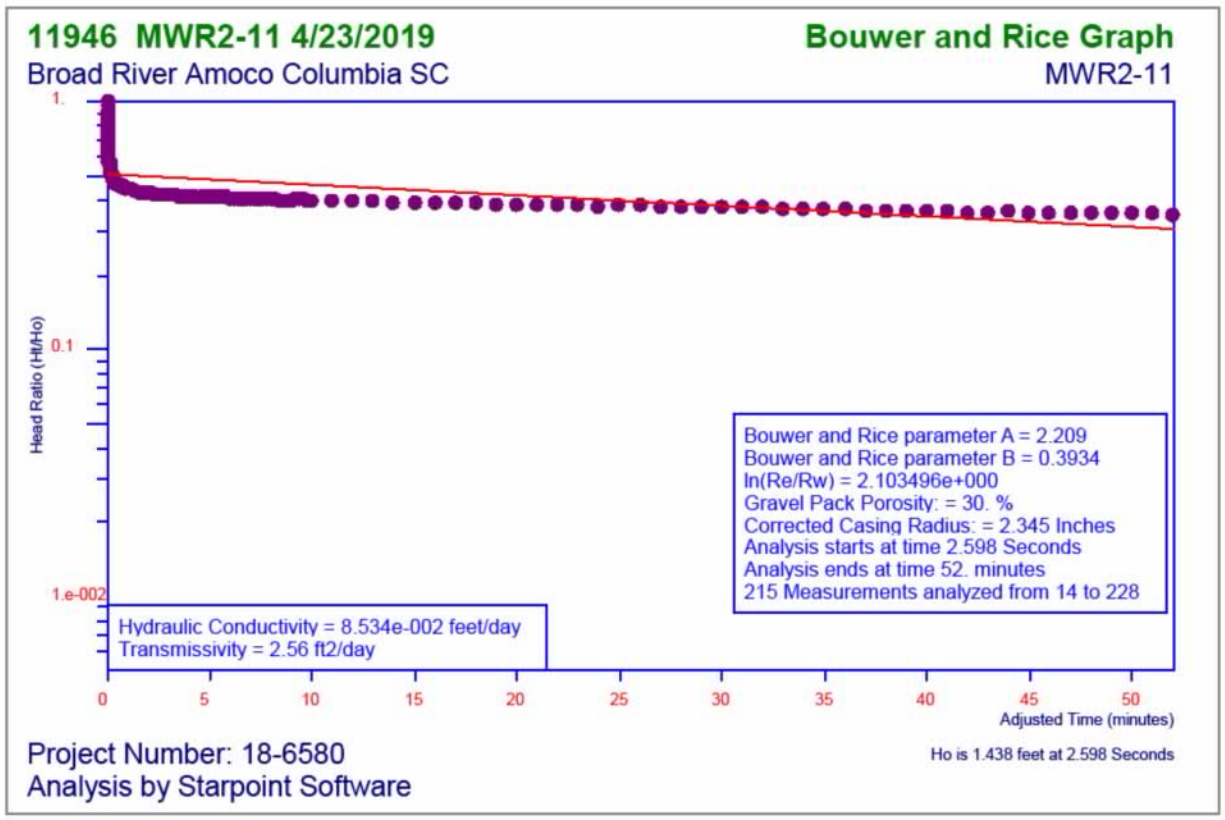
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-7.33e-002	0.947	0.947	0.1909
2	3.3e-003	-7.e-002	4.962	4.962	1.
3	6.6e-003	-6.67e-002	2.386	2.386	0.4809
4	1.e-002	-6.33e-002	0.11	0.11	2.217e-002
5	1.33e-002	-6.e-002	3.04	3.04	0.6127
6	1.66e-002	-5.67e-002	2.895	2.895	0.5834
7	2.e-002	-5.33e-002	1.034	1.034	0.2084
8	2.33e-002	-5.e-002	1.756	1.756	0.3539
9	2.66e-002	-4.67e-002	2.592	2.592	0.5224
10	3.e-002	-4.33e-002	1.813	1.813	0.3654
11	3.33e-002	-4.e-002	1.462	1.462	0.2946
12	3.66e-002	-3.67e-002	2.044	2.044	0.4119
13	4.e-002	-3.33e-002	2.03	2.03	0.4091
14	4.33e-002	-3.e-002	1.606	1.606	0.3237
15	4.66e-002	-2.67e-002	1.703	1.703	0.3432
16	5.e-002	-2.33e-002	1.905	1.905	0.3839
17	5.33e-002	-2.e-002	1.727	1.727	0.348
18	5.66e-002	-1.67e-002	1.597	1.597	0.3218
19	6.e-002	-1.33e-002	1.712	1.712	0.345
20	6.33e-002	-1.e-002	1.717	1.717	0.346
21	6.66e-002	-6.7e-003	1.592	1.592	0.3208
22	7.e-002	-3.3e-003	1.578	1.578	0.318
23	7.33e-002	0.	1.621	1.621	0.3267
24	7.66e-002	3.3e-003	1.578	1.578	0.318
25	8.e-002	6.7e-003	1.515	1.515	0.3053
26	8.33e-002	1.e-002	1.52	1.52	0.3063
27	8.66e-002	1.33e-002	1.52	1.52	0.3063
28	9.e-002	1.67e-002	1.472	1.472	0.2967
29	9.33e-002	2.e-002	1.443	1.443	0.2908
30	9.66e-002	2.33e-002	1.438	1.438	0.2898
31	0.1	2.67e-002	1.419	1.419	0.286
32	0.1033	3.e-002	1.385	1.385	0.2791

33	0.1066	3.33e-002	1.366	1.366	0.2753
34	0.11	3.67e-002	1.356	1.356	0.2733
35	0.1133	4.e-002	1.332	1.332	0.2684
36	0.1166	4.33e-002	1.308	1.308	0.2636
37	0.12	4.67e-002	1.289	1.289	0.2598
38	0.1233	5.e-002	1.275	1.275	0.257
39	0.1266	5.33e-002	1.255	1.255	0.2529
40	0.13	5.67e-002	1.231	1.231	0.2481
41	0.1333	6.e-002	1.217	1.217	0.2453
42	0.1366	6.33e-002	1.202	1.202	0.2422
43	0.14	6.67e-002	1.183	1.183	0.2384
44	0.1433	7.e-002	1.164	1.164	0.2346
45	0.1466	7.33e-002	1.149	1.149	0.2316
46	0.15	7.67e-002	1.135	1.135	0.2287
47	0.1533	8.e-002	1.121	1.121	0.2259
48	0.1566	8.33e-002	1.106	1.106	0.2229
49	0.16	8.67e-002	1.092	1.092	0.2201
50	0.1633	9.e-002	1.077	1.077	0.217
51	0.1666	9.33e-002	1.063	1.063	0.2142
52	0.17	9.67e-002	1.053	1.053	0.2122
53	0.1733	0.1	1.044	1.044	0.2104
54	0.1766	0.1033	1.034	1.034	0.2084
55	0.18	0.1067	1.02	1.02	0.2056
56	0.1833	0.11	1.01	1.01	0.2035
57	0.1866	0.1133	1.005	1.005	0.2025
58	0.19	0.1167	0.996	0.996	0.2007
59	0.1933	0.12	0.986	0.986	0.1987
60	0.1966	0.1233	0.976	0.976	0.1967
61	0.2	0.1267	0.971	0.971	0.1957
62	0.2033	0.13	0.962	0.962	0.1939
63	0.2066	0.1333	0.957	0.957	0.1929
64	0.21	0.1367	0.952	0.952	0.1919
65	0.2133	0.14	0.947	0.947	0.1909
66	0.2166	0.1433	0.943	0.943	0.19
67	0.22	0.1467	0.938	0.938	0.189
68	0.2233	0.15	0.933	0.933	0.188
69	0.2266	0.1533	0.928	0.928	0.187
70	0.23	0.1567	0.923	0.923	0.186
71	0.2333	0.16	0.919	0.919	0.1852
72	0.2366	0.1633	0.914	0.914	0.1842
73	0.24	0.1667	0.909	0.909	0.1832
74	0.2433	0.17	0.909	0.909	0.1832
75	0.2466	0.1733	0.904	0.904	0.1822
76	0.25	0.1767	0.899	0.899	0.1812
77	0.2533	0.18	0.894	0.894	0.1802
78	0.2566	0.1833	0.894	0.894	0.1802
79	0.26	0.1867	0.89	0.89	0.1794
80	0.2633	0.19	0.89	0.89	0.1794
81	0.2666	0.1933	0.885	0.885	0.1784
82	0.27	0.1967	0.885	0.885	0.1784
83	0.2733	0.2	0.88	0.88	0.1773
84	0.2766	0.2033	0.88	0.88	0.1773
85	0.28	0.2067	0.875	0.875	0.1763
86	0.2833	0.21	0.875	0.875	0.1763
87	0.2866	0.2133	0.87	0.87	0.1753
88	0.29	0.2167	0.87	0.87	0.1753
89	0.2933	0.22	0.866	0.866	0.1745

90	0.2966	0.2233	0.866	0.866	0.1745
91	0.3	0.2267	0.861	0.861	0.1735
92	0.3033	0.23	0.861	0.861	0.1735
93	0.3066	0.2333	0.861	0.861	0.1735
94	0.31	0.2367	0.856	0.856	0.1725
95	0.3133	0.24	0.856	0.856	0.1725
96	0.3166	0.2433	0.856	0.856	0.1725
97	0.32	0.2467	0.851	0.851	0.1715
98	0.3233	0.25	0.851	0.851	0.1715
99	0.3266	0.2533	0.851	0.851	0.1715
100	0.33	0.2567	0.846	0.846	0.1705
101	0.3333	0.26	0.846	0.846	0.1705
102	0.35	0.2767	0.842	0.842	0.1697
103	0.3666	0.2933	0.832	0.832	0.1677
104	0.3833	0.31	0.827	0.827	0.1667
105	0.4	0.3267	0.817	0.817	0.1647
106	0.4166	0.3433	0.813	0.813	0.1638
107	0.4333	0.36	0.808	0.808	0.1628
108	0.45	0.3767	0.803	0.803	0.1618
109	0.4666	0.3933	0.803	0.803	0.1618
110	0.4833	0.41	0.798	0.798	0.1608
111	0.5	0.4267	0.793	0.793	0.1598
112	0.5166	0.4433	0.789	0.789	0.159
113	0.5333	0.46	0.789	0.789	0.159
114	0.55	0.4767	0.784	0.784	0.158
115	0.5666	0.4933	0.784	0.784	0.158
116	0.5833	0.51	0.779	0.779	0.157
117	0.6	0.5267	0.774	0.774	0.156
118	0.6166	0.5433	0.774	0.774	0.156
119	0.6333	0.56	0.774	0.774	0.156
120	0.65	0.5767	0.769	0.769	0.155
121	0.6666	0.5933	0.769	0.769	0.155
122	0.6833	0.61	0.765	0.765	0.1542
123	0.7	0.6267	0.765	0.765	0.1542
124	0.7166	0.6433	0.765	0.765	0.1542
125	0.7333	0.66	0.76	0.76	0.1532
126	0.75	0.6767	0.76	0.76	0.1532
127	0.7666	0.6933	0.76	0.76	0.1532
128	0.7833	0.71	0.76	0.76	0.1532
129	0.8	0.7267	0.755	0.755	0.1522
130	0.8166	0.7433	0.755	0.755	0.1522
131	0.8333	0.76	0.755	0.755	0.1522
132	0.85	0.7767	0.75	0.75	0.1511
133	0.8666	0.7933	0.75	0.75	0.1511
134	0.8833	0.81	0.75	0.75	0.1511
135	0.9	0.8267	0.75	0.75	0.1511
136	0.9166	0.8433	0.75	0.75	0.1511
137	0.9333	0.86	0.745	0.745	0.1501
138	0.95	0.8767	0.745	0.745	0.1501
139	0.9666	0.8933	0.745	0.745	0.1501
140	0.9833	0.91	0.745	0.745	0.1501
141	1.	0.9267	0.741	0.741	0.1493
142	1.2	1.127	0.731	0.731	0.1473
143	1.4	1.327	0.721	0.721	0.1453
144	1.6	1.527	0.716	0.716	0.1443
145	1.8	1.727	0.712	0.712	0.1435
146	2.	1.927	0.707	0.707	0.1425

147	2.2	2.127	0.702	0.702	0.1415
148	2.4	2.327	0.697	0.697	0.1405
149	2.6	2.527	0.697	0.697	0.1405
150	2.8	2.727	0.697	0.697	0.1405
151	3.	2.927	0.697	0.697	0.1405
152	3.2	3.127	0.692	0.692	0.1395
153	3.4	3.327	0.692	0.692	0.1395
154	3.6	3.527	0.688	0.688	0.1387
155	3.8	3.727	0.688	0.688	0.1387
156	4.	3.927	0.688	0.688	0.1387
157	4.2	4.127	0.688	0.688	0.1387
158	4.4	4.327	0.683	0.683	0.1376
159	4.6	4.527	0.683	0.683	0.1376
160	4.8	4.727	0.683	0.683	0.1376
161	5.	4.927	0.683	0.683	0.1376
162	5.2	5.127	0.683	0.683	0.1376
163	5.4	5.327	0.678	0.678	0.1366
164	5.6	5.527	0.678	0.678	0.1366
165	5.8	5.727	0.678	0.678	0.1366
166	6.	5.927	0.678	0.678	0.1366
167	6.2	6.127	0.678	0.678	0.1366
168	6.4	6.327	0.678	0.678	0.1366
169	6.6	6.527	0.673	0.673	0.1356
170	6.8	6.727	0.673	0.673	0.1356
171	7.	6.927	0.673	0.673	0.1356
172	7.2	7.127	0.673	0.673	0.1356
173	7.4	7.327	0.673	0.673	0.1356
174	7.6	7.527	0.673	0.673	0.1356
175	7.8	7.727	0.668	0.668	0.1346
176	8.	7.927	0.668	0.668	0.1346
177	8.2	8.127	0.668	0.668	0.1346
178	8.4	8.327	0.668	0.668	0.1346
179	8.6	8.527	0.668	0.668	0.1346
180	8.8	8.727	0.668	0.668	0.1346
181	9.	8.927	0.668	0.668	0.1346
182	9.2	9.127	0.668	0.668	0.1346
183	9.4	9.327	0.668	0.668	0.1346
184	9.6	9.527	0.668	0.668	0.1346
185	9.8	9.727	0.664	0.664	0.1338
186	10.	9.927	0.664	0.664	0.1338
187	11.	10.93	0.659	0.659	0.1328
188	12.	11.93	0.664	0.664	0.1338
189	13.	12.93	0.664	0.664	0.1338
190	14.	13.93	0.664	0.664	0.1338
191	15.	14.93	0.664	0.664	0.1338
192	16.	15.93	0.659	0.659	0.1328
193	17.	16.93	0.659	0.659	0.1328
194	18.	17.93	0.654	0.654	0.1318
195	19.	18.93	0.654	0.654	0.1318
196	20.	19.93	0.654	0.654	0.1318
197	21.	20.93	0.654	0.654	0.1318
198	22.	21.93	0.644	0.644	0.1298
199	23.	22.93	0.639	0.639	0.1288
200	24.	23.93	0.649	0.649	0.1308
201	25.	24.93	0.649	0.649	0.1308
202	26.	25.93	0.644	0.644	0.1298
203	27.	26.93	0.644	0.644	0.1298

