

CITY OF RALEIGH INDUSTRIAL PRETREATMENT MONITORING REPORT

MONTHLY FACILITY STATUS SHEET      Effective January 1, 2008

All monitoring data and sampling frequencies meet permit requirements.       Compliant

All monitoring data and sampling frequencies DO NOT meet permit requirements.       Noncompliant

If non-compliant, did you notify control authority within 24 hours of becoming aware of violations?       yes       no

If non-compliant, did you resample within one week of becoming aware of the violation?       yes       no

All required monitoring has been conducted.       yes       no

Are copies of laboratory report, chain of custody form(s), and Industrial Data Summary Form attached.       Yes       No

If facility is noncompliant or did not resample within one week, please comment on corrective actions being taken in respect to equipment, operation, maintenance, etc., and a time table for improvements to be made and/or why re-sampling did not occur within one week of becoming aware of the violation(s).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

“ I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.”

Furthermore, based on my inquiry of the person or persons directly responsible for managing compliance with the permit limitation for Locally Regulated Organic Compounds (LROC) or Total Toxic Organics(TTO), I certify that, to the best of my knowledge, no dumping of concentrated toxic organics into the wastewaters has occurred since filing of the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the City of Raleigh Industrial Pretreatment Program.

Kenneth Kretschman  
Permittee (Please type or print name of permittee)

(Please note Permittee and Delegated Person may not be the same person.)

Kenneth Kretschman      4/24/16  
Signature of Permittee or Delegated Person      Date

\*If signed by other than permittee, delegation of signatory authority must be on file with the City.”  
Note: Do not sign this report unless the City has a letter of signatory authority on file noting authority has been delegated.





March 09, 2016

## Piedmont Geologic

Sample Delivery Group: L820843  
Samples Received: 03/02/2016  
Project Number: 1535  
Description: NCSU Lot 86 - Water Treatment System Monitoring  
Site: RALEIGH, NC  
Report To: Mr. Pete Dressel  
6003 Chapel Hill Road Suite 145  
Raleigh, NC 27607

Entire Report Reviewed By:



Jimmy Hunt  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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<sup>2</sup>Tc

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<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

*Kenneth R. ...*  
*... 4/14/16*

# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



GWE EFFLUENT L820843-01 GW

Collected by  
Geoffrey Murphrey

Collected date/time  
03/01/16 14:50

Received date/time  
03/02/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG853507	1	03/08/16 02:11	03/08/16 02:11	ACG

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jimmy Hunt  
Technical Service Representative

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

**GWE EFFLUENT**

Collected date/time: 03/01/16 14:50

**SAMPLE RESULTS - 01**

L820843

ONE LAB. NATIONWIDE.



Additional Information

Analyte	Result	Units
pH (On Site)	8	su

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	03/08/2016 02:11	WG853507
Carbon tetrachloride	ND		1.00	1	03/08/2016 02:11	WG853507
Chloroform	ND		5.00	1	03/08/2016 02:11	WG853507
1,2-Dibromoethane	ND		1.00	1	03/08/2016 02:11	WG853507
1,2-Dichloropropane	ND		1.00	1	03/08/2016 02:11	WG853507
1,1,2,2-Tetrachloroethane	ND		1.00	1	03/08/2016 02:11	WG853507
Tetrachloroethene	ND		1.00	1	03/08/2016 02:11	WG853507
Toluene	ND		5.00	1	03/08/2016 02:11	WG853507
Trichloroethene	ND		1.00	1	03/08/2016 02:11	WG853507
1,4-Dioxane	1600		100	1	03/08/2016 02:11	WG853507
(S) Toluene-d8	105		90.0-115		03/08/2016 02:11	WG853507
(S) Dibromofluoromethane	110		79.0-121		03/08/2016 02:11	WG853507
(S) o,o,o-Trifluorotoluene	102		90.4-116		03/08/2016 02:11	WG853507
(S) 4-Bromofluorobenzene	96.9		80.1-120		03/08/2016 02:11	WG853507



