Haley & Aldrich, Inc.
400 Augusta Street
Suite 130
Greenville, SC 29601
864.214.8750

30 June 2015
File No. 38111-009

Georgia Environmental Protection Division
Response and Remediation Program; Release Notification Unit
2 Martin Luther King Jr. Drive, SE
Suite 1462 East
Atlanta, Georgia 30334

Attn: Allan C. Nix, P.G.

Subject: June 2015 Semiannual Progress Report
General Time Facility
100 Newton Bridge Road - Athens, Georgia

Dear Mr. Nix:

Carpenter Technology Corporation (CTC) was conditionally approved to enroll into the Georgia Voluntary Remediation Program (VRP) in April 2014. EPD's conditional approval specifies "monitored natural attenuation" (MNA) as the corrective action for contaminated groundwater on-site but indicates that other corrective action alternatives will have to be evaluated and implemented as well. Specifically, the Georgia Environmental Protection Division (EPD) has requested that CTC submit a plan to address the high trichloroethene (TCE) concentrations in groundwater at the MW-16 well cluster. CTC complied with this request by submitting a plan in the October 2014 Semiannual Progress Report.

In addition to the proposed groundwater remediation plan, the October 2014 Semiannual Progress Report included surface water sampling results from the North Oconee River and groundwater sampling results from monitoring well MW-8I. The surface water samples were collected adjacent to the MW-11 well cluster and downstream of the site to document no adverse effects to potential ecological or human receptors. The groundwater sample was obtained to evaluate shallow groundwater and the potential risk for vapor intrusion adjacent to the Dairy Pak facility.

The proposed groundwater remediation plan built on the results of an initial field scale study to evaluate the effectiveness of Enhanced In-Situ Bioremediation (EISB) in addressing the TCE hot-spot. Initial field testing of EISB, using Regenesis' 3D micro-emulsion (3DMe), showed the efficacy of injecting biological amendments into the subsurface, however, the 3DMe substrate did not produce the desired reduction in TCE concentration that was observed in the bench-scale study. As a result the initial field testing was considered inconclusive. Consequently, CTC engaged the services of TRC Environmental Corporation to evaluate the effectiveness and efficiency of utilizing an alternative soluble and readily degradable

substrate (sodium lactate) to enhance the rate of TCE dechlorination in groundwater in the vicinity of the MW-16 well cluster. The results of this evaluation are provided in Attachment A.

Pursuant to the VRP approval letter, this semiannual progress report also includes a list of impacted downgradient qualifying properties to be brought into the VRP under the General Time site. It is our understanding that EPD does not currently have a formal process for including additional qualifying properties. CTC would simply need permission from the property owners to bring them into the VRP under General Time. CTC has access to their properties to conduct work. A list of downgradient qualifying properties is provided in Attachment B.

On May 7, 2015, EPD provided comments on October 2014 VRP Semiannual Report. The following narrative addresses these comments. CTC understands that these comments must be addressed to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards, and policies of the Act.

EPD Comment 1: A semiannual monitoring program on site, of both groundwater and surface water, will be required and should be implemented immediately. Specify sampling points for the monitoring program, including wells and four surface-water locations. For more detail, refer to Comment 4 in EPD's April 16, 2014, letter, Supplemental Comments on Revised Voluntary Remediation Program Application of December 2013.

CTC Response: A semiannual groundwater and surface water monitoring program will be implemented for the General Times site. The monitoring program will consider EPD Comment 1 above as well as Comment 4 in EPD's April 16, 2014, letter, Supplemental Comments on Revised Voluntary Remediation Program Application of December 2013. The results of semiannual groundwater and surface water sampling will be provided in future progress reports.

EPD Comment 2: As of the date of this letter, the second VRP semiannual report, which was due on April 16, 2015, has not been received. To avoid possible removal of the site from the VRP, reports must be submitted in a timely fashion.

CTC Response: CTC appreciates EPD's understanding and apologizes for the delay in submitting VRP Progress Report 2 and understands that the deadline for submitting future reports will not change as a result. VRP Progress Report 3 will be submitted on or before October 16, 2015.

EPD Comment 3: Please calculate updated risk-reduction standards for the constituents of concern on site. Refer to Comments 1, 2, and 3 in EPD's April 16, 2014, supplemental comments letter.

CTC Response: Haley & Aldrich, on behalf of CTC, has calculated updated risk-reduction standards (RRS's) as requested. These updated RRS's are provided in Table 1.