204	28.	27.93	0.644	0.644	0.1298
205	29.	28.93	0.644	0.644	0.1298
206	30.	29.93	0.644	0.644	0.1298
207	31.	30.93	0.639	0.639	0.1288
208	32.	31.93	0.639	0.639	0.1288
209	33.	32.93	0.639	0.639	0.1288
210	34.	33.93	0.639	0.639	0.1288
211	35.	34.93	0.635	0.635	0.128
212	36.	35.93	0.63	0.63	0.127
213	37.	36.93	0.635	0.635	0.128
214	38.	37.93	0.63	0.63	0.127
215	39.	38.93	0.63	0.63	0.127
216	40.	39.93	0.63	0.63	0.127
217	41.	40.93	0.63	0.63	0.127
218	42.	41.93	0.63	0.63	0.127
219	43.	42.93	0.63	0.63	0.127
220	44.	43.93	0.63	0.63	0.127
221	45.	44.93	0.63	0.63	0.127
222	46.	45.93	0.63	0.63	0.127
223	47.	46.93	0.625	0.625	0.126
224	48.	47.93	0.625	0.625	0.126
225	49.	48.93	0.63	0.63	0.127
226	50.	49.93	0.625	0.625	0.126
227	51.	50.93	0.62	0.62	0.1249
228	52.	51.93	0.625	0.625	0.126
229	53.	52.93	0.63	0.63	0.127
230	54.	53.93	0.63	0.63	0.127
231	55.	54.93	0.625	0.625	0.126
232	56.	55.93	0.62	0.62	0.1249
233	57.	56.93	0.625	0.625	0.126
234	58.	57.93	0.62	0.62	0.1249
235	59.	58.93	0.62	0.62	0.1249
236	60.	59.93	0.615	0.615	0.1239
237	61.	60.93	0.615	0.615	0.1239


11946 MWR2-11 4/23/2019
Bouwer and Rice Graph
Broad River Amoco Columbia SC
MWR2-11
1.
0.1
1.e-002
Head Ratio (Ht/Ho)
Bouwer and Rice parameter A = 2.209
Bouwer and Rice parameter B = 0.3934
ln(Re/Rw) = 2.103496e+000
Gravel Pack Porosity: = 30. %
Corrected Casing Radius: = 2.345 Inches
Analysis starts at time 2.598 Seconds
Analysis ends at time 52. minutes
215 Measurements analyzed from 14 to 228
Hydraulic Conductivity = 8.534e-002 feet/day
Transmissivity = 2.56 ft2/day
0
5
10
15
20
25
30
35
40
45
50
Adjusted Time (minutes)
Project Number: 18-6580
Analysis by Starpoint Software
Ho is 1.438 feet at 2.598 Seconds

11946 MWR2-11

Site Name:	Broad River Amoco
Location:	Columbia SC
Test Date:	4/23/2019
Project Number:	18-6580
Import File:	F:\Broad River Amoco 18-6580\SLUG TESTS\BRAmwr2-11

Well Label:	MWR2-11
Aquifer Thickness:	30. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	4. Inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	2.345 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	7.95 feet
Anisotropy Ratio:	1.
Time Adjustment:	2.598 Seconds

Test starts with trial 1
There are 228 time and drawdown measurements
Maximum head is 3.788 feet
Minimum head is 0. feet

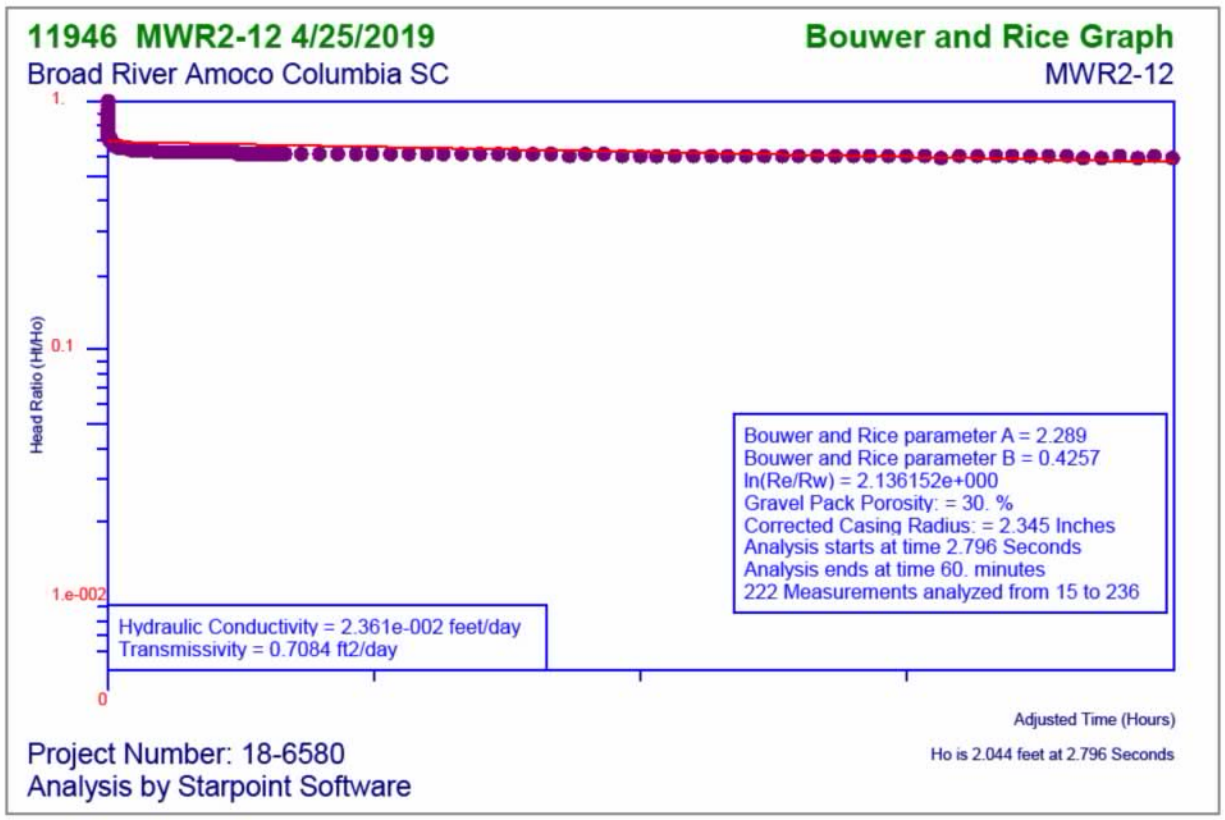
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-4.33e-002	1.957	1.957	0.5166
2	3.3e-003	-4.e-002	3.788	3.788	1.
3	6.6e-003	-3.67e-002	0.365	0.365	9.636e-002
4	1.e-002	-3.33e-002	1.601	1.601	0.4227
5	1.33e-002	-3.e-002	2.284	2.284	0.603
6	1.66e-002	-2.67e-002	1.438	1.438	0.3796
7	2.e-002	-2.33e-002	1.524	1.524	0.4023
8	2.33e-002	-2.e-002	1.841	1.841	0.486
9	2.66e-002	-1.67e-002	1.519	1.519	0.401
10	3.e-002	-1.33e-002	1.5	1.5	0.396
11	3.33e-002	-1.e-002	1.615	1.615	0.4263
12	3.66e-002	-6.7e-003	1.462	1.462	0.386
13	4.e-002	-3.3e-003	1.404	1.404	0.3706
14	4.33e-002	0.	1.438	1.438	0.3796
15	4.66e-002	3.3e-003	1.385	1.385	0.3656
16	5.e-002	6.7e-003	1.332	1.332	0.3516
17	5.33e-002	1.e-002	1.317	1.317	0.3477
18	5.66e-002	1.33e-002	1.288	1.288	0.34
19	6.e-002	1.67e-002	1.25	1.25	0.33
20	6.33e-002	2.e-002	1.221	1.221	0.3223
21	6.66e-002	2.33e-002	1.197	1.197	0.316
22	7.e-002	2.67e-002	1.168	1.168	0.3083
23	7.33e-002	3.e-002	1.139	1.139	0.3007
24	7.66e-002	3.33e-002	1.115	1.115	0.2944
25	8.e-002	3.67e-002	1.091	1.091	0.288
26	8.33e-002	4.e-002	1.067	1.067	0.2817
27	8.66e-002	4.33e-002	1.043	1.043	0.2753
28	9.e-002	4.67e-002	1.024	1.024	0.2703
29	9.33e-002	5.e-002	1.005	1.005	0.2653
30	9.66e-002	5.33e-002	0.981	0.981	0.259
31	0.1	5.67e-002	0.966	0.966	0.255
32	0.1033	6.e-002	0.947	0.947	0.25

33	0.1066	6.33e-002	0.933	0.933	0.2463
34	0.11	6.67e-002	0.918	0.918	0.2423
35	0.1133	7.e-002	0.904	0.904	0.2386
36	0.1166	7.33e-002	0.889	0.889	0.2347
37	0.12	7.67e-002	0.88	0.88	0.2323
38	0.1233	8.e-002	0.865	0.865	0.2284
39	0.1266	8.33e-002	0.856	0.856	0.226
40	0.13	8.67e-002	0.851	0.851	0.2247
41	0.1333	9.e-002	0.841	0.841	0.222
42	0.1366	9.33e-002	0.832	0.832	0.2196
43	0.14	9.67e-002	0.827	0.827	0.2183
44	0.1433	0.1	0.822	0.822	0.217
45	0.1466	0.1033	0.817	0.817	0.2157
46	0.15	0.1067	0.812	0.812	0.2144
47	0.1533	0.11	0.808	0.808	0.2133
48	0.1566	0.1133	0.803	0.803	0.212
49	0.16	0.1167	0.798	0.798	0.2107
50	0.1633	0.12	0.793	0.793	0.2093
51	0.1666	0.1233	0.788	0.788	0.208
52	0.17	0.1267	0.783	0.783	0.2067
53	0.1733	0.13	0.783	0.783	0.2067
54	0.1766	0.1333	0.779	0.779	0.2056
55	0.18	0.1367	0.774	0.774	0.2043
56	0.1833	0.14	0.774	0.774	0.2043
57	0.1866	0.1433	0.769	0.769	0.203
58	0.19	0.1467	0.764	0.764	0.2017
59	0.1933	0.15	0.764	0.764	0.2017
60	0.1966	0.1533	0.759	0.759	0.2004
61	0.2	0.1567	0.759	0.759	0.2004
62	0.2033	0.16	0.755	0.755	0.1993
63	0.2066	0.1633	0.755	0.755	0.1993
64	0.21	0.1667	0.75	0.75	0.198
65	0.2133	0.17	0.75	0.75	0.198
66	0.2166	0.1733	0.75	0.75	0.198
67	0.22	0.1767	0.745	0.745	0.1967
68	0.2233	0.18	0.745	0.745	0.1967
69	0.2266	0.1833	0.74	0.74	0.1954
70	0.23	0.1867	0.74	0.74	0.1954
71	0.2333	0.19	0.74	0.74	0.1954
72	0.2366	0.1933	0.735	0.735	0.194
73	0.24	0.1967	0.735	0.735	0.194
74	0.2433	0.2	0.735	0.735	0.194
75	0.2466	0.2033	0.731	0.731	0.193
76	0.25	0.2067	0.731	0.731	0.193
77	0.2533	0.21	0.731	0.731	0.193
78	0.2566	0.2133	0.726	0.726	0.1917
79	0.26	0.2167	0.726	0.726	0.1917
80	0.2633	0.22	0.726	0.726	0.1917
81	0.2666	0.2233	0.726	0.726	0.1917
82	0.27	0.2267	0.721	0.721	0.1903
83	0.2733	0.23	0.721	0.721	0.1903
84	0.2766	0.2333	0.721	0.721	0.1903
85	0.28	0.2367	0.721	0.721	0.1903
86	0.2833	0.24	0.716	0.716	0.189
87	0.2866	0.2433	0.716	0.716	0.189
88	0.29	0.2467	0.716	0.716	0.189
89	0.2933	0.25	0.716	0.716	0.189

90	0.2966	0.2533	0.716	0.716	0.189
91	0.3	0.2567	0.711	0.711	0.1877
92	0.3033	0.26	0.711	0.711	0.1877
93	0.3066	0.2633	0.711	0.711	0.1877
94	0.31	0.2667	0.711	0.711	0.1877
95	0.3133	0.27	0.711	0.711	0.1877
96	0.3166	0.2733	0.707	0.707	0.1866
97	0.32	0.2767	0.707	0.707	0.1866
98	0.3233	0.28	0.707	0.707	0.1866
99	0.3266	0.2833	0.707	0.707	0.1866
100	0.33	0.2867	0.707	0.707	0.1866
101	0.3333	0.29	0.707	0.707	0.1866
102	0.35	0.3067	0.702	0.702	0.1853
103	0.3666	0.3233	0.697	0.697	0.184
104	0.3833	0.34	0.692	0.692	0.1827
105	0.4	0.3567	0.692	0.692	0.1827
106	0.4166	0.3733	0.687	0.687	0.1814
107	0.4333	0.39	0.683	0.683	0.1803
108	0.45	0.4067	0.683	0.683	0.1803
109	0.4666	0.4233	0.678	0.678	0.179
110	0.4833	0.44	0.678	0.678	0.179
111	0.5	0.4567	0.678	0.678	0.179
112	0.5166	0.4733	0.673	0.673	0.1777
113	0.5333	0.49	0.673	0.673	0.1777
114	0.55	0.5067	0.668	0.668	0.1763
115	0.5666	0.5233	0.668	0.668	0.1763
116	0.5833	0.54	0.668	0.668	0.1763
117	0.6	0.5567	0.668	0.668	0.1763
118	0.6166	0.5733	0.663	0.663	0.175
119	0.6333	0.59	0.663	0.663	0.175
120	0.65	0.6067	0.663	0.663	0.175
121	0.6666	0.6233	0.658	0.658	0.1737
122	0.6833	0.64	0.658	0.658	0.1737
123	0.7	0.6567	0.658	0.658	0.1737
124	0.7166	0.6733	0.658	0.658	0.1737
125	0.7333	0.69	0.658	0.658	0.1737
126	0.75	0.7067	0.658	0.658	0.1737
127	0.7666	0.7233	0.654	0.654	0.1727
128	0.7833	0.74	0.654	0.654	0.1727
129	0.8	0.7567	0.654	0.654	0.1727
130	0.8166	0.7733	0.654	0.654	0.1727
131	0.8333	0.79	0.654	0.654	0.1727
132	0.85	0.8067	0.654	0.654	0.1727
133	0.8666	0.8233	0.649	0.649	0.1713
134	0.8833	0.84	0.649	0.649	0.1713
135	0.9	0.8567	0.649	0.649	0.1713
136	0.9166	0.8733	0.649	0.649	0.1713
137	0.9333	0.89	0.649	0.649	0.1713
138	0.95	0.9067	0.649	0.649	0.1713
139	0.9666	0.9233	0.649	0.649	0.1713
140	0.9833	0.94	0.644	0.644	0.17
141	1.	0.9567	0.644	0.644	0.17
142	1.2	1.157	0.639	0.639	0.1687
143	1.4	1.357	0.63	0.63	0.1663
144	1.6	1.557	0.625	0.625	0.165
145	1.8	1.757	0.625	0.625	0.165
146	2.	1.957	0.62	0.62	0.1637

147	2.2	2.157	0.615	0.615	0.1624
148	2.4	2.357	0.61	0.61	0.161
149	2.6	2.557	0.61	0.61	0.161
150	2.8	2.757	0.61	0.61	0.161
151	3.	2.957	0.61	0.61	0.161
152	3.2	3.157	0.606	0.606	0.16
153	3.4	3.357	0.606	0.606	0.16
154	3.6	3.557	0.601	0.601	0.1587
155	3.8	3.757	0.601	0.601	0.1587
156	4.	3.957	0.601	0.601	0.1587
157	4.2	4.157	0.601	0.601	0.1587
158	4.4	4.357	0.596	0.596	0.1573
159	4.6	4.557	0.596	0.596	0.1573
160	4.8	4.757	0.596	0.596	0.1573
161	5.	4.957	0.596	0.596	0.1573
162	5.2	5.157	0.596	0.596	0.1573
163	5.4	5.357	0.591	0.591	0.156
164	5.6	5.557	0.591	0.591	0.156
165	5.8	5.757	0.591	0.591	0.156
166	6.	5.957	0.586	0.586	0.1547
167	6.2	6.157	0.586	0.586	0.1547
168	6.4	6.357	0.586	0.586	0.1547
169	6.6	6.557	0.586	0.586	0.1547
170	6.8	6.757	0.586	0.586	0.1547
171	7.	6.957	0.582	0.582	0.1536
172	7.2	7.157	0.582	0.582	0.1536
173	7.4	7.357	0.582	0.582	0.1536
174	7.6	7.557	0.582	0.582	0.1536
175	7.8	7.757	0.582	0.582	0.1536
176	8.	7.957	0.582	0.582	0.1536
177	8.2	8.157	0.582	0.582	0.1536
178	8.4	8.357	0.577	0.577	0.1523
179	8.6	8.557	0.577	0.577	0.1523
180	8.8	8.757	0.577	0.577	0.1523
181	9.	8.957	0.577	0.577	0.1523
182	9.2	9.157	0.582	0.582	0.1536
183	9.4	9.357	0.582	0.582	0.1536
184	9.6	9.557	0.582	0.582	0.1536
185	9.8	9.757	0.577	0.577	0.1523
186	10.	9.957	0.577	0.577	0.1523
187	11.	10.96	0.577	0.577	0.1523
188	12.	11.96	0.572	0.572	0.151
189	13.	12.96	0.572	0.572	0.151
190	14.	13.96	0.562	0.562	0.1484
191	15.	14.96	0.567	0.567	0.1497
192	16.	15.96	0.567	0.567	0.1497
193	17.	16.96	0.567	0.567	0.1497
194	18.	17.96	0.562	0.562	0.1484
195	19.	18.96	0.557	0.557	0.147
196	20.	19.96	0.557	0.557	0.147
197	21.	20.96	0.553	0.553	0.146
198	22.	21.96	0.548	0.548	0.1447
199	23.	22.96	0.553	0.553	0.146
200	24.	23.96	0.543	0.543	0.1433
201	25.	24.96	0.548	0.548	0.1447
202	26.	25.96	0.548	0.548	0.1447
203	27.	26.96	0.543	0.543	0.1433

204	28.	27.96	0.543	0.543	0.1433
205	29.	28.96	0.538	0.538	0.142
206	30.	29.96	0.538	0.538	0.142
207	31.	30.96	0.538	0.538	0.142
208	32.	31.96	0.538	0.538	0.142
209	33.	32.96	0.533	0.533	0.1407
210	34.	33.96	0.533	0.533	0.1407
211	35.	34.96	0.533	0.533	0.1407
212	36.	35.96	0.529	0.529	0.1397
213	37.	36.96	0.524	0.524	0.1383
214	38.	37.96	0.524	0.524	0.1383
215	39.	38.96	0.524	0.524	0.1383
216	40.	39.96	0.519	0.519	0.137
217	41.	40.96	0.524	0.524	0.1383
218	42.	41.96	0.514	0.514	0.1357
219	43.	42.96	0.509	0.509	0.1344
220	44.	43.96	0.519	0.519	0.137
221	45.	44.96	0.514	0.514	0.1357
222	46.	45.96	0.514	0.514	0.1357
223	47.	46.96	0.514	0.514	0.1357
224	48.	47.96	0.509	0.509	0.1344
225	49.	48.96	0.514	0.514	0.1357
226	50.	49.96	0.509	0.509	0.1344
227	51.	50.96	0.509	0.509	0.1344
228	52.	51.96	0.505	0.505	0.1333


11946 MWR2-12 4/25/2019
Bouwer and Rice Graph
Broad River Amoco Columbia SC
MWR2-12
1.
0.1
1.e-002
0
Head Ratio (Ht/Ho)
Bouwer and Rice parameter A = 2.289
Bouwer and Rice parameter B = 0.4257
ln(Re/Rw) = 2.136152e+000
Gravel Pack Porosity: = 30. %
Corrected Casing Radius: = 2.345 Inches
Analysis starts at time 2.796 Seconds
Analysis ends at time 60. minutes
222 Measurements analyzed from 15 to 236
Hydraulic Conductivity = 2.361e-002 feet/day
Transmissivity = 0.7084 ft2/day
Adjusted Time (Hours)
Ho is 2.044 feet at 2.796 Seconds
Project Number: 18-6580
Analysis by Starpoint Software

11946 MWR2-12

Site Name:	Broad River Amoco
Location:	Columbia SC
Test Date:	4/25/2019
Project Number:	18-6580
Import File:	F:\Broad River Amoco 18-6580\SLUG TESTS\R2-12

Well Label:	MWR2-12
Aquifer Thickness:	30. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	4. Inches
Gravel Pack Porosity:	30. %
Corrected Casing Radius:	2.345 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	9.06 feet
Anisotropy Ratio:	1.
Time Adjustment:	2.796 Seconds

Test starts with trial 1
There are 236 time and drawdown measurements
Maximum head is 4.294 feet
Minimum head is 0. feet

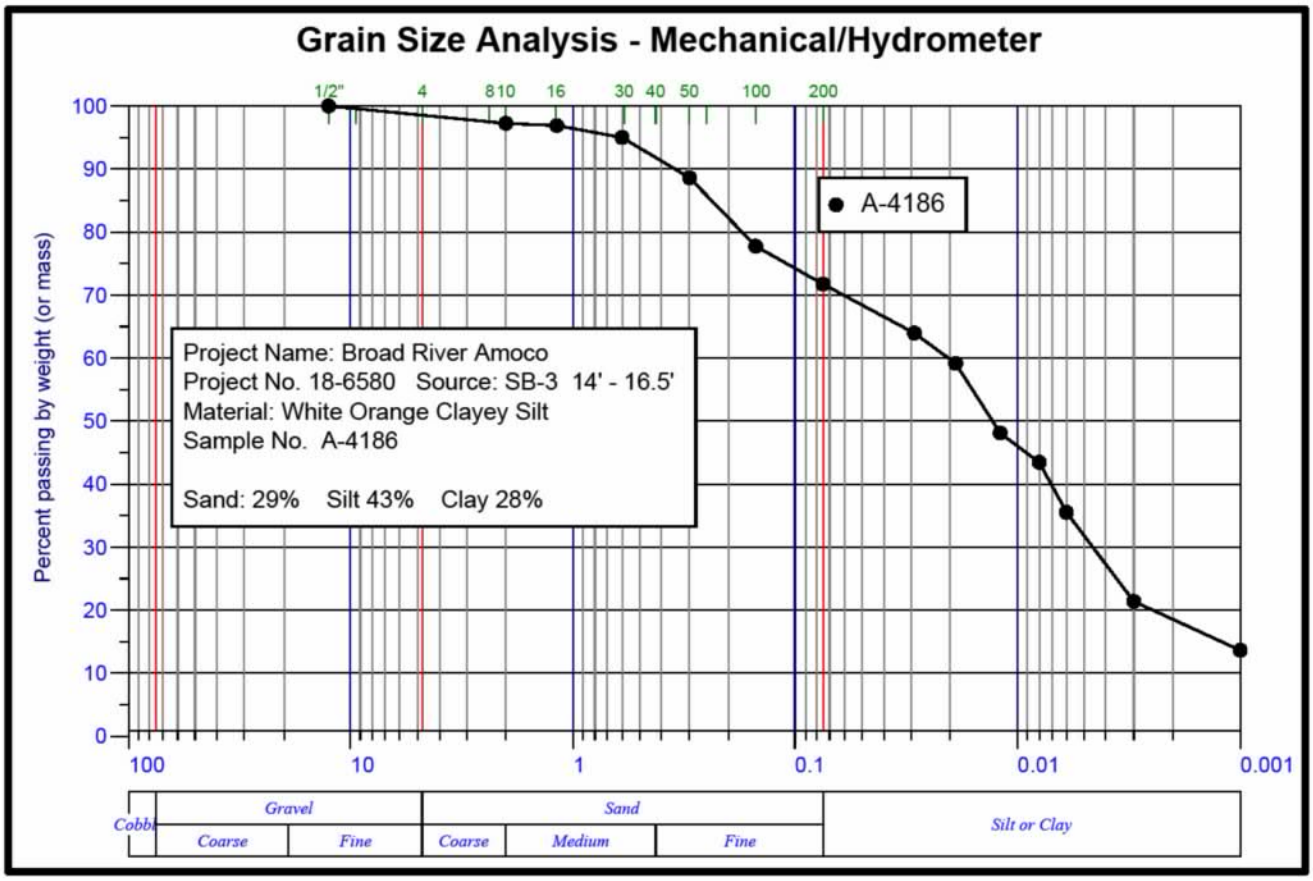
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-4.66e-002	2.741	2.741	0.6383
2	3.3e-003	-4.33e-002	4.294	4.294	1.
3	6.6e-003	-4.e-002	2.496	2.496	0.5813
4	1.e-002	-3.66e-002	1.664	1.664	0.3875
5	1.33e-002	-3.33e-002	2.222	2.222	0.5175
6	1.66e-002	-3.e-002	2.847	2.847	0.663
7	2.e-002	-2.66e-002	2.641	2.641	0.615
8	2.33e-002	-2.33e-002	2.155	2.155	0.5019
9	2.66e-002	-2.e-002	2.083	2.083	0.4851
10	3.e-002	-1.66e-002	2.275	2.275	0.5298
11	3.33e-002	-1.33e-002	2.314	2.314	0.5389
12	3.66e-002	-1.e-002	2.155	2.155	0.5019
13	4.e-002	-6.6e-003	2.02	2.02	0.4704
14	4.33e-002	-3.3e-003	2.025	2.025	0.4716
15	4.66e-002	0.	2.044	2.044	0.476
16	5.e-002	3.4e-003	1.986	1.986	0.4625
17	5.33e-002	6.7e-003	1.919	1.919	0.4469
18	5.66e-002	1.e-002	1.876	1.876	0.4369
19	6.e-002	1.34e-002	1.847	1.847	0.4301
20	6.33e-002	1.67e-002	1.832	1.832	0.4266
21	6.66e-002	2.e-002	1.789	1.789	0.4166
22	7.e-002	2.34e-002	1.746	1.746	0.4066
23	7.33e-002	2.67e-002	1.717	1.717	0.3999
24	7.66e-002	3.e-002	1.698	1.698	0.3954
25	8.e-002	3.34e-002	1.679	1.679	0.391
26	8.33e-002	3.67e-002	1.65	1.65	0.3843
27	8.66e-002	4.e-002	1.626	1.626	0.3787
28	9.e-002	4.34e-002	1.606	1.606	0.374
29	9.33e-002	4.67e-002	1.592	1.592	0.3707
30	9.66e-002	5.e-002	1.582	1.582	0.3684
31	0.1	5.34e-002	1.568	1.568	0.3652
32	0.1033	5.67e-002	1.558	1.558	0.3628

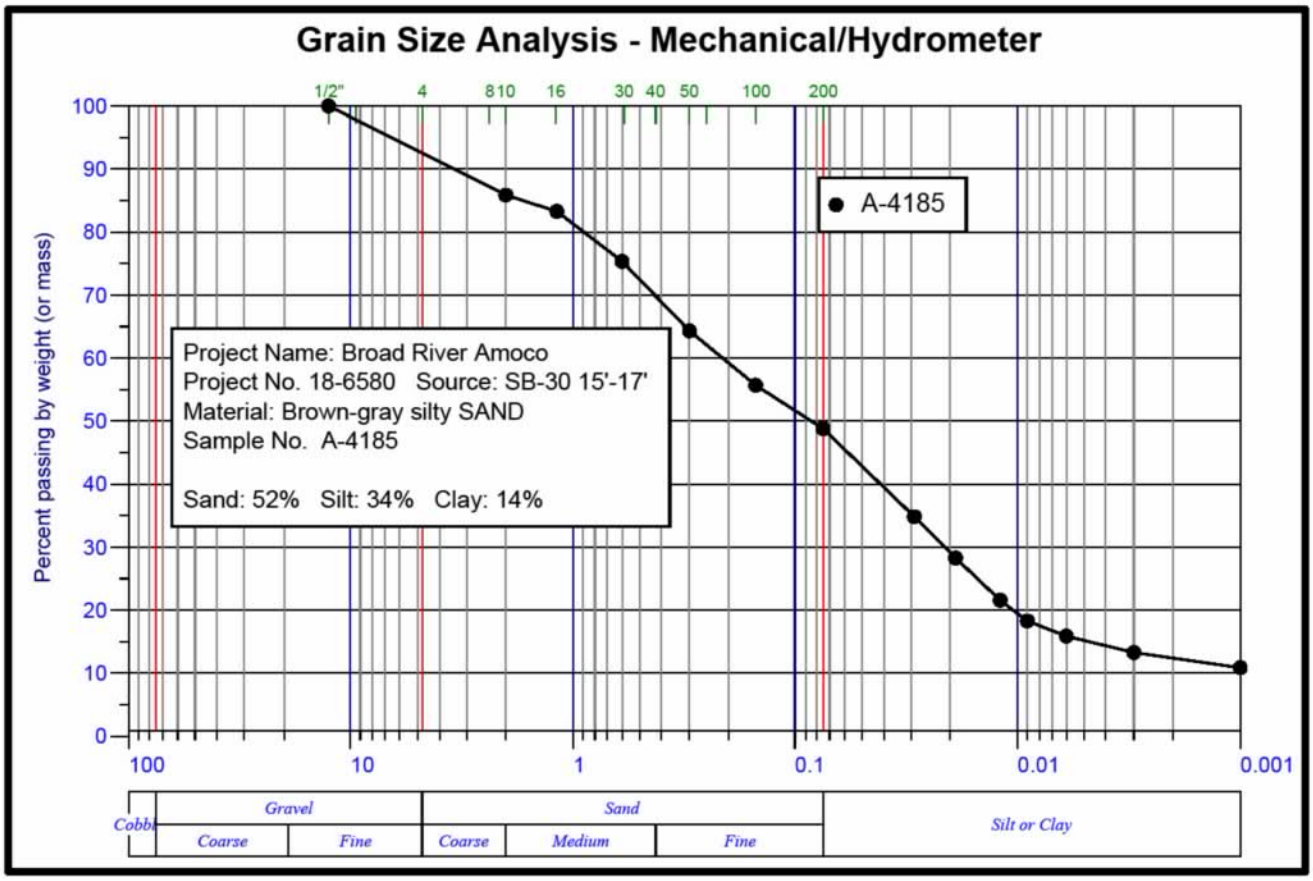
33	0.1066	6.e-002	1.549	1.549	0.3607
34	0.11	6.34e-002	1.539	1.539	0.3584
35	0.1133	6.67e-002	1.529	1.529	0.3561
36	0.1166	7.e-002	1.52	1.52	0.354
37	0.12	7.34e-002	1.515	1.515	0.3528
38	0.1233	7.67e-002	1.51	1.51	0.3517
39	0.1266	8.e-002	1.501	1.501	0.3496
40	0.13	8.34e-002	1.496	1.496	0.3484
41	0.1333	8.67e-002	1.491	1.491	0.3472
42	0.1366	9.e-002	1.486	1.486	0.3461
43	0.14	9.34e-002	1.481	1.481	0.3449
44	0.1433	9.67e-002	1.477	1.477	0.344
45	0.1466	0.1	1.472	1.472	0.3428
46	0.15	0.1034	1.467	1.467	0.3416
47	0.1533	0.1067	1.467	1.467	0.3416
48	0.1566	0.11	1.462	1.462	0.3405
49	0.16	0.1134	1.457	1.457	0.3393
50	0.1633	0.1167	1.457	1.457	0.3393
51	0.1666	0.12	1.452	1.452	0.3381
52	0.17	0.1234	1.452	1.452	0.3381
53	0.1733	0.1267	1.448	1.448	0.3372
54	0.1766	0.13	1.443	1.443	0.3361
55	0.18	0.1334	1.443	1.443	0.3361
56	0.1833	0.1367	1.438	1.438	0.3349
57	0.1866	0.14	1.438	1.438	0.3349
58	0.19	0.1434	1.433	1.433	0.3337
59	0.1933	0.1467	1.433	1.433	0.3337
60	0.1966	0.15	1.433	1.433	0.3337
61	0.2	0.1534	1.428	1.428	0.3326
62	0.2033	0.1567	1.428	1.428	0.3326
63	0.2066	0.16	1.428	1.428	0.3326
64	0.21	0.1634	1.424	1.424	0.3316
65	0.2133	0.1667	1.424	1.424	0.3316
66	0.2166	0.17	1.424	1.424	0.3316
67	0.22	0.1734	1.424	1.424	0.3316
68	0.2233	0.1767	1.419	1.419	0.3305
69	0.2266	0.18	1.419	1.419	0.3305
70	0.23	0.1834	1.419	1.419	0.3305
71	0.2333	0.1867	1.419	1.419	0.3305
72	0.2366	0.19	1.414	1.414	0.3293
73	0.24	0.1934	1.414	1.414	0.3293
74	0.2433	0.1967	1.414	1.414	0.3293
75	0.2466	0.2	1.414	1.414	0.3293
76	0.25	0.2034	1.409	1.409	0.3281
77	0.2533	0.2067	1.409	1.409	0.3281
78	0.2566	0.21	1.409	1.409	0.3281
79	0.26	0.2134	1.409	1.409	0.3281
80	0.2633	0.2167	1.404	1.404	0.327
81	0.2666	0.22	1.404	1.404	0.327
82	0.27	0.2234	1.404	1.404	0.327
83	0.2733	0.2267	1.404	1.404	0.327
84	0.2766	0.23	1.404	1.404	0.327
85	0.28	0.2334	1.404	1.404	0.327
86	0.2833	0.2367	1.4	1.4	0.326
87	0.2866	0.24	1.4	1.4	0.326
88	0.29	0.2434	1.4	1.4	0.326
89	0.2933	0.2467	1.4	1.4	0.326

90	0.2966	0.25	1.4	1.4	0.326
91	0.3	0.2534	1.395	1.395	0.3249
92	0.3033	0.2567	1.395	1.395	0.3249
93	0.3066	0.26	1.395	1.395	0.3249
94	0.31	0.2634	1.395	1.395	0.3249
95	0.3133	0.2667	1.395	1.395	0.3249
96	0.3166	0.27	1.395	1.395	0.3249
97	0.32	0.2734	1.395	1.395	0.3249
98	0.3233	0.2767	1.39	1.39	0.3237
99	0.3266	0.28	1.39	1.39	0.3237
100	0.33	0.2834	1.39	1.39	0.3237
101	0.3333	0.2867	1.39	1.39	0.3237
102	0.35	0.3034	1.39	1.39	0.3237
103	0.3666	0.32	1.385	1.385	0.3225
104	0.3833	0.3367	1.38	1.38	0.3214
105	0.4	0.3534	1.376	1.376	0.3204
106	0.4166	0.37	1.376	1.376	0.3204
107	0.4333	0.3867	1.371	1.371	0.3193
108	0.45	0.4034	1.371	1.371	0.3193
109	0.4666	0.42	1.366	1.366	0.3181
110	0.4833	0.4367	1.366	1.366	0.3181
111	0.5	0.4534	1.361	1.361	0.317
112	0.5166	0.47	1.361	1.361	0.317
113	0.5333	0.4867	1.356	1.356	0.3158
114	0.55	0.5034	1.356	1.356	0.3158
115	0.5666	0.52	1.356	1.356	0.3158
116	0.5833	0.5367	1.351	1.351	0.3146
117	0.6	0.5534	1.351	1.351	0.3146
118	0.6166	0.57	1.351	1.351	0.3146
119	0.6333	0.5867	1.351	1.351	0.3146
120	0.65	0.6034	1.347	1.347	0.3137
121	0.6666	0.62	1.347	1.347	0.3137
122	0.6833	0.6367	1.347	1.347	0.3137
123	0.7	0.6534	1.347	1.347	0.3137
124	0.7166	0.67	1.342	1.342	0.3125
125	0.7333	0.6867	1.342	1.342	0.3125
126	0.75	0.7034	1.342	1.342	0.3125
127	0.7666	0.72	1.342	1.342	0.3125
128	0.7833	0.7367	1.342	1.342	0.3125
129	0.8	0.7534	1.337	1.337	0.3114
130	0.8166	0.77	1.337	1.337	0.3114
131	0.8333	0.7867	1.337	1.337	0.3114
132	0.85	0.8034	1.337	1.337	0.3114
133	0.8666	0.82	1.337	1.337	0.3114
134	0.8833	0.8367	1.332	1.332	0.3102
135	0.9	0.8534	1.332	1.332	0.3102
136	0.9166	0.87	1.332	1.332	0.3102
137	0.9333	0.8867	1.332	1.332	0.3102
138	0.95	0.9034	1.332	1.332	0.3102
139	0.9666	0.92	1.332	1.332	0.3102
140	0.9833	0.9367	1.332	1.332	0.3102
141	1.	0.9534	1.332	1.332	0.3102
142	1.2	1.153	1.323	1.323	0.3081
143	1.4	1.353	1.318	1.318	0.3069
144	1.6	1.553	1.308	1.308	0.3046
145	1.8	1.753	1.308	1.308	0.3046
146	2.	1.953	1.303	1.303	0.3034

147	2.2	2.153	1.299	1.299	0.3025
148	2.4	2.353	1.299	1.299	0.3025
149	2.6	2.553	1.299	1.299	0.3025
150	2.8	2.753	1.294	1.294	0.3014
151	3.	2.953	1.289	1.289	0.3002
152	3.2	3.153	1.289	1.289	0.3002
153	3.4	3.353	1.289	1.289	0.3002
154	3.6	3.553	1.289	1.289	0.3002
155	3.8	3.753	1.289	1.289	0.3002
156	4.	3.953	1.284	1.284	0.299
157	4.2	4.153	1.284	1.284	0.299
158	4.4	4.353	1.284	1.284	0.299
159	4.6	4.553	1.279	1.279	0.2979
160	4.8	4.753	1.279	1.279	0.2979
161	5.	4.953	1.279	1.279	0.2979
162	5.2	5.153	1.279	1.279	0.2979
163	5.4	5.353	1.279	1.279	0.2979
164	5.6	5.553	1.279	1.279	0.2979
165	5.8	5.753	1.279	1.279	0.2979
166	6.	5.953	1.275	1.275	0.2969
167	6.2	6.153	1.279	1.279	0.2979
168	6.4	6.353	1.275	1.275	0.2969
169	6.6	6.553	1.275	1.275	0.2969
170	6.8	6.753	1.275	1.275	0.2969
171	7.	6.953	1.275	1.275	0.2969
172	7.2	7.153	1.275	1.275	0.2969
173	7.4	7.353	1.27	1.27	0.2958
174	7.6	7.553	1.27	1.27	0.2958
175	7.8	7.753	1.27	1.27	0.2958
176	8.	7.953	1.27	1.27	0.2958
177	8.2	8.153	1.27	1.27	0.2958
178	8.4	8.353	1.27	1.27	0.2958
179	8.6	8.553	1.27	1.27	0.2958
180	8.8	8.753	1.27	1.27	0.2958
181	9.	8.953	1.27	1.27	0.2958
182	9.2	9.153	1.265	1.265	0.2946
183	9.4	9.353	1.265	1.265	0.2946
184	9.6	9.553	1.265	1.265	0.2946
185	9.8	9.753	1.265	1.265	0.2946
186	10.	9.953	1.265	1.265	0.2946
187	11.	10.95	1.26	1.26	0.2934
188	12.	11.95	1.27	1.27	0.2958
189	13.	12.95	1.265	1.265	0.2946
190	14.	13.95	1.265	1.265	0.2946
191	15.	14.95	1.26	1.26	0.2934
192	16.	15.95	1.26	1.26	0.2934
193	17.	16.95	1.26	1.26	0.2934
194	18.	17.95	1.26	1.26	0.2934
195	19.	18.95	1.26	1.26	0.2934
196	20.	19.95	1.255	1.255	0.2923
197	21.	20.95	1.255	1.255	0.2923
198	22.	21.95	1.255	1.255	0.2923
199	23.	22.95	1.25	1.25	0.2911
200	24.	23.95	1.25	1.25	0.2911
201	25.	24.95	1.25	1.25	0.2911
202	26.	25.95	1.246	1.246	0.2902
203	27.	26.95	1.25	1.25	0.2911

204	28.	27.95	1.25	1.25	0.2911
205	29.	28.95	1.241	1.241	0.289
206	30.	29.95	1.246	1.246	0.2902
207	31.	30.95	1.241	1.241	0.289
208	32.	31.95	1.246	1.246	0.2902
209	33.	32.95	1.246	1.246	0.2902
210	34.	33.95	1.246	1.246	0.2902
211	35.	34.95	1.246	1.246	0.2902
212	36.	35.95	1.246	1.246	0.2902
213	37.	36.95	1.241	1.241	0.289
214	38.	37.95	1.241	1.241	0.289
215	39.	38.95	1.241	1.241	0.289
216	40.	39.95	1.236	1.236	0.2878
217	41.	40.95	1.241	1.241	0.289
218	42.	41.95	1.236	1.236	0.2878
219	43.	42.95	1.236	1.236	0.2878
220	44.	43.95	1.236	1.236	0.2878
221	45.	44.95	1.236	1.236	0.2878
222	46.	45.95	1.231	1.231	0.2867
223	47.	46.95	1.226	1.226	0.2855
224	48.	47.95	1.236	1.236	0.2878
225	49.	48.95	1.231	1.231	0.2867
226	50.	49.95	1.231	1.231	0.2867
227	51.	50.95	1.231	1.231	0.2867
228	52.	51.95	1.231	1.231	0.2867
229	53.	52.95	1.231	1.231	0.2867
230	54.	53.95	1.231	1.231	0.2867
231	55.	54.95	1.226	1.226	0.2855
232	56.	55.95	1.226	1.226	0.2855
233	57.	56.95	1.231	1.231	0.2867
234	58.	57.95	1.226	1.226	0.2855
235	59.	58.95	1.231	1.231	0.2867
236	60.	59.95	1.226	1.226	0.2855


Grain Size Analysis - Mechanical/Hydrometer
1/2"
4
8
10
16
30
40
50
100
200
A-4186
Project Name: Broad River Amoco
Project No. 18-6580 Source: SB-3 14' - 16.5'
Material: White Orange Clayey Silt
Sample No. A-4186
Sand: 29% Silt 43% Clay 28%
Percent passing by weight (or mass)
100
90
80
70
60
50
40
30
20
10
0
100
10
1
0.1
0.01
0.001
Cobbl
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay


Grain Size Analysis - Mechanical/Hydrometer
1/2"
4
8
10
16
30
40
50
100
200
A-4185
Project Name: Broad River Amoco
Project No. 18-6580 Source: SB-30 15'-17'
Material: Brown-gray silty SAND
Sample No. A-4185
Sand: 52% Silt: 34% Clay: 14%
Percent passing by weight (or mass)
100
90
80
70
60
50
40
30
20
10
0
100
10
1
0.1
0.01
0.001
Cobbl
Gravel
Coarse
Fine
Sand
Coarse
Medium
Fine
Silt or Clay

Appendix G
IDW Disposal Manifests

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number

GENERATOR

5. Generator's Name and Mailing Address: CTS I

Generator's Phone:

Generator's Site Address (if different than mailing address): BP 4335 Broad River Rd. Columbia SC

6. Transporter 1 Company Name: CHARLES MOORE — U.S. EPA ID Number:

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: T K TANK SERVICES INC. 425 BOULEVARD RD. SUMTER, SC — U.S. EPA ID Number:

Facility's Phone: 803-418-5314

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NONHAZARDOUS PETROLEUM CONTAMINATED WATER/PRODUCT	T-1	VAC TRUCK	625	gal	WATER
2.				375	gal	Fuel
3.						
4.						

13. Special Handling Instructions and Additional Information

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: KEVIN WESSINGER — Signature: [signature] — Month: 4 Day: 23 Year: 19

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Willie Fortune — Signature: Willie Fortune — Month: 4 Day: 23 Year: 19

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Ashley Turner — Signature: [signature] — Month: 4 Day: 23 Year: 19

CERTIFICATE OF DISPOSAL

T K TANK SERVICES, INC.

Certifies to all that

1,000 GALLONS

Of Nonhazardous, Petroleum Contaminated Water / Product

Have been disposed of in accordance with EPA regulations on petroleum contaminated water.

This product was generated at

BP, BROAD RIVER RD., COLUMBIA, SC

4/23/2019

DATE

Casey Todd Newman

SIGNATURE

Soil Disposal Manifest

The Broad River Amoco soil disposal manifest information will be submitted under a separate cover as it was not available at the time of report completion.

Appendix H
Not Included

Appendix I
Not Included

Appendix J
Access Agreements

CTSI

Carolina Technical Services, Inc.

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS

December 12, 2018

Herteline Lowman
4315 Broad River Road
Columbia, SC 29210

Attn: Ms. Annie Roberts, POA

Property Location: 4315 Broad River Road
Columbia SC 29210
Richland County Tax ID No.: R06108-04-70

CTSI Project: 18-6580
Broad River BP
4335 Broad River Road
Columbia SC 29210
UST Permit #11946

Dear Sir/Madam:

Carolina Technical Services, Inc. (CTSI) has been contracted by Broad River C Store LLC to perform an assessment of contaminated groundwater, which originates at the BP convenience store at 4335 Broad River Road Columbia, SC. This assessment is being performed in accordance with South Carolina's regulations regarding underground storage tanks (USTs) and is under the oversight of the South Carolina Department of Health and Environmental Control (SCDHEC) Underground Storage Tank Management Division.

Based upon data collected to date, SCDHEC has requested that we assess whether your property, referenced above, has been impacted. In order to complete the groundwater assessment, CTSI requests that you grant CTSI limited access to your property listed above.

Our work will include the collection of soil and groundwater samples in order to determine whether the reported release of petroleum products at the Broad River BP site extends to your property. This work will be performed at absolutely no expense to you. The assessment and remediation of the petroleum product release will be funded by the responsible party and the State of South Carolina.

Our Assessment Plan has been approved by the SCDHEC UST Program. We plan to install temporary soil boring(s) and two-inch diameter monitoring well(s) on your property. These well(s) will be constructed so that they will be flush to the ground. The only visible portion will be a small eight-inch manhole and small concrete pad at the surface. CTSI will make every effort to limit any inconvenience caused by the presence of drilling equipment and to clean up thoroughly upon completion of the installation. Installation work typically is completed within a several day time frame.

Analytical results from samples collected on your property will also be provided to you. When SCDHEC determines that no further actions are required regarding the release of petroleum products at the Broad River BP site, any monitoring wells will be properly abandoned according to South Carolina regulations.

Enclosed with this letter you will find a schematic drawing of a typical monitoring well and an Access Agreement that would permit us to enter on the above listed property for our assessment activities.

If you have any questions, please contact me at 843-610-1953 or Mr. Steven Bush at (803) 407-3336.

Sincerely,

CAROLINA TECHNICAL SERVICES, INC.

William D. Wood Jr.,

William Wood, P.G.

Project Manager

Enclosures:

Right of Entry Agreement

for

Herteline Lowman

4315 Broad River Road

Columbia, SC 29210

Richland County Tax ID No.: R06108-04-70

I, Annie Roberts, certify that I am the legal owner or the authorized representative of the above-listed properties. Permission is hereby granted to Carolina Technical Services, Inc. (CTSI) and/or SCDHEC or their agents to enter upon the referenced property for the following purposes:

1. Drilling of temporary soil borings/monitoring wells
2. Collection of soil and/or groundwater samples
3. Installation of monitoring /recovery wells.
4. Abandonment of monitoring/recovery wells.

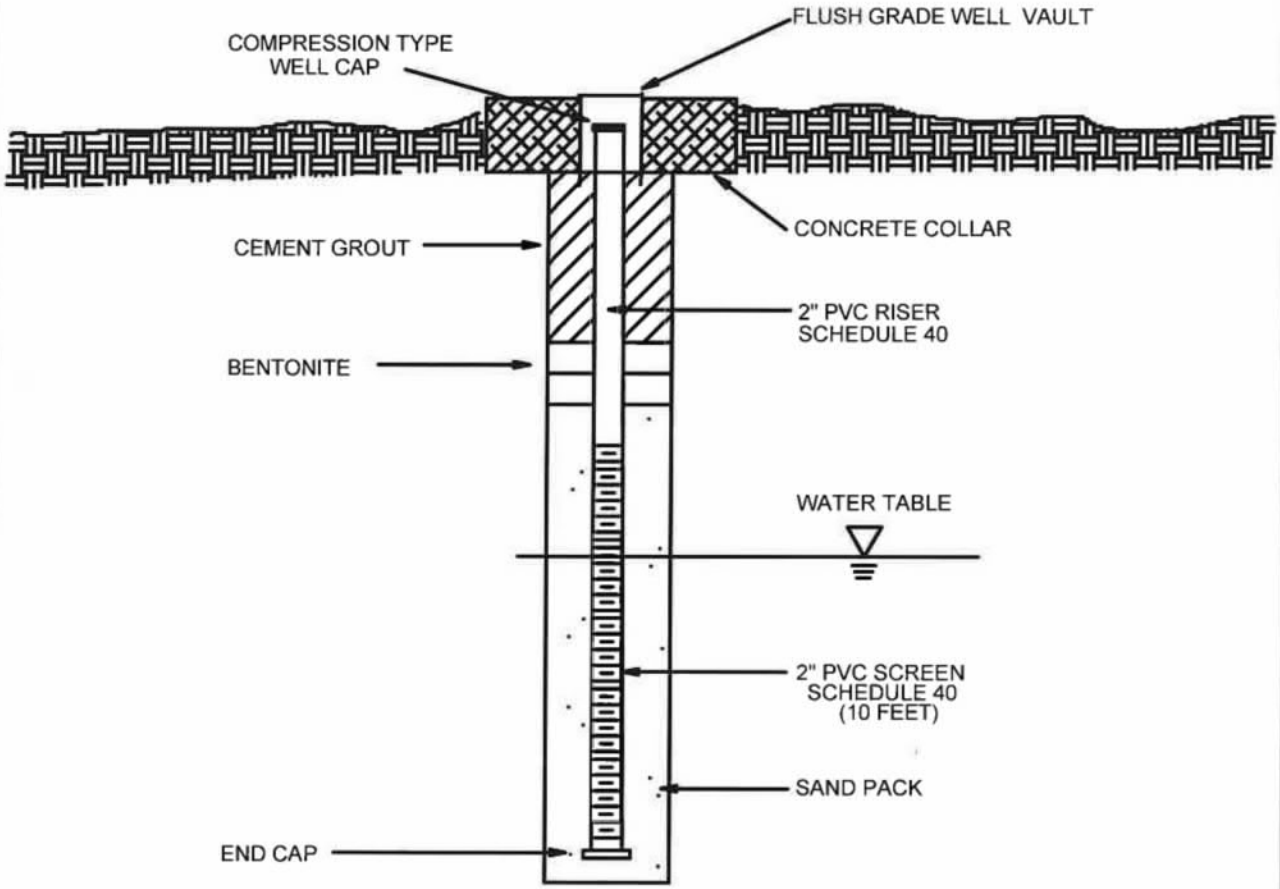
NAME (Print Please): Annie Roberts

TITLE (Print Please): POA

SIGNATURE: Annie Roberts

WITNESS: Gwynetta Berry

DATE: 12/12/18



TYPICAL MONITORING WELL SCHEMATIC DRAWING

SCDHEC UST PERMIT:

Date: | Scale: | Dwg:

CTSI

Geotechnical Engineering and Environmental Services

IRMO, SOUTH CAROLINA

Appendix K
Data Verification Checklist

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	✓		
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?			✓
10	Has current use of the site and adjacent land been described?	✓		
11	Has the site-specific geology and hydrogeology been described?	✓		
12	Has the primary soil type been described?	✓		
13	Have field screening results been described?	✓		
14	Has a description of the soil sample collection and preservation been detailed?	✓		
15	Has the field screening methodology and procedure been detailed?	✓		
16	Has the monitoring well installation and development dates been provided?	✓		
17	Has the method of well development been detailed?	✓		
18	Has justification been provided for the locations of the monitoring wells?	✓		
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?	✓		
26	Does the report include a brief discussion of the aquifer evaluation and results?	✓		
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	✓		
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	✓		
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)	✓		
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)	✓		
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)	✓		
47	Have the soil boring/field screening logs been provided? (Appendix D)	✓		
48	Have the well completion logs, DHEC Form 2099, and DHEC Form 1903 been provided? (Appendix E)	✓		
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	✓		
50	Have the disposal manifests been provided? (Appendix G)	✓		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	✓		
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

Project Verifier (signature) _____

(print name) _____

Date _____

Appendix L
Free-Phase Product Recovery Data

CTSI 15/16

LOG OF Boring

Site Name:	Broad River Amoco	Method:	FP Recovery	Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:		SC Registration	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

12/17/18

ft-bgs

SOIL DESCRIPTION

ft-bgs

1300 ARRIVE ON SITE

FP. Recovery

RW-5

DTP-6.58

DTW-11.98

1" pvc Threads = 0.08 FT

DTW - DTP = FP THICKNESS

FP THICKNESS x .71 = water equivalent WE

DTW + WE = INTAKE DEPTH

11.98 − 6.58 = 5.4

5.4 x .71 = 3.83

11.98 − 3.83 = 8.15 − INTAKE DEPTH

RW-A

DTP-6.13

DTW-6.27

11.97 DTP
12.01 DTW 1652

1717
11.90
12.09

10.2
8.15
2.05

14:39 START PUMPING @ peristaltic

14:53 ~ pump 3gal/ FP

DTW - 11.90
DTP - 8.05
LOWER INTAKE 1FT TO 9.15'

1507 pump off 6 gal
1511 8.61 DTP
1512 START PUMP
1518 LOWER INTAKE 1 FT TO 9.15 FT
1529 DTP 9.55 DTW 11.09
1536 LOWER INTAKE TO ~ 11.5

1555 STOP - 6gal
1558 10.70 DTP
11.97 DTW
LOWER TO 12.5 11.8

1630 12.10 DTP
12.11 DTW

~3gal/FP

resume pump

COMMENTS:

FP ~ 6#/gal

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 1 of 3

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	12-18-18	SC Registration	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs **SOIL DESCRIPTION** ft-bgs

Well	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
TW-1			8.63				
TW-2			10.25				
TW-3			10.59				
TW-4			10.81				
TW-5			10.67				
TW-6			10.63				
TW-7			9.82				
TW-8							
TW-9							
TW-10							
TW-11							
TW-12							7.63
TW-13							
TW-14							
TW-15							

COMMENTS:

1057
1052

RW-10 FP 9.97
[RW-7] W 10.64

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 2 of 3

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	12-18-18	SC Registration:	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs **SOIL DESCRIPTION** ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
TW-16							
TW-17							
TW-18							
TW-19							
TW-20							
TW-21							
RW-5	13:21		10.07				
RW-3	13:22		10.30				
RW-1	14:25	10.95	11.09				
RW-2	14:26		10.43				
RW-6	14:28		10.51				
DMW-1	14:29		11.26				
MW-5	14:30	8.76	9.95				
RW-4	14:31		10.23				
MW-4	14:33		8.21				
RW-7	14:34		8.24				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

LOG OF Boring

CTSI

Site Name:	Broad River Amoco	Method:	-	Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	12/14/2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	CH	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs — **SOIL DESCRIPTION** — ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-8	14:41		8.82				
RW-9	14:43		10.58				
MW-3	14:44	10.08	10.34				
MW-6A	14:45		10.74				
MW-6B	14:46		10.81				
MW-10A	14:47		1.51				
MW-10B	14:47		4.76				
MW-11A	14:49		0				
MW-11B	14:49		3.52				
MW-1	14:52		10.77				
RW-11	14:53		10.85				
RW-12	14:53		10.46				

COMMENTS:

RW- FP 6.16 1533
A W 6.20

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	DEC. 18, 2018	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs — SOIL DESCRIPTION — ft-bgs

Well	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW A	10:00	6.16	6.31				
RW B	10:02	9.54	11.64	10:12	10:30	4 GAL	TEA COLOR LIQUID
RW B	10:35	11.01	11.60	10:39	10:48	1 GAL	
RW B	10:53	11.57	11.62				
RW A	10:59	6.16	6.30	11:13	11:52	1 GAL	SLOWED RATE TO 4 @ 11:16. EXTRACT HOSE AT 6.25' PUSHING IT DOWN AS NEEDED
RW A	11:56	6.31	6.35				BLACK IN COLOR
RW B	11:59	11.33	11.57				
RW 10	11:55	9.97	10.64	12:11	12:18	3/4 GAL	VERY DARK IN COLOR
RW 10	12:21	10.53	10.58				
RW A	13:30	6.20	6.24				
RW B	13:33	11.09	11.55	13:39	13:49	1 GAL	
RW B	13:51	11.59	11.64				
AW 5	14:30	8.76	9.95	15:04	15:10	1/4 GAL	TEA COLOR
RW 5	15:15	9.82	9.91				
RW B	15:22	11.29	11.53				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/~~Time Started~~:	DEC 18 2018	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW 10	15:27	9.96	10.42	15 33	15:42	1/4 GAL	DARK TEA Color
RW 10	15:43	10.31	10.40				
RW A	15:33	6.16	6.20				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
~~Date(s) Drilled~~:	DEC 19 2018	SC Registration:	NA	Longitude:	
~~Date-Time Completed~~:	KEVIN WESELYER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW 5	11:58	ND	10.11				
RW 3	12:04	ND	10.22				
RW 1	12:08	9.88	10.13				.25' OF PRODUCT
RW 2	12:12	ND	10.40				
~~SB12~~		~~NI~~	~~6.54~~				
SB-13	12:15	ND	6.54				CHECKED WITH BAILER
SB-12	12:23	ND	7.43				SHEEN
TMW-2	12:29	ND	8.23				
TMW-1	12:31	8.70	~~8.70~~ 8.77				
MW-5	12:36	9.16	9.24				.08' OF PRODUCT
RW-4	12:40	ND	10.26				
RW-6	12:44	ND	10.53				
MW-4	12:47	ND	8.22				
RW-7	12:50	ND	8.27				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-5580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	Dec 19 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
SB-19	12:55	ND	7.43				ON ODER
SB-20	12:57	ND	8.86				
SB-21	12:59	ND	8.15				POSABLE SHEEN
RW-8	13:05	ND	8.85				
SB-15	13:14	ND	10.31				
SB-16	13:15	ND	9.56				SHEEN
SB-17	13:17	9.65	9.94				.29' OF PRODUCT
SB-18	13:22	ND	10.41				
SB-14	13:24	ND	10.68				
MW-3	13:27	10.08	10.36				.18' OF PRODUCT
RW-9	13:31	ND	10.57				POSABLE SHEEN ?
SB-7	13:36	ND	9.83				
SB-9	13:37	8.97	9.00				
SB-10	13:39	ND	10.00				
TMW-3	14:42	9.50	9.88				.38' OF PRODUCT

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date: ~~Time Started~~	DEC 19 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Sampling Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-1	14:18	ND	10.27	14:11	14:17	1/4 GAL	DARK BROWN COLOR
SB-17	14:54	ND	9.71	14:50	14:53		1/4 GAL TOTAL
TMW-3	15:02	ND	9.64	14:57	15:00		
MW-3	15:08	ND	10.57	15:04	15:07		

OMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/~~Time Started~~	DEC 19, 2018	SC Registration:	NA	Longitude	
~~Date/Time Completed~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW A	8:39	6.19	6.23				
RW B	8:45	9.06	11.22	9:02	9:46	5 3/4 GAL	DARK TEA COLOR
RW 10	9:56	9.96	10.49	10:05	10:20	1 GAL	TEA COLOR
RW B	10:07	11.12	11.22				
RW 10	10:25	10.35	10.45				
RW B	11:40	10.86	11.16				
RW 10	11:43	9.98	10.40				
RW B	13:42	10.54	11.11				
RW B	15:37	10.28	11.08	15:42	15:58	2 1/4 GAL	
RW B	16:00	11.24	11.25				

RW-12

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 6 of 6

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	DEC 22, 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-10	1			14:00	14:11		HAD STOP AND RESTART MAY HAVE SOME H_2O
RW-10	14:24	10.54	10.55	14.15	14:23	1¼ GAL	IT DID - ⅛
TMW-1	14:45	9.50	9:51	14:34	14:41	⅛ GAL	BLACK IN COLOR

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Page 5-6

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	DEC 22 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
MW-4	12:58	ND	8.97				
RW-7	13:03	ND	8.40				
RW-8	13:07	ND	8.60				
MW-2	13:11	ND	9.88				WITH ODER
RW-5	13:18	ND	9.91				
RW-10	13:21	9.91	10.46				0.55' OF PRODUCT

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Page 1 of 1 — 4-6

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev (ft-msl)	Grade
Location	Columbia SC	Subcontractor/Drillers	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	DEC 22 2018	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs — **SOIL DESCRIPTION** — ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
RW-12	11:29	ND	10.19				
RW-11	11:34	10.78	10.79				0.01 of Product
MW-1	11:38	ND	10.75				
MW-6B	11:47	ND	10.80				
MW-6A	11:51	ND	10.70				
MW-3	11:56	ND	10.15				Has Sheen
RW-9	12:00	ND	10.48				
RW-A	12:14	6.20	6.21				
RW-3	12:19	ND	9.61				
RW-1	12:29	ND	9.80				
RW-2	12:34	ND	10.04				
MW-1	12:40	ND	10.53				
MW-5	12:44	9.07	9.16				0.09' of Product
RW-4	12:49	ND	9.50				
RW-6	12:54	ND	10.27				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 3-6

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	DEC 22 2018	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

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ft-bgs — SOIL DESCRIPTION — ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
SB-6	9:34	ND	10.37				
SB-5	9:39	ND	10.30				
SB-4	9:41	ND	10.67				
SB-3	9:40	ND	9.96				
SB-2	9:50	ND	9.29				
SB-1	9:52	ND	8.21				
SB-7	9:55	9.37	9.38				0.01' of PRODUCT

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

2-6

Page ~~1 of 1~~

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	Dec 12 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
SB-13	8:30	ND	5.68				
SB-9	8:34	8.78	8.81				0.03' OF PRODUCT
SB-10	8:37	ND	9.05				
TMW-1	8:43	8.76	10.14				1.38' OF PRODUCT
TMW-2	8:47	ND	8.10				
SB-12	8:50	ND	7.41				
SB-19	8:52	ND	7.47				WITH ODER
SB-20	8:58	ND	8.23				
SB-21	9:02	ND	8.29				
SB-15	9:08	ND	9.89				
SB-16	9:15	ND	9.45				WITH SHEEN
SB-17	9:18	ND	9.35				WITH ODER
TMW-3	9:22	9.61	9.68				0.07' OF PRODUCT
SB-14	9:28	ND	10.55				
SB-18	9:30	ND	10.46				

OMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 1 of 1 — 1-6

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	DEC 27 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-B	10:12	6.62	9.16	10:24	10:53	6 GAL	
RW-B	11:02	8.90	9.25	11:04	11:14	1 1/4 GAL	
RW-B	11:18	9.31	9.34				
RW-B	15:04	8.75	9.21	15:05	15:15	1 GAL	
RW-B	15:17	9.20	9.22				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

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Page ~~1 of 1~~

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date ~~Started~~:	DEC. 29, 2018	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
SB-17	10:01	8.94	9.80	10:10	10:14	1/8 GAL	0.86' OF PRODUCT
	10:17	9.10	9.12				0.45' MORE OF H^2O FROM 12-22-18
MW-5	14:09	9.00	9.12				
RW-4	14:19	ND	9.21				
TMW-2	14:21	ND	8.14				
SB-12	14:23	ND	7.36				
SB-19	14:26	ND	7.21				
SB-20	14:29	ND	7.48				
SB-21	14:32	ND	8.27				
MW-4	14:35	ND	8.69				HAS ODER
RW-7	14:38	ND	8.36				SLUG CAME OUT WITH IT AND ODER
RW-6	14:43	ND	10.29				
MW-2	14:47	10.03	10.25				0.22 OF PRODUCT

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	DEC 29 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs — SOIL DESCRIPTION — ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
SB-1	12:01	ND	8.20				
RW-12	12:04	ND	10.10				
SB-7	12:07	ND	9.40				
RW-11	12:10	ND	10.64				
MW-1	12:12	ND	10.62				
SB-10B	12:15	ND	8.77				
SB-9A	12:18	8.51	8.57				0.06' of Product
SB-13	12:22	ND	5.93				
RW-A	12:26	6.23	6.24				0.01' with sheen
RW-3	12:36	ND	8.97				
RW-1	12:42	ND	9.73				with sheen and odor
RW-2	13:48	ND	10.32				
RW-5	13:52	ND	10.23				
~~RW-6~~ DMW-1	13:57	ND	10.64				
TMW-1	14:00	8.67	9.68				1.01' of Product

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	DEC. 29, 2018	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
SB-16	10:22	ND	9.33				
SB-15	10:24	ND	10.15				
RW-8	10:27	ND	8.16				
TMW-3	10:31	9.54	9.63				0.09' of Product
MW-3	10:33	ND	9.97				With Sheen
RW-9	10:37	ND	10.32				
SB-14	10:40	ND	10.31				
SB-18	10:42	ND	10.27				
MW-6A	10:46	ND	10.53				
MW-6B	10:51	ND	10.72				
SB-16	10:54	ND	10.41				
SB-5	11:01	ND	10.49				
SB-4	11:03	ND	10.41				
SB-3	11:08	ND	9.88				
SB-2	11:12	ND	9.10				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal mgers	Latitude:	
Date ~~Time Started~~:	Dec. 29 2018	SC Registration:	NA	Longitude:	
~~Date/Time Completed~~:	KEVIN WESSAKER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-10	9:31	9.90	10.17	9:36	9:40	1/4 GAL	0.27' OF PRODUCT
	9:43	10.11	10.12				WATER LEVEL UP 0.29' FROM 12-22
TMW-1				14:55	15:00	1/8 GAL	DARK COLOR
TMW-1	15:06	9.04	9.24				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF Boring Page 1 OF 5

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date: ~~Time Operator:~~	DEC. 29, 2018	SC Registration:	NA	Longitude:	
~~Date Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-B	8:58	6.30	6.75	9.08	9.20	1 GAL	0.45' OF PRODUCT
	9:23	6.71	6.74				WATER LEVEL IS UP 2.41 FROM LAST READING 12-22-18
RW-B	15:15	6.65	6.71				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	12-31-18	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Drilling Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-8	10:00	6.68	6.76				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	1-2-19	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-3	11:24	ND	9.43				
RW-1	11:29	9.54	9.55				
RW-2	11:38	ND	10.05				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	1-2-19	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
SB-24	10:13	ND	9.54				
SB-23	10:16	ND	9.74				
SB-22	10:20	ND	5.70				
SB-25	10:28	ND	7.11				
SB-26	10:33	ND	6.79				
SB-27	10:38	4.73	5.45				0.72' of PRODUCT STRONG ODER
RW-8	10.45	6.72	6.81				0.09' of PRODUCT
SB-1	10.53	ND	7.91				
SB-2	10:55	ND	8.90				
RW-12	10:58	ND	9.66				
SB-7	11:02	9.21	9.22				
RW-11	11:08	ND	10.12				
RW-10	11:12	9.82	10.00				
RW-5	11:15	ND	9.74				
SB-10B	11:20	ND	9.23				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sample

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	JANUARY 5 2019	SC Registration:	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs — **SOIL DESCRIPTION** — ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
SB-29	7:57	6.40	6.62				
SB-15	12:39	ND	9.65				
SB-16	12:41	ND	8.81				
SB-17	12:43	9.06	9.08				
RW-B	12:48	6.56	6.65				
RW-3	12:54	ND	8.64				
RW-10	12:57	8.87	8.70				
SB-27	13:16	5.14	5.65				
TMW 3	13:27	9.51	9.65				
MW 3	13:40	ND	9.20				WITH ODOR
SB-18	13:34	ND	9.58				
RW-A	13:21	ND	6.09				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Doaral rogers	Latitude:	
Date/Time Started:	JANUARY 7 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft - bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
MWR-3	13:31	ND	9.59				ODD ODER
MWR-2	13:39	ND	8.99				WITH ODER
MWR-1	13:43	ND	6.67				WITH ODER
MWR-4	13:50	ND	10.85				ODD ODER
MWR-5	13:57	ND	6.57				NO ODER
MWR-6	14:19	ND	8.82				NO ODER
MWR-7	14:25	5.85	6.08				0.23' OF PRODUCT
SB-25	14:30	ND	6.70				
SB-26	14:33	ND	6.93				
SB-27	14:39	5.31	5.56				0.25' OF PRODUCT
SB-29	14:45	6.07	6.12				0.05' OF PRODUCT
SB-30	14:53	ND	11.83				
SB-31	14:58	ND	11.99				
SB-22	15:03	ND	5.70				
SB-23	15:05	ND	8.33				
SB-24	15:07	ND	7.14				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	JANUARY 7 2018	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs **SOIL DESCRIPTION** ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
SB-32	15:20	ND	3.56				
SB-33	15:22	ND	2.53				
SB-34	15:25	ND	4.03				
SB-35	15:26	ND	4.35				
SB-36	15:28	ND	4.53				
SB-37	15:30	ND	3.30				
SB-40	15:32	ND	1.85				
SB-41	15:34	ND	1.54				
SB-42	15:35	ND	4.14				
RW-8	15:59	6.61	6.71				0.10' OF PRODUCT
RW-10	16:02	9.70	9.89				0.19 OF PRODUCT
TMW-3	16:06	9.60	9.75				0.15' OF PRODUCT
SB-17	16:10	9.34	9.35				0.01' OF PRODUCT

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev. (ft msl)	Grade
Location	Columbia SC	Subcontractor/Drillers	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	JANUARY 9 2019	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
MW-4	13:41	ND	8.14				SHEMER AND ODER
RW-7	13:45	ND	8.00				LITE ODER
SB-19	13:49	ND	7.17				
SB-20	13:51	ND	8.58				
SB-21	13:54	ND	8.05				
RW-8	13:57	ND	8.40				
SB-30	14:00	ND	11.80				
SB-31	14:02	ND	12.28				
SB-15	14:04	ND	9.73				
SB-16	14:06	ND	8.71				NTH ODER
SB-17	14:08	9.38	9.41				
TMW-3	14:12	9.58	9.75				
RW-9	14:14	ND	9.55				
SB-14	14:16	ND	9.61				
SB-18	14:18	ND	9.48				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	JANUARY 9 2014	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-6	14:36	ND	9.89				
MWR2-6	14:39	ND	7.94				
SB-29	14:43	5.90	6.00				0.10' OF PRODUCT DARK IN COLOR
MWR2-7	14:49	5.73	5.77				0.04' OF PRODUCT DARK IN COLOR
SB-27	14:51	5.17	5.53				0.35' OF PRODUCT
SB-24	15:01	ND	6.67				
SB-25	15:09	ND	6.50				SOME ODER
SB-12	15:12	7.13	7.14				0.01 OF PRODUCT
TMW-2	15:33	7.50	7.80				0.30 OF PRODUCT GUMMIE
RW-4	15:38	ND	9.57				
DMW-1	15:48	ND	10.12				
MW-5	15:54	8.60	8.71				0.11 OF PRODUCT
RW-2	16:00	9.75	9.76				0.01 OF PRODUCT ODER
RW-10	16:03	9.58	9.80				0.22' OF PRODUCT
RW-5	16:06	ND	9.56				ODER SHEEN
RW-1	16:09	ND	9.14				ODER SHEEN

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-5580	Sampling Method		Measuring Point Elev. (ft-msl)	Grade
Location	Columbia SC	Subcontractor/Driller	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	JANUARY 9 2019	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN HESSINGER	Monitoring Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-3	16:13	ND	9.35				
SB-9A	16:16	8.16	8.20				0.04' OF PRODUCT
SB-10B	16:18	ND	9.39				
RW-B	16:23	6.58	6.70				0.12' OF PRODUCT
RW-12	16:25	ND	9.37				

COMMENTS

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - split spoon sampler

CTSI

LOG OF Boring

Page 3 of 3

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	1/15/19	SC Registration:	NA	Longitude:	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
SB-13			7.57				Sheen, Heavy odor
SB-7			7.18				
RW-B		6.71	6.81				
RW-A			6.17				Thick Black Oily Film
RW-5			9.68				Sheen
RW-1			9.08				
RW-10		9.55	9.78				
RW-9			9.97				
SB-29							
MW-5							
SB-3							

VHP ORS

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF Boring Page 1 of 3

Site Name:	Broad River Amoco	Method:		Total Depth (ft)	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl)	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	1/15/19	SC Registration:	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs **SOIL DESCRIPTION** ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
SB-42			2.53				1.72 Stickup
SB-41			1.55				0.6 Stickup
SB-40			1.64				0.2 SH
SB-39			2.94				1.1 SH
SB-38			6.90				5.4 SH
SB-37			2.32				0.4 SH
SB-36			3.42				1.3 SH
SB-35			3.60				0.8 SH
SB-34			4.24				0.3 SH
SB-33			2.81				0.3 SH
SB-32			3.76				0.9 SH
MWR2-2			8.99				sheen?
MWR2-1			6.27				
MWR2-4			8.36				sheen?
MWR2-5			6.80				sheen?

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI LOG OF Boring Page 2 of 3

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	1/15/19	SC Registration:	NA	Longitude:	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

Well	Time	DTP	DTW	Pump Start	Pump Stop	Gal. Amount	Comment
SB-17		9.55	10.22				
SB-16			8.88				
SB-15			9.84				
SB-31			12.62				1534
SB-30			12.12				1.6 ft 34
RW-8			8.67				Map
SB-21			8.34				
SB-20			8.54				
SB-19			7.05				
SB-27		5.35	5.51				
SB-26			6.89				
SB-25			6.63				
SB-12			7.33				
MWR2-7		5.86	5.88				Black oily Film
MWR2-6			7.69				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
NA - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-5580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	1/16/19	SC Registration:	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-10		9.55	9.78	1330	1340	0.5	Final FP 9.71 W 9.72
RW-B		6.74	6.84	1400	1405	0.25	Final W 6.80 Sheen
SB-17		9.59	10.20	1415	1430	0.10	Final FP 9.71 W 9.72

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
NA - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI **LOG OF Boring** Page 1 of 1

Site name	Broad River Amoco	Method		Total Depth (ft)	
Project number	18-6583	Sampling Method		Measuring Point Elev. (ft msl)	Grade
Location	Columbia SC	Subcontractor/Driller	Elite Tech/ Dearal rogers	Latitude	
Date Time Started	1/29/19	SC Registration	NA	Longitude	
Date Time Completed		Monitoring Equipment	NA	Geologist/Engineer	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-A			6.27				sheen <0.01
RW-B			6.50				sheen <0.01
RW-C		9.82					TD 12.91
MW12-8		9.59					TD 12.72
SB-17			9.13				sheen <0.01
SB-14			9.88				
RW-10		9.52	9.90				
SB-15		~~9.50~~	9.50				
MW12-7			5.55				

COMMENTS

NOTES:
in - indicates inches
ft - indicates depth in feet
ft bgs - indicates feet below ground surface
ft msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore samples
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft)	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	1/25/19	SC Registration:	NA	Longitude:	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

Circulation

Well	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL. AMOUNT	COMMENT
RW-C	1300	9.82		1300			TD 12.91 Pump @ 11ft Pump Full speed
	1305	10.20					
	1310	10.62					
	1315	10.96			1315	6	Pump stopped to Empty GASCAN
	1325			1325			Resume Pump @ 12.5
	1330	11.25					
	1340	11.51					Raised Pump to 12 in order to increase rate
	1355	11.80			1355	12	Empty Gas Can Resume @ 12.5'
	1415	11.68		1415			
	1430	12.03					
	1435	12.15					
	1455	12.35			1455	18	Gas Can Emptied Pump lowered to bottom
	1515	1235		1515			Peristaltic Tubing Replaced
	1520	12.60					
	1523	12.82			1523	20	At bottom, pumping air.

COMMENTS:

12.58' @ 1603 (Time)

NOTES:

in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
NA - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco 11946	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:		Latitude	
Date/Time Started:	1/24/19	SC Registration	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

RW-C

10,21 - DTP 10:10 2.71 FS F.P.
12,90 TD
START PUMPING 10:23
12.15 DTP - 11:15 5 gal
11:35 3 gal DTP 12.9

11:50
MWR2-8
DTP 9.57
NO H_2O
pump ~ 2.5 gal
1215 - Dry

RW-C DTP 12.25 12:17

1255 pump R2-8 - just a little

RW-C DTP 12.57 1300
pump ~ 1 gal

1320 LV SITE

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	-JAN-28-2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN KESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	12:55	9.89	FULL DEPTH	13:00	13:27	6	VERY DARK
				13:35	13:57	2.5	
MW-R2-8	14:00	9.97	FULL DEPTH	14:08	14:27	2	VERY DARK
SB-17	14:35	ND	9.54				
RW-B	14:45	6.74	6.75				
RW-10	15:03	9.23	9.70	15:11	15:17	1	SOME WATER
MW-R2-7	15:37	5.82	5.83				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI **LOG OF Boring**

Page 1 of 1

Site Name:	Broad River Amoco	Method:	
Project Number:	18-6580	Sampling Method:	
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers
Date/Time Started:	1-29-19	SC Registration:	NA
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA

Total Depth (ft):

Measuring Point Elev. (ft msl): Grade

Latitude:

Longitude:

Geologist Engineer: William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	12:08	10.27	FULL DEPTH	12:11	12:48	6	
				12:57	13:10	1	PUMPING LIKE SLUG VERY SLOW
MW-R2-C	13:30	10 78	FULL DEPTH	13:32	13:58	1	

MENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev. (ft-msl)	Grade
Location	Columbia SC	Subcontractor/Driller	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	1-31-19	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN WESSINGER	Sampling Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	12:56	10.15	FULL DEPTH	12:58	13:24	6	VERY DARK
				13:30	13:49	1.5	
MW-R2-8	13:55	10.38	FULL DEPTH	13:58	14:30	2	ABOVE SECOND RIB ON DRUM 2
MW-R2-12	14:39	12.02	12.12	14:43	14:52	1/8	
RW-10	14:57	9.44	9.75	15:01	15:08	1/4	A LITTLE WATER
RW-B	15.17	6.85	6.87				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-Foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev. (ft msl)	Grade
Location	Columbia SC	Subcontractor/Drillers	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	2-1-19	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN WESSINGER	Sampling Equipment	NA	Geological Engineer	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	12:20	10:54	FULL DEPTH	12:32	13:07	6	
[redacted]				13:11	13:23	1/8	
MW-R2-8	13:30	11.25	FULL DEPTH	13:35	13:55	3/4	
MW-R2-7	14:18	6.11	6.16	14:24	14:31	1/16	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI **LOG OF Boring**

Page 1 of 1

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev. (ft-msl)	Grade
Location	Columbia SC	Subcontractor/Drillers	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	FEBRUARY 4 2019	SC Registration	NA	Longitude	
Driller	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	15:29	10:13	FULL DEPTH	13:36	14:10	6	FULL CAN (DRUM)
				14:16	14:39	1 3/4	NEW CAN (DRUM)
MWR2-11	15:15	ND	10.80				
MWR2-8	14:46	10.00	FULL	14:48	15:04	2	
RW-10	15:23	9.26	9.71	15:29	15:34	1/8	

MMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 6 2019	SC Registration:	NA	Longitude:	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:50	10:32	FULL DEPTH	10:54	11:34	6	
				11:39	12:00	1	
MW-R2-8	12:08	10.58	FULL DEPTH	12:10	12:30	1	

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

J.5

CTSI

LOG OF Boring

Site Name	Broad River Amoco	Method		Total Depth (ft)	
Project Number	18-6580	Sampling Method		Measuring Point Elev. (ft-msl)	Grade
Location	Columbia SC	Subcontractor/Drillers	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started	FEBRUARY 6 2019	SC Registration	NA	Longitude	
Date/Time Completed	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
SB-17	11:03	ND	9.73				
SB-15	11:06	ND	9.94				
MW-R2-11	11:10	ND	10.47				WITH ODER AND COLOR ON END
TMW-3	11:14	9.50	9.54				
SB-31	12:39	ND	12.80				
SB-30	12:43	ND	12.23				
RW-9	12:48	ND	10.19				DEPTH OF WELL IS 10'4"
MW-R2-12	12:54	ND	10.33				
SB-18	14:35	ND	10.16				
MW-R2-9	14:39	ND	10.15				
MW-6A	14:42	ND	10.48				
MW-6B	14:48	ND	10.67				
SB-6	14:53	ND	10.42				
SB-5	14:55	ND	10.29				
MW-R2-3	14:58	ND	10.16				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Page 1 of 1