Method Blank (MB)

(MB) 03/08/16 00:23

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Benzene	ND		0.00100
Carbon tetrachloride	ND		0.00100
Chloroform	ND		0.00500
1,2-Dibromoethane	ND		0.00100
1,2-Dichloropropane	ND		0.00100
1,1,2,2-Tetrachloroethane	ND		0.00100
Tetrachloroethene	ND		0.00100
Toluene	ND		0.00500
Trichloroethene	ND		0.00100
1,4-Dioxane	ND		0.100
(S) Toluene-d8	105		90.0-115
(S) Dibromofluoromethane	109		79.0-121
(S) a,a-Trifluorotoluene	99.8		90.4-116
(S) 4-Bromofluorobenzene	98.9		80.1-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 03/07/16 22:57 • (LCSD) 03/07/16 23:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0268	0.0269	107	108	73.0-122			0.460	20
Carbon tetrachloride	0.0250	0.0270	0.0276	108	110	70.9-129			2.27	20
Chloroform	0.0250	0.0285	0.0283	114	113	73.2-125			0.850	20
1,2-Dibromoethane	0.0250	0.0248	0.0260	99.3	104	79.8-122			4.78	20
1,2-Dichloropropane	0.0250	0.0279	0.0281	112	112	77.4-125			0.590	20
1,1,2,2-Tetrachloroethane	0.0250	0.0244	0.0255	97.6	102	79.3-123			4.32	20
Tetrachloroethene	0.0250	0.0237	0.0238	94.9	95.4	73.5-130			0.510	20
Toluene	0.0250	0.0266	0.0265	106	106	77.9-116			0.120	20
Trichloroethene	0.0250	0.0250	0.0254	100	101	79.5-121			1.43	20
(S) Toluene-d8				105	104	90.0-115				
(S) Dibromofluoromethane				111	111	79.0-121				
(S) a,a-Trifluorotoluene				101	100	90.4-116				
(S) 4-Bromofluorobenzene				96.1	97.0	80.1-120				



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
-----------	-------------

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

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<sup>8</sup> Al

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# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.  
 \* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

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<sup>3</sup> Ss

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<sup>6</sup> Qc

<sup>7</sup> GI

<sup>8</sup> AI

<sup>9</sup> Sc

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA	100789
A2LA - ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6-9</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**





March 15, 2016

## Piedmont Geologic

Sample Delivery Group: L820844  
Samples Received: 03/02/2016  
Project Number: 1535  
Description: NCSU Lot 86 - Water Treatment System Monitoring  
Site: RALEIGH, NC  
Report To: Mr. Pete Dressel  
6003 Chapel Hill Road Suite 145  
Raleigh, NC 27607

Entire Report Reviewed By:

*Brian Ford*

Brian Ford

Technical Service Representative

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<sup>4</sup> GI

<sup>5</sup> AI

<sup>6</sup> Sc

Brian Ford  
Technical Service Representative

Project Narrative

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L820844 -01, -02 contains subout data that is included after the chain of custody.



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Qualifier                      Description

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Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

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L# **80944**  
 Table **K098**  
 Account: **PIEGEO**  
 Template: **T82912**  
 Prelogin: **P542881**  
 TSR: **350 Jimmy Hunt**  
 PB: **20516 vrb**  
 Shipped Via: **FedEx Ground**

Rem./Contaminant	Sample # (lab only)
	61
	62

Analysis / Container / Preservative

Analysis / Container / Preservative	Hold #	Condition (lab use only)

**Piedmont Geologic**  
 6003 Chapel Hill Road Suite 145  
 Raleigh, NC 27607

Report to:  
**Mr. Pete Dressel**  
 Email To: [pdressel@piedmontgeologic.com](mailto:pdressel@piedmontgeologic.com)

City/State Collected: **Raleigh, NC**  
 Lab Project # **PIEGEO-NCSU LOT 86**  
 P.O. # **1347**

Date Results Needed

Email?	No	Yes	FAX?	No	Yes
		X			

Sample ID	Comp/Grab	Matrix	Depth	Date	Time	No. of CNTS
<b>GWE EFFLUENT</b>	<b>Grab</b>	<b>GW</b>		<b>3/1/16</b>	<b>1450</b>	<b>2</b>
<b>GWE EFFLUENT</b>	<b>↓</b>	<b>GW</b>		<b>↓</b>	<b>↓</b>	<b>1</b>
<b>FIELD BLANK</b>	<b>↓</b>	<b>GW</b>		<b>↓</b>	<b>1440</b>	<b>1</b>

\* Matrix: **SS - Soil** **GW - Groundwater** **WW - WasteWater** **DW - Drinking Water** **OT - Other**

Remarks: **V8260AP9 = Benzene, CCl4, Toluene, 1122-TCA, TCE, Chloroform, ED8, 12-DCPA, PCE, 14-Dioxane**  
**(Report 1,4-Dioxane down to the MDL)**

PIEGEO0805135

Relinquished by: (Signature) *[Signature]* Date: **3/1/16** Time: **16:20**

Relinquished by: (Signature) *[Signature]* Date: **3/1/16** Time: **17:10**

Relinquished by: (Signature) *[Signature]* Date: **3/1/16** Time: **17:10**

Temp: **8.0** Temp **8.0** Temp **8.0**

Flow **8.0** Flow **8.0** Flow **8.0**

Samples returned via:  FedEx  Courier  UPS

Temp: **3.2** °C Bottles Received: **4**

Date: **3-2-16** Time: **9:00**

Received by: (Signature) *[Signature]* Time: **16:20**

Received by: (Signature) *[Signature]* Time: **17:10**

Received for lab by: (Signature) *[Signature]* Time: **17:10**



March 14, 2016

Ms. Janice Cozby  
Environmental Science Corporation  
12065 Lebanon Road  
Mount Juliet, Tennessee 37122

Re: Routine Analysis  
Work Order: 392476

Dear Ms. Cozby:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 03, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4289.

Sincerely,

Julie Robinson  
Project Manager

Purchase Order: S23377  
Chain of Custody: WG853362  
Enclosures



## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Certificate of Analysis Report for

ENVL001 Environmental Science Corporation  
Client SDG: 392476 GEL Work Order: 392476

**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Julie Robinson.

Reviewed by \_\_\_\_\_

*Julie Robinson*





# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: March 14, 2016

Page 1 of 2

**Environmental Science Corporation**  
**12065 Lebanon Road**  
**Mount Juliet, Tennessee**

**Contact: Ms. Janice Cozby**

**Workorder: 392476**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis-Mercury</b>											
Batch	1549883										
QC1203502230	LCS										
Mercury	5.00			4.76	ng/L		95.1	(77%-123%)	LYG1	03/04/16	13:58
QC1203502229	MB										
Mercury			U	<0.2	ng/L					03/04/16	12:43
QC1203502231	392417008	MS									
Mercury	25.0	6.36		30.1	ng/L		94.9	(71%-125%)		03/04/16	15:57
QC1203502232	392417008	MSD									
Mercury	25.0	6.36		27.8	ng/L	7.84	85.8	(0%-24%)		03/04/16	16:03

**Notes:**

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- NI See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 392476

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

**There are no "Data Exception Reports" associated with this analytical report.**

# Sub-Contract Chain of Custody

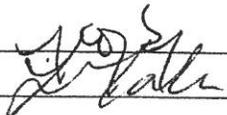
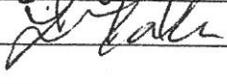
 **Environmental Science Corp**  
 12065 Lebanon Road  
 Mt. Juliet, TN 37122  
 (615) 773-9756 (615) 758-5859 fax

392476

Sub-Contract Lab : GEL  
 City / State : Charleston, SC  
 Results Needed by : 3/16/16  
 ESC Purchase Order # : S23377  
 Send Reports To : Janice Cozby jcozby@esclabsciences.com

**WORKGROUP**      **WG853362**  
 Date Created :      **3/2/16**

SAMPLENO Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L820844-01 20014328 20014328	GW	030116 1450	Mercury	HG1631	1631E	GWE EFF
L820844-02 20014329 20014329	GW	1440	Mercury	HG1631	1631E	FB

Relinquished by:       Date: 030216  
 Received by:       Date: 030316 0905  
 Relinquished by: \_\_\_\_\_      Date: \_\_\_\_\_  
 Page Received by: \_\_\_\_\_      Date: \_\_\_\_\_

**SAMPLE RECEIPT & REVIEW FORM**

Client: <b>ENVL</b>		SDG/AR/COC/Work Order: <b>392476</b>	
Received By: <b>Lisa Tola</b>		Date Received: <b>030316</b>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <b>0</b>	
Classified Radioactive II or III by RSO?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Package, COC, and/or Samples marked as beryllium or asbestos containing?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: <b>UN#:</b>	
Samples identified as Foreign Soil?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue Ice Dry Ice None Other (describe) <b>18°C</b>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <b>4150232</b> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: <b>PH=2 All</b>
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Preservation added, List: Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.				Circle Applicable: <b>FedEx Air</b> FedEx Ground UPS Field Services Courier Other <b>661736168604</b>

Comments (Use Continuation Form if needed):

**List of current GEL Certifications as of 14 March 2016**

<b>State</b>	<b>Certification</b>
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-16314-1  
Client Project/Site: NCSU Lot 86

For:  
Piedmont Geologic P.C.  
6003 Chapel Hill Road  
Suite 145  
Raleigh, North Carolina 27607

Attn: Pete Dressel

*Rhonda Ridenhower*

---

Authorized for release by:  
3/18/2016 1:43:00 PM

Rhonda Ridenhower, Manager of Project Management  
(314)298-8566  
rhonda.ridenhower@testamericainc.com

### LINKS

Review your project  
results through  
**Total Access**

Have a Question?

**?** Ask  
The  
Expert

Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

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

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

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# Case Narrative

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

Job ID: 160-16314-1

Laboratory: TestAmerica St. Louis

Narrative

## CASE NARRATIVE

Client: Piedmont Geologic P.C.

Project: NCSU Lot 86

Report Number: 160-16314-1

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

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

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

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

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

### RECEIPT

The samples were received on 03/02/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 19.0 C.

### GROSS ALPHA AND GROSS BETA RADIOACTIVITY

Sample GWE EFFLUENT (160-16314-1) was analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with USEPA Method 900.0. The samples were prepared on 03/05/2016 and analyzed on 03/11/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### TRITIUM, TOTAL (LSC)

Sample GWE EFFLUENT (160-16314-1) was analyzed for Tritium, Total (LSC) in accordance with USEPA 906.0. The samples were prepared on 03/10/2016 and analyzed on 03/13/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Case Narrative

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

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**Job ID: 160-16314-1 (Continued)**

---

**Laboratory: TestAmerica St. Louis (Continued)**



Chain of Custody Record

<b>Client Information</b> Client Contact: Pete Dressel Company: Piedmont Geologic P.C. Address: 6003 Chapel Hill Road Suite 145 City: Raleigh State/Zip: NC, 27607 Phone: 919-854-9700(Tel) Email: pjdressel@piedmontgeologic.com Project Name: NCSU Lot 86 Size:		Lab PM: Rhonda Ridenhower E-Mail: rhonda.ridenhower@testamericainc.com Carrier Tracking No(s): COC No: 160-2264-1097.1 Page: 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): PO #: Purchase Order not required WO #:		Analysis Requested Total Number of Containers:	
Sample Identification GWE Effluent		Field Filtered Sample (Yes or No)	
Sample Date: 3/11/16 Sample Time: 1450 Sample Type (C=Comp, G=grab): G Matrix (W=Water, S=solid, O=soil, L=leachate, A=air): Water		906.0 - Tritium 900.0 - Gross Beta	
Preservation Code:		Special Instructions/Note: 160-16314 Chain of Custody	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: <i>Pete Dressel</i> Relinquished by: <i>Geoffrey Murphy</i> Relinquished by:		Date/Time: 3/11/16 1600 Date/Time: 3/2/16 0925 Date/Time:	
Custody Seals Intact: A Yes Δ No		Cooler Temperature(s) °C and Other Remarks:	