EPD Comment 4: No site plan, potentiometric-surface map, or sampling-location plan was presented in the report. Accordingly, the locations of surface water sampling points SW-1 and SW-2 could not be determined. Every future VRP semiannual report should include:

1. A site plan depicting the location of every well on site
2. A sample-location map depicting surface-water and groundwater sampling locations; the map should include callouts specifying detected concentrations of individual COCs at each sampling location
3. A potentiometric-surface map indicating the direction of groundwater flow across the site

CTC Response: EPD's comment is acknowledged. Future reports, submitted after the semiannual groundwater and surface water monitoring program is implemented, will include the requested maps.

EPD Comment 5: EPD remains concerned that the groundwater-surface water transitional zone, the riparian zone, and surface water in the vicinity of the MW-11 well cluster may have been impacted by TCE concentrations in groundwater. The MW-11 wells are located in possible wetlands, which heightens EPD's concern regarding the dissolved TCE plume in that area. Accordingly:

1. Propose an ecological assessment for that portion of the site, including sediment sampling. For the site to be eventually delisted under the VRP, the ecological assessment and any associated remediation must be conducted within the time frame allotted for completion of all VRP activities.

2. Provide GPS coordinates obtained in the field for the MW-11 well cluster, as requested in Comment 7(b) of EPD's April 16, 2014, supplemental comment letter, and as requested in earlier EPD documents. These coordinates should be provided in the next semiannual report, or sooner if they are available. Along with the coordinates, provide the date and time they were obtained, weather conditions, the make and model of the GPS unit, and the margin for error.

CTC Response: Since site COC's have not been detected in the North Oconee River and discharge to the North Oconee River is the only potentially completed pathway that was identified, CTC does not recognize or understand the need for an ecological assessment. Clearly, if semiannual sampling of groundwater and surface water indicates a changed condition with detectable levels of COCs above ecological screening values being measured in surface water, CTC will respond accordingly, recognizing that an ecological assessment and remediation may be needed.

In response to Comment 5(b) above and your January 8, 2013 e-mail asking for the same information, Dan McDonnell and Mark Miesfeldt (Haley & Aldrich) visited the General Time site on January 31, 2013 to independently establish coordinates for the MW-11 well cluster and ensure that the wells were correctly plotted on the project base map. Prior to visiting the site, Haley & Aldrich reviewed the project database to make sure that the well coordinate, provided by Geolab personnel, were correctly entered and to confirm that the wells plotted on the base map matched those coordinates. The resulting base map was compared to historical maps, contained in previous reports, and was found to be consistent.

During the site visit, Haley & Aldrich independently established coordinates for several monitoring wells, including the MW-11 well cluster, using a hand held GPS unit. The coordinates obtained matched the

coordinates contained in the project database confirming that the MW-11 well cluster is located correctly. The coordinates for the MW-11 well cluster are as follows:

- *MW-11S - N 33º 58' 54.6" W 083º 23' 11.7"*
- *MW-11I - N 33º 58' 54.6" W 083º 23' 11.7"*
- *MW-11D - N 33º 58' 54.6" W 083º 23' 11.7"*

EPD Comment 6: Evaluate the potential for vapor intrusion in buildings downgradient of the former General Time facility. We recommend use of the EPA VISL screening tool and then, if risk standards are exceeded, use of a more advanced model, such as Johnson & Ettinger. EPD does not concur with the hypothesis that clean groundwater overlies contaminated groundwater downgradient of the former General Time facility. More data is required to support this conclusion, because insufficient data is available to make a definitive statement on contaminant stratification within the on-site aquifers.

CTC Response: Previous sampling results obtained from a shallow well located between the former General Times site and Georgia Power, as well as a shallow well located adjacent to Champion Dairy Pak showed that the shallow groundwater off-site was not impacted and that the VOC plume off-site was overlain by un-impacted groundwater, thereby mitigating the risk of vapor migration at these off-site properties. However, to address EPD's concern Haley & Aldrich, on behalf of CTC, calculated vapor intrusion screening levels (VISL) using EPA's VISL screening tool. The VISL for TCE calculated using this extremely conservative screening tool was 9 ug/L. For comparison purposes, historical sampling results from wells screened in the intermediate zone at the top of bedrock were used. TCE concentrations exceed this screening level downgradient of Georgia Power but drop below this level beneath Champion Dairy Pak.

To further evaluate the vapor intrusion potential down-gradient of the property the Johnson-Ettinger groundwater to indoor air vapor intrusion model (J&E Model) was used. The J&E Model allows for consideration of property-specific hydrogeological and building information to allow for assessment of vapor intrusion potential. Therefore, the J&E model was run with following property-specific input parameters:

- *Depth to GW: 7 ft*
- *Soil type: Silty Clay because the vadose zone soil is beneath the study area is saprolite*
- *Commercial slab-on-grade construction with a six inch floor slab*
- *Vapor migration assume to occur into a ground-level office 8 ft x 8 ft x 8 ft with an air exchange rate of 1.5/hr (based on the median air exchange rate in commercial buildings as cited in EPA's 2011 Exposure Factors Handbook)*
- *Current EPA toxicity values for trichloroethene*
- *Full-time commercial worker exposure factors that assume exposure to TCE migrating from groundwater to indoor air 8 hours per day, 250 days per year, for 25 years.*

J&E model calculations are provided in Attachment C. As indicated, a TCE concentration in groundwater of 8,180 ug/L would be protective for an excess lifetime cancer risk of 1 in 1 million and a hazard index of 1, for vapor intrusion into a commercial building overlying TCE in groundwater. Off-site

groundwater concentrations are significantly lower than the values calculated using J&E regardless of sampling interval Haley & Aldrich, therefore Haley & Aldrich concludes that the vapor intrusion risk at off-site downgradient properties is negligible.

EPD Comment 7: A point of exposure and point of demonstration will have to be specified, pursuant to the Act. Refer to Comment 5 in EPD's April 16, 2014, supplemental comments letter.

CTC Response: EPD's comment is acknowledged. A point of exposure and a point of demonstration will be specified as CTC works through the process.

EPD Comment 8: Regarding future groundwater sampling, please note the following:

1. EPD requires adherence to the USEPA Region 4 groundwater sampling operating procedures (OPs), "Procedure SESDPROC-301-R3, Groundwater Sampling," effective March 6, 2013. The OPs and can be accessed on the Internet at http://www.epa.gov/region4 /sesd/fbqstp.
2. On all groundwater sampling field logs, the depth to the tube or pump intake should be included. When conducting low-flow sampling or micropurging, the pump intake should be positioned in the middle of the screened interval, whereas with a traditional multi-volume purge, the pump intake should be positioned near the top of the water column.
3. Turbidity in groundwater samples should be less than 10 NTUs whenever possible. Low turbidity is especially important in groundwater samples that will be undergoing metals analysis.

CTC Response: Field staff supporting CTC on future sampling efforts will conduct their work in accordance with the referenced guidance and procedures.

EPD Comment 9: Groundwater sampling field logs and a narrative describing groundwater sampling protocols should be provided in every semiannual report. No groundwater sampling logs or a description of the MW-8I groundwater sampling protocols were provided in the current report.

CTC Response: Groundwater sampling field logs and a narrative describing groundwater sampling protocols will be provided in semiannual reports.

EPD Comment 10: Please provide future digital copies of semiannual reports in a searchable PDF format. A copy of EPD's guidelines on document-submittal formatting is enclosed

CTC Response: Digital copies of semiannual reports, in a searchable PDF format, will be provided for future submittals in accordance with EPD guidelines.

SURFACE WATER SAMPLING RESULTS

Based on the CSM, and knowing that the on-site building is unoccupied and could not be re-occupied without significant improvements to the roof, the only ***potential*** exposure pathway to site-related groundwater contamination is discharge of groundwater to surface water at the North Oconee River, with subsequent exposure to the surface water by aquatic organisms and people who use the river recreationally and as a source of potable water.

Surface water samples collected from the North Oconee River on June 3, 2015 continue to show that VOCs are not present in surface water adjacent to the MW-11 well cluster or downstream of the Site; therefore, potential surface water receptors are not being impacted by the VOCs detected in groundwater. The CSM is therefore still valid. Analytical reports are provided in Attachment D.

CLOSING

As required in the VRP guidance a monthly summary of hours invoiced and description of services provided since the last submittal is provided as Attachment E. An updated milestone schedule is provided as Figure 1.

If you have any questions or need additional information, please do not hesitate to call Sean McGowan at 610.334.2701 or Mark Miesfeldt at 864.214.8751.

Sincerely yours,
HALEY & ALDRICH, INC.

Mark Miesfeldt,
Project Manager

Daniel E. McDonnell, P.G.
Georgia Registration No. PG002083

Attachments: Table1
Figure 1
Attachments A through E

\\GRN\common\38111 Carpenter GA\2015\Semiannual Report\2015-0630-HAI_VRP Report _F.docx

PROFESSIONAL GEOLOGIST CERTIFICATION

I certify that I am a qualified groundwater scientist who has received a post-graduate degree in the natural sciences, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this VRP Application prepared for Carpenter Technology Corporation for the General Time site, located in Athens, Georgia, was prepared by myself and appropriate qualified subordinates working under my direction.

June 30, 2015

Daniel E. McDonnell, P.G. Date
Georgia Professional Geologist Registration No. 002083

HALEY ALDRICH

TABLE

TABLE 2
RISK REDUCTION STANDARDS
GENERAL TIME FACILITY
ATHENS, GEORGIA

MEDIA	PARAMETER	Type I (µg/L)	Type II (µg/L)	Type III (µg/L)	Type IV