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearst rogers	Latitude:	
Date/Time Started:	FEBRUARY 6 2019	SC Registration:	NA	Longitude:	
~~Date/Time Completed~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs — SOIL DESCRIPTION — ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
MW-R2-2	15:03	ND	9.18				
MW-1	15:06	ND	10.43				
RW-11	15:12	ND	10.52				
SB-7	15:15	ND	9.39				
RW-12	15:19	9.98	9.99				NO ODER
MW-R2-1	15:25	ND	6.74				
MW-R2-4	15:31	ND	8.40				
MW-R2-5	15:33	ND	6.81				
RW-B	15:57	6.93	6.97				
RW-A	15:59	6.32	6.34				
RW-1	16:13	ND	9.20				
RW-3	16:17	ND	9.59				
RW-5	16:21	ND	9.80				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 7 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
SB-10B	10:10	ND	9.67				
DMW-1	10:15	ND	10.40				
SB-27	10:20	6.55	6.57				
MW-R2-7	10:26	ND	6.27				BROWN IN COLOR AND ODER
MW-R2-6	10:40	7.58	7.60				STRONG ODER
RW-6	10:56	ND	10.11				
MW-5	11:02	8.56	8.72				
RW-4	11:08	ND	9.95				
MW-R2-10	11:14	ND	8.44				
RW-2	11:20	ND	10.09				
MW-4	11:54	ND	9.07				ODER SHEEN
RW-7	11:58	ND	8.64				
RW-10	12:18	9.35	9.78				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 8, 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-10	10:05	9.40	9.85	10:09	10:15	1/4	SOME WATER
RW-B	10:21	6.96	7.00	10:26	10:30	1/16	
RW-C	10:38	10 37	FULL DEPTH	10:43	11:38	6	
				11:43	11:57	1	
MW-R2-8	12:02	10.93	11.40	12:04	12:26	1	SHOWED WATER BUT EXSTRACTED ALL THE WAY TO BOTTOM. NO WATER IN CAN
MW-R2-7	12:50	6.28	6.30	13:00	13:15	2	MOSTLY WATER BROWN IN COLOR

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split spoon sampler

CTSI

LOG OF Boring

Page 1 of 1

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 12, 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-10	8:31	9.38	9.80	8:38	8:51	2	MOSTLY WATER
RW-C	9:02	10.29	FULL DEPTH	9:03	9:43	6	
				9:48	9:59	1	
MW-R2-8	10:13	10.48	FULL DEPTH	10:14	10:28	1	
MW-R2-13	10:39	ND	3.08				
MW-R2-12	10:42	ND	10.53				
MW-R2-16	10:45	ND	10.73				
MW-R2-15	10:49	ND	10.52				
MW-R2-11	11:04	ND	10.13				
MW-R2-14	11:07	ND	9.95				
RW-D	11:19	ND	9.97				
MW-R2-7	11:22	6.45	6.46				
MW-R2-10	11:25	ND	8.50				
MW-R2-6	11:27	7.56	7.60				

COMMENTS:
NOTE! SET TUB AT 9.80' ON RW-10 WHY SO MUCH WATER ???

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

LOG OF Boring

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 14 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	12:30	10.45	FULL DEPTH	12:36	13:24	6	
				13:25	13:40	1	
MW2-8	13:46	10.89	FULL DEPTH	13:49	13:57	1	
RW-10	14:06	9.45	9.86	14:11	14 20	.5	
	14:22	ND	9.71				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	FEBRUARY 15 2019	SC Registration:	NA	Longitude:	
~~Date/Time Completed~~:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-B	13:26	ND	7.13				
RW-A	13:29	ND	6.42				
MW-R2-7	13:34	6.34	6.98	13:45	14:01	1	
RW-D	14:09	ND	7.76				
RW-C	14:30	10.81	FULL DEPTH	14:34	15:21	6	
MW-R2-8	15:25	11.71	FULL DEPTH	15:28	15:36	1/4	

MMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl)	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 11, 2019	SC Registration	NA	Longitude	
~~Date/Time Completed~~	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:08	9.51	FULL DEPTH	10:12	10:57	6	
				11:04	11:48	4	
MW-R2-8	11:56	11.30	FULL DEPTH	11:58	12:14	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft)	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl)	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 13, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:55	9.80	FULL DEPTH	10:00	10:36	6	
				10:42	11:01	3	
MWR2-8	11:08	11.71	FULL DEPTH	11:12	11:24	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI 15/16

LOG OF Boring

Site Name:	Broad River Amoco	Method:	FP Recovery	Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:		SC Registration:	NA	Longitude	
Date/Time Completed:		Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

12/17/18

ft-bgs

SOIL DESCRIPTION

ft-bgs

1300 ARR ONSITE

FP Recovery

RW-5

DTP-6.58

DTW-11.98

1" pvc Threads = 0.08 FT

DTW - DTP = FP THICKNESS

FP THICKNESS x .71 = water equivalent WE

DTW - WE = INTAKE DEPTH

RW-A

DTP-6.13

DTW-6.27

11.98 - 6.58 = 5.4

5.4 x .71 = 3.83

11.98 - 3.83 8.15 - INTAKE DEPTH

10.2
8.15
2.05

11.97 DTP
12.01 DTW 1652

1717
11.90
12.09

14:39 START PUMPING @ peristaltic

14:53 ~ pump 3gal/ FP

DTW - 11.90

DTP - 8.05

Lower intake 1FT to 9.15'

1505 STOP - 6gal

1558 10.70 DTP
11.87 DTW
LOWER TO 12.5 11.8

1507 pump off 6 gal

1511 8.61 DTP

1512 START PUMP

1518 LOWER INTAKE 1.5FT TO 9.65FT

1529 DTP 9.5 DTW 11.09

1536 LOWER INTAKE TO ~ 11.5

1630 12.10 DTP
12.11 DTW

~3gal/FP

resume gw

COMMENTS:

FP ~ 6#/gal

NOTES:

in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

ACT

CTSI

LOG OF Boring

Page 1 of 1

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 15 2019	SC Registration:	NA	Longitude	
Date/Time Completed:	KELLY WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:20	9.83	FULL DEPTH	9:25	10:20	6	4TH DRUM FULL
				10:31	11:13	3.5	
MWR2-8	11:20	11.62	FULL DEPTH	11:23	11:41	1	
RW-B	13:51	7.84	7.85				0.01' OF PRODUCT
RW-A	1353	ND	6.13				
RW-5	13:57	ND	9.24				
RW-10	14:00	9.05	9.29				0.24' OF PRODUCT
MWR4	14:05	ND	7.89				
MWR5	14:06	ND	6.55				
MW-5	14:13	8.10	8.11				0.01' OF PRODUCT
MWR20	14:16	ND	7.70				
RW-D	14:19	6.30	6.33				0.03' OF PRODUCT
MWR27	14:27	5.60	5.61				0.01' OF PRODUCT
MWR26	14:31	7.13	7.28				0.15' OF PRODUCT
MWR24	14:39	ND	8.39				
MWR21	14:42	ND	9.40				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 19 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ftags

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:12	9.84	FULL DEPTH	10:17	10:55	6	
				11:04	11:40	3	
MW-R2-0	11:46	11.48	FULL DEPTH	11:40	12:14	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Daaral rogers	Latitude	
Date/Time Started:	MARCH 20 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVINWESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

in-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	15:02	10.00'	FULL DEPTH	15:06	16:00	6	
				16:10	16:36	2	

COMMENTS:

NOTES:
in - Indicates inches
ft - Indicates depth in feet
ft-bgs - Indicates feet below ground surface
ft-msl - Indicates feet above mean sea level
N/A - Indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 1 of 1

Site Name: Broad River Amoco
Project Number: 18-6580
Location: Columbia SC
Date/Time Started: MARCH 5 2019
Date/Time Completed: KEVIN WESSINGER

Method:
Sampling Method:
Subcontractor/Drillers: Elite Tech/ Dearal rogers
SC Registration: NA
Monitoring Equipment: NA

Total Depth (ft):
Measuring Point Elev. (ft-msl): Grade
Latitude
Longitude
Geologist/Engineer: William D Wood

ft-bgs

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	11:45	9.44	FULL DEPTH	11:51	12:29	6	VERY DARK IN COLOR
				12:35	13:15	4	
MW-R2-B	14:46	8.81	FULL DEPTH	14:50	15:18	3	

ft-bgs

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

LOG OF Boring

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 6, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:58	10.21	FULL DEPTH	11:01	11:52	6	VERY DARK IN COLOR
				11:58	12:09	1.5	
MW-R2-8	12:15	11.41	FULL DEPTH	12:17	12:26	1	
RW-B	14:00	6.76	6.77				
RW-10	14:04	ND	9.53				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Page 1 of 1

Site Name:	Broad River Amoco	Method:	Total Depth (ft):
Project Number:	18-5680	Sampling Method:	Measuring Point Elev. (ft-msl): Grade
Location:	Columbia SC	Subcontractor/Driller: Elite Tech/ Deasal rogers	Latitude
Date/Time Started:	MARCH 8 2019	SC Registration: NA	Longitude
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment: NA	Geologist/Engineer: William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	11:24	9.72	FULL DEPTH	11:28	12:12	6	VERY DARK IN
				12:21	12:38	3	COLOR
MW-R2-8	12:50	11.41	FULL DEPTH	12:53	13:06	3/4	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl)	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 11, 2019	SC Registration	NA	Longitude	
~~Date/Time Completed~~	KEVIN WESSINGER	Monitoring Equipment	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:08	9.51	FULL DEPTH	10:12	10:57	6	
				11:04	11:48	4	
MW-R2-8	11:56	11.30	FULL DEPTH	11:58	12:14	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft)	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl)	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 13, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:55	9.80	FULL DEPTH	10:00	10:36	6	
				10:42	11:01	3	
MWR2-8	11:08	11.71	FULL DEPTH	11:12	11:24	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

ACT

CTSI

LOG OF Boring

Page 1 of 1

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 15 2019	SC Registration:	NA	Longitude	
Date/Time Completed:	KELLY WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:20	9.83	FULL DEPTH	9:25	10:20	6	4TH DRUM FULL
				10:31	11:13	3.5	
MWR2-8	11:20	11.62	FULL DEPTH	11:23	11:41	1	
RW-B	13:51	7.84	7.85				0.01' OF PRODUCT
RW-A	1353	ND	6.13				
RW-5	13:57	ND	9.24				
RW-10	14:00	9.05	9.29				0.24' OF PRODUCT
MWR4	14:05	ND	7.89				
MWR5	14:06	ND	6.55				
MW-5	14:13	8.10	8.11				0.01' OF PRODUCT
MWR20	14:16	ND	7.70				
RW-D	14:19	6.30	6.33				0.03' OF PRODUCT
MWR27	14:27	5.60	5.61				0.01' OF PRODUCT
MWR26	14:31	7.13	7.28				0.15' OF PRODUCT
MWR24	14:39	ND	8.39				
MWR21	14:42	ND	9.40				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 19 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ftags

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:12	9.84	FULL DEPTH	10:17	10:55	6	
				11:04	11:40	3	
MW-R2-0	11:46	11.48	FULL DEPTH	11:40	12:14	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Daaral rogers	Latitude	
Date/Time Started:	MARCH 20 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVINWESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

in-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	15:02	10.00'	FULL DEPTH	15:06	16:00	6	
				16:10	16:36	2	

COMMENTS:

NOTES:
in - Indicates inches
ft - Indicates depth in feet
ft-bgs - Indicates feet below ground surface
ft-msl - Indicates feet above mean sea level
N/A - Indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 27 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs **SOIL DESCRIPTION** ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	11:50	10.05	FULL DEPTH	11:50	12:40	6	
				12:52	13:06	2	
MW12-8	13:40	11 30	FULL DEPTH	13:51	14:05	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name: Broad River Amoco
Project Number: 18-6580
Location: Columbia SC
Date/Time Started: MARCH 25 2019
Date/Time Completed: KEVIN WESSINGER
Method:
Sampling Method:
Subcontractor/Drillers: Elite Tech/ Dearal rogers
SC Registration: NA
Monitoring Equipment: NA
Total Depth (ft):
Measuring Point Elev. (ft-msl): Grade
Latitude
Longitude
Geologist/Engineer: William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	10:12	10.06	FULL DEPTH	10:14	10:58	6	
				11:04	11:24	2	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 29 2018	SC Registration	NA	Longitude	
Date/Time Completed:	~~4/2~~ KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	11:13	10.12'	FULL DEPTH	11:15	11:58	6	
				12:20	12:50	2	
MW-R2-8	13:04	11.00	FULL DEPTH	13:06	13:22	1	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	4/22/2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:04	10.32	FULL DEPTH	9:10	9:57	6	
				10:02	10:16	1	
MW-RZ-8	10:21	11.55	FULL DEPTH	10:23	10:42	1	
RW-10	10:51	~~ND~~	9.24				NO PRODUCT ?
RW-B	10:56	7.06	7.09	11:02	11:06	1/8	
RW-B	11:11	ND	7.02				WATER LEVEL HIGHER & PUMP ROD IN WELL
MW-RZ-6	11:38	7.17	7.39	11:42	11:57	1/2	
MW-RZ-6	12:01	ND	7.64				ORS COVERED IN DARK STUFF
MW-RZ-7	12:22	6.12	6.14	12:25	12:34	1	
MW-RZ-7	12:37	ND	6.16				LIGHTER COLOR MIX
RW-D	12:45	ND	6.91				

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	April 5, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	8:59	10.59	FULL DEPTH	9:45	9:55	6	
				10:00	10:17	1/2	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	April 4 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
MW-R2-8	9:23	11.72	FULL DEPTH	9:28	9:35	1/2	
RW-C	9:41	11.40	FULL DEPTH	9:44	10:36	4	
MW-R2-6		7.28					

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

Site Name: Broad River Amoco | Method: | Total Depth (ft):

Project Number: 18-6580 | Sampling Method:

Location: Columbia SC | Subcontractor/Drillers: Elite Tech/ Dearal rogers | Measuring Point Elev. (ft-msl): Grade

Date/Time Started: April 8 2019 | SC Registration: NA | Latitude

Date/Time Completed: KEVIN WESSINGER | Monitoring Equipment: NA | Longitude

Geologist/Engineer: William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	8:56	10.29	FULL DEPTH	9:03	9:56	6	
				10:01	10:19	1	
MW-R2-8	10:24	11.54	FULL DEPTH	10:27	10:42	1	
MW-R2-6	10:55	6.95	7.04	11:00	11:10	1	MAY HAD SOME WATER
	11:12	ND	7.45				
MW-R2-7	11:18	ND	5.60				
RW-D	11:20	6.58	6.62	11:23	11:35	1	MAY HAD SOME WATER
	11:37	ND	7.09				
RW-B	11:55	ND	6.84				STRONG SMELL
RW-10	11:58	901	9.68	12:02	12:12	1	MAY HA SOME WATER
	12:15	ND	9.61				

NTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

Site Name: Broad River Amoco
Project Number: 18-8580
Location: Columbia SC
Date/Time Started: APRIL 11 2019
Date/Time Completed: KEVIN WESSINGER
Method:
Sampling Method:
Subcontractor/Drillers: Elite Tech/ Dearal rogers
SC Registration: NA
Monitoring Equipment: NA
Total Depth (ft):
Measuring Point Elev. (ft-msl): Grade
Latitude
Longitude
Geologist/Engineer: William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:10	10.20	Full Depth	9:15	10:12	6	
				10:17	10:28	1	

ft-bgs

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

Site Name: Broad River Amoco
Project Number: 18-6580
Location: Columbia SC
Date/Time Started: APRIL 18 2019
Date/Time Completed: KEVIN WESSINGER
Method:
Sampling Method:
Subcontractor/Drillers: Elite Tech/ Dearal rogers
SC Registration: NA
Monitoring Equipment: NA
Total Depth (ft):
Measuring Point Elev. (ft-msl): Grade
Latitude
Longitude
Geologist/Engineer: William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:30	9.95	FULL DEPTH	9:35	11:35	8	
MWR2-3	11:42	10.74	FULL DEPTH	11:50	12:30	1.5	

ft-bgs

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
NA - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

Site Name: Broad River Amoco
Project Number: 18-6580
Location: Columbia SC
Date/Time Started: APRIL 22 2019
Date/Time Completed: KEVIN WESSINGER
Method:
Sampling Method:
Subcontractor/Drillers: Elite Tech/ Dearal rogers
SC Registration NA
Monitoring Equipment: NA
Total Depth (ft):
Measuring Point Elev. (ft-msl): Grade
Latitude
Longitude
Geologist/Engineer: William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	15:19	10.17	FULL DEPTH	13:27	14:19	6	
				14:25	14:55	1.5	

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

Broad River Amoco

Project Number: 18-6580

Location: Columbia SC

Date/Time Started: APRIL 26 2019

Date/Time Completed: KEVIN WESSINGER

Method:

Sampling Method:

Subcontractor/Drillers: Elite Tech/ Dearal rogers

SC Registration: NA

Monitoring Equipment: NA

Total Depth (ft):

Measuring Point Elev. (ft-msl): Grade

Latitude

Longitude

Geologist/Engineer: William D Wood

SOIL DESCRIPTION

WELL	TIME	DTP	DTW	PUMP START	PUMP STOP	GAL AMOUNT	COMMENT
RW-C	9:40	10.26	FULL DEPTH	9:57	11:17	6	
				11:25	12:11	2	
NWR2-8	12:15	10.90	FULL DEPTH	12:20	12:40	1	
RW-B	13:27	7.10	7.15	13:35	13:40	1/8	PUSHING THE TUBE DOWN
"	13:42	ND	7.28				
RW-10	13:48	8.91	9.48	13:52	14:05	1	
"	14:15	ND	9.38				

ENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4 foot Macrocore sampler
SS - Split Spoon sampler

Appendix M
Organic Vapor Monnitoring Data

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Desral rogers	Latitude	
Date/Time Started:	MARCH 4 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN / CODIE	Monitoring Equipment:	NA	Geologist/Engineer	William D Wood

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION
C.O

ISOBUTYLENE GAS 100ppm
100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	14:50	7.0	
SMH #2	14:55	72.1	
SMH #3	14:59	22.9	
CLEANOUT	15:01	5.1	1166
CLEANOUT	15:05	1.6	1178
CLEANOUT	15:06	7.9	1202
CLEANOUT	15:08	1.2	1208 CAP BROKE OPEN
CLEAN OUT	15:10	2.6	1218 MAY BE SHUT OFF VALVE
CLEAN OUT	15:13	1.1	1230 WITH MAKE SHIFT CAP

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to the boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI **LOG OF Boring** Page 1 of 1

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 4 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN/CODIE	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	1520	34.2	
SMH #2	15:30	57.5	
SMH #3	15:35	23.9	
CLEANOUT	15:38	5.0	1166
	15:40	1.9	1178
	15:43	1.6	1202
	15:44	0.8	1208
	15:46	2.1	1218
▽	15:49	0.7	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method		Total Depth (ft):	
Project Number:	18-6580	Sampling Method		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearsl rogers	Latitude	
Date/Time Started:	MARCH 5 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION
0.0ppm 9:32 AM

ISOBUTYLENE GAS 100ppm
100 ppm 9:58 AM

LOCATION	TIME	READING	NOTE:
SMH#1	11:05	19.8	
SMH#2	11:10	17.5	
SMH#3	11:15	10.9	
CLEANOUT	11:20	3.4	1166
	11:24	2.8	1178
	11:26	3.1	1207
	11:29	2.1	1208
	11:32	2.6	1218
	11:34	2.1	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method		Total Depth (ft):	
Project Number:	18-6530	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 5 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION

ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH# 1	13:29	33.7	
SMH# 2	13:35	118.0	
SMH# 3	13:41	26.5	
CLEANOUT	13:48	17.1	1166
	13:50	12.0	1178
	13:52	12.5	1202
	13:55	9.6	1208
	13:57	7.0	1218
	14:01	31.5	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon samples

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method		Total Depth (ft):	
Project Number:	18-6530	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 5 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH#1	16:00	41.7	
SMH#2	16:07	28.9	
SMH#3	16:11	34.1	
CLEANOUT	16:14	26.2	1166
	16:17	29.2	1178
	16:20	14.5	1202
	16:23	13.4	1208
	16:25	15.1	1218
	16:29	11.4	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore samper
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:	-	Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	MARCH 6, 2019	SC Registation	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

FRESH AIR CALIBRATION
9:41 AM 0.0ppm

ISOBUTYLENE GAS 100ppm
107 ppm 9:47 AM

LOCATION	TIME	READING	NOTE:
SMH # 1	10:24	7.0	
SMH #2	10:29	19.3	
SMH #3	10:33	4.2	
CLEANOUTS	10:38	1.9	1166
	10:41	2.4	1178
	10:43	5.8	1202
	10:45	4.9	1208
	10:47	2.2	1218
↓	10:50	2.2	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to the boring
MC - 4-foot Macrocore samplar
SS - Split Spoon sampler

LOG OF Boring

CTSI

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 6 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	13:28	32.0	
SMH #2	13:36	19.8	
SMH #3	13:40	14.9	
CleanOut	13:43	8.7	1166
	13:45	4.2	1178
	13:47	8.2	1202
	13:49	11.6	1208
	13:51	3.8	1218
	13:53	6.8	1230

MMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 6 2019	SC Registration	NA	Longitude	
~~Date/Time Completed~~:	KEVIN KESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

FRESH AIR CALIBRATION

ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	15:46	15.1	
SMH #2	15:51	12.7	
SMH #3	15:55	11.0	
CLEAN OUT	15:58	6.8	1166
	16:00	8.7	1178
	16:02	4.1	1202
	16:04	12.2	1208
	16:06	3.6	1218
	16:09	3.1	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 8 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION
10:04 AM 0.0 ppm

ISOBUTYLENE GAS 100ppm
105 10:06 AM

LOCATION	TIME	READING	NOTE:
SMH#1	10:42	17.7	
SMH#2	10:46	20.5	
SMH#3	10:50	18.0	
CLEANOUT	10:53	5.1	1166
	10:57	15.4	1178
	11:01	3.0	1202
	11:04	17.7	1208
	11:07	3.0	1218
	11:10	58.9	1230
SMH#2	11:13	25.2	DOUBLE CHECK

MMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 8 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	13:25	24.9	
SMH #2	13:30	17.0	
SMH #3	13:39	10.0	
CLEAN OUT	13:41	11.9	1166
	13:43	17.6	1178
	13:46	20.8	1202
	13:48	8.0	1208
	13:50	4.9	1218
	13:53	15.5	1230
SMH #2A	13:35	12.2	HAD JUST FOUND BETWEEN SMH-2 & 3

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 8 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

RAIN

ft-bgs | SOIL DESCRIPTION | ft-bgs

FRESH AIR CALIBRATION | ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	15:24	23.7	
SMH #2	15:28	20.0	
SMH #2A	15:31	13.4	
SMH #3	15:33	9.6	
CLEANOUT	15:35	8.8	1166
	15:41	9.8	1178
	15:43	9.1	1202
	15:45	4.9	1208
	15:46	2.8	1218
	15:49	7.7	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

1 of 2

Page 1 of 1

Site Name:	Broad River Amoco	Method:	Total Depth (ft):
Project Number:	18-6580	Sampling Method:	Measuring Point Elev. (ft-msl): Grade
Location:	Columbia SC	Subcontractor/Drillers: Elite Tech/ Dearal rogers	Latitude
Date/Time Started: MARCH 11 2019		SC Registration: NA	Longitude
Date/Time Completed: KEVIN WESSINGER		Monitoring Equipment: NA	Geologist/Engineer: William D Wood

NOTE: ON FRIDAY 3-8-19 A FOURTH SMH WAS FOUND AND NOTED AS SMH#2A. IT WAS BETWEEN #2 & #3 Bill Wood SAID TO DROP #3 AND SMH#2A CALL AS 3 AND NOT GET THE FOURTH

#1 → #2 → #3 → #2A → #3

SOIL DESCRIPTION

FRESH AIR CALIBRATION
8:12AM 0.0 ppm

ISOBUTYLENE GAS 100ppm
8:15AM 105 ppm

LOCATION	TIME	READING	NOTE:
SMH #1	8:53	36.8	
SMH #2	9:46	34.6	
SMH #3	9:50	14.2	
CLEANOUT	9:53	7.0	1208
↓	9:55	6.3	1218
↓	9:57	5.4	1230
SMH #1	12:37	6.0	
SMH #2	12:41	24.9	
SMH #3	12:53	33.4	
CLEANOUT	12:51	44.6	1208
↓	12:47	3.2	1218
↓	12:43	27.2	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

SOIL DESCRIPTION

FRESH AIR CALIBRATION

3/11/19

ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	15:22	2.3	
SMH #2	15:27	12.3	
SMH #3	15:36	15.5	
CLEANOUT	15:33	1.9	1208
〃	15:31	2.7	1218
〃	15:29	1.7	1230

MENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

SS - Split Spoon sampler

CTSI — LOG OF BORING — Page 1 of 1

Site Name:	Broad River Amoco	Method:	Total Depth (ft):
Project Number:	18-6580	Sampling Method:	Measuring Point Elev. (ft-msl): Grade
Location:	Columbia SC	Subcontractor/Drillers: Elite Tech/ Deasral rogers	Latitude
Date/Time Started:	MARCH 13 2019	SC Registration: NA	Longitude
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment: NA	Geologist/Engineer: William D Wood

ft-bgs

SOIL DESCRIPTION

FRESH AIR CALIBRATION
8:51 AM 0.0 PPM

ISOBUTYLENE GAS 100ppm
8:57 AM 95.9 ppm

LOCATION	TIME	READING	NOTE:
SMH #1	9:20	13.8	
SMH #2	9:25	9.3	
SMH #3	9:35	4.7	
CLEANOUT	9:32	1.6	1208
〃	9:30	1.9	1218
〃	9:28	1.4	1230
SMH #1	11:37	16.3	
SMH #2	11:41	20.7	
SMH #3	11:50	7.5	
CLEANOUT	11:47	2.7	1208
〃	11:45	4.2	1218
〃	11:43	40.0	1230

ft-bgs

MMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF BORING

Page 2 OF 2

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 13 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
EMH#1	15:33	10.8	
EMH#2	15:37	34.9	
EMH#3	15:52	16.0	
CLEAN OUT	15:50	15.4	1208
↓	15:45	4.1	1218
↓	15:41	59.9	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF BORING

Page 2

Site Name: Broad River Amoco

Project Number: 18-6580

Location: Columbia SC

Date/Time Started: MARCH 13 2014

Date/Time Completed: KEVIN WEAVER

Method:

Sampling Method:

Subcontractor(s):

SC Registration: NA

Monitoring Equipment: NA

Total Depth (ft):

Measuring Point Elev. (ft msl):

Elite Tech/ Dearal rogers

Latitude

Longitude

Geologist/Engineer: William D Wood

Grade

SOIL DESCRIPTION

FRESH AIR CALIBRATION

ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
EMH#1	15:33	10.8	
EMH#2	15:37	34.9	
SMH#3	15:52	16.0	
CLEAN OUT	15:50	15.4	1208
	15:45	4.1	1218
	15:41	59.9	1230

CTSI

LOG OF BORING Page 1 of 2 (10F2)

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Orsters:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 15 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

FRESH AIR CALIBRATION
8:21 AM 0.0ppm

ISOBUTYLENE GAS 100ppm
98.6ppm 8:23AM

LOCATION	TIME	READING	NOTE:
SMH #1	8:56	164.0	HIGHEST ALL WEEK
SMH #2	9:01	36.5	
SMH #3	9:15	15.4	
CLEANOUT	9:12	8.6	1208
〃	9:10	8.2	1218
〃	9:05	20.0	1230
SMH #1	12:12	25.3	
SMH #2	12:18	19.3	
SMH #3	12:24	6.7	
CLEANOUT	12:22	4.7	1208
〃	12:20	4.9	1218
〃	12:16	7.6	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF BORING

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude:	
Date/Time Started:	MARCH 15 2019	SC Registration:	NA	Longitude:	
~~Date/Time Completed~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	15:55	18.1	
SMH #2	16.01	9.4	
SMH #3	16.09	7.1	
CLEAN OUT	16.06	3.5	
〃	16.03	4.6	
〃	15:59	8.9	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF BORING Page 1 of 1 1 of 2

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Driller's:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 18, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN JESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

SOIL DESCRIPTION

FRESH AIR CALIBRATION
9:04AM 0.0ppm

ISOBUTYLENE GAS 100ppm
9:06AM 98.2 ppm

LOCATION	TIME	READING	NOTE:
SMH #1	9:51	61.2	
SMH #2	9:57	2.3	
SMH #3	10:06	2.0	
CLEANOUT	10:03	1.9	12 08
〃	10:01	1.6	1218
〃	9.59	1.0	1230
SMH #1	12:28	96.5	
SMH #2	12:32	44.1	
SMH #3	12:45	62.2	
CLEANOUT	12:42	20.4	1208
〃	12:39	4.1	1218
〃	12:37	1.0	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF BORING

Page 2 of 2

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-5580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Daaral rogers	Latitude:	
Date/Time Started:	MARCH 18 2019	SC Registration:	NA	Longitude:	
Date/Time Completed:	KEVIN JESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs

SOIL DESCRIPTION

ft-bgs

FRESH AIR CALIBRATION — ISOBUTYLENE GAS 100ppm

LOCATION	TIME	READING	NOTE:
SMH #1	16:11	70.3	
SMH #2	16:15	111.0	
SMH #3	16:25	7.8	
CLEAN OUT	16:23	15.2	1208
↓	16:20	3.9	1218
↓	16:18	13.5	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF Boring Page 1 of 2

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 19, 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

FRESH AIR CALIBRATION
8:46 AM 0.0 ppm

ISOBUTYLENE GAS 100ppm
100ppm 8:47 AM

LOCATION	TIME	READING	NOTE:
SMH #1	9:11	21.8	
SMH #2	9:15	2.9	
SMH #3	9:23	2.2	
CLEANOUT	9:21	1.3	1208
↓	9:20	1.4	1218
↓	9:18	1.4	1230
SMH #1	14:26	2.0	
SMH #2	14:29	2.8	
SMH #3	14:37	17.7	
CLEANOUT	14:35	3.7	1208
↓	14:33	5.0	1218
↓	14:31	15.5	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI LOG OF Boring Page 2 OF 2

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 19 2019	SC Registration	NA	Longitude	
Date/Time Completed:	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer:	William D Wood

ft-bgs | SOIL DESCRIPTION | ft-bgs

FRESH AIR CALIBRATION		ISOBUTYLENE GAS 100ppm	
LOCATION	TIME	READING	NOTE:
SMH #1	16:14	1.9	
SMH #2	16:17	10.2	
SMH #3	16:29	3.4	
CLEAN OUT	16:24	2.2	1208
CLEAN OUT	16:22	2.1	1218
CLEAN OUT	16:19	2.9	1230

COMMENTS:

NOTES:
in - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler

CTSI

LOG OF Boring

Site Name:	Broad River Amoco	Method:		Total Depth (ft):	
Project Number:	18-6580	Sampling Method:		Measuring Point Elev. (ft-msl):	Grade
Location:	Columbia SC	Subcontractor/Drillers:	Elite Tech/ Dearal rogers	Latitude	
Date/Time Started:	MARCH 22 2019	SC Registration	NA	Longitude	
~~Date/Time Completed:~~	KEVIN WESSINGER	Monitoring Equipment:	NA	Geologist/Engineer	William D Wood

ft-bgs | **SOIL DESCRIPTION** | ft-bgs

FRESH AIR CALIBRATION
11:18 AM 0.0 ppm

ISOBUTYLENE GAS 100ppm
11:20 104 ppm

LOCATION	TIME	READING	NOTE:
SMH #1	11:26	21.2	
SMH #2	11:30	14.0	
SMH #3	11:38	2.8	
CLEANOUT	11:36	1.9	1208
↓	11:34	2.8	1218
↓	11:32	3.5	1230
SMH #1	13:22	106.0	
SMH #2	13:27	4.8	
SMH #3	13:38	2.5	
CLEANOUT	13:35	2.2	1208
↓	13:33	2.3	1218
↓	13:30	14.2	1230

COMMENTS:

NOTES:
In - indicates inches
ft - indicates depth in feet
ft-bgs - indicates feet below ground surface
ft-msl - indicates feet above mean sea level
N/A - indicates not applicable to this boring
MC - 4-foot Macrocore sampler
SS - Split Spoon sampler