## Login Sample Receipt Checklist

Client: Piedmont Geologic P.C.

Job Number: 160-16314-1

**Login Number: 16314**

**List Source: TestAmerica St. Louis**

**List Number: 1**

**Creator: Daniels, Brian J**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\neq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## Definitions/Glossary

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

### Qualifiers

#### Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Method Summary

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



# Sample Summary

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-16314-1	GWE EFFLUENT	Water	03/01/16 14:50	03/02/16 09:25

---



# Client Sample Results

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

**Client Sample ID: GWE EFFLUENT**

**Lab Sample ID: 160-16314-1**

Date Collected: 03/01/16 14:50

Matrix: Water

Date Received: 03/02/16 09:25

**Method: 900.0 - Gross Alpha and Gross Beta Radioactivity**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Beta	1.59		0.623	0.642	4.00	0.841	pCi/L	03/05/16 14:45	03/11/16 15:34	1

**Method: 906.0 - Tritium, Total (LSC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	2590		474	526	500	451	pCi/L	03/10/16 13:40	03/13/16 18:29	1



# QC Sample Results

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-239240/1-A					Client Sample ID: Method Blank					
Matrix: Water					Prep Type: Total/NA					
Analysis Batch: 240130					Prep Batch: 239240					
Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Beta	0.1036	U	0.489	0.490	4.00	0.856	pCi/L	03/05/16 14:45	03/11/16 15:34	1

Lab Sample ID: LCSB 160-239240/3-A					Client Sample ID: Lab Control Sample					
Matrix: Water					Prep Type: Total/NA					
Analysis Batch: 240130					Prep Batch: 239240					
Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Gross Beta	93.2	94.38		9.96	4.00	0.859	pCi/L	101	75 - 125	

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-239980/1-A					Client Sample ID: Method Blank					
Matrix: Water					Prep Type: Total/NA					
Analysis Batch: 240327					Prep Batch: 239980					
Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0000	U	246	246	500	448	pCi/L	03/10/16 13:40	03/13/16 17:43	1

Lab Sample ID: LCS 160-239980/2-A					Client Sample ID: Lab Control Sample					
Matrix: Water					Prep Type: Total/NA					
Analysis Batch: 240327					Prep Batch: 239980					
Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Tritium	4670	5095		768	500	458	pCi/L	109	74 - 114	

Lab Sample ID: 160-16314-1 DU					Client Sample ID: GWE EFFLUENT					
Matrix: Water					Prep Type: Total/NA					
Analysis Batch: 240327					Prep Batch: 239980					
Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tritium	2590		2532		513	500	439	pCi/L	0.06	1



# QC Association Summary

Client: Piedmont Geologic P.C.  
Project/Site: NCSU Lot 86

TestAmerica Job ID: 160-16314-1

## Rad

### Prep Batch: 239240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16314-1	GWE EFFLUENT	Total/NA	Water	Evaporation	
LCSB 160-239240/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-239240/1-A	Method Blank	Total/NA	Water	Evaporation	

### Prep Batch: 239980

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16314-1	GWE EFFLUENT	Total/NA	Water	LSC_Dist_Susp	
160-16314-1 DU	GWE EFFLUENT	Total/NA	Water	LSC_Dist_Susp	
LCS 160-239980/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-239980/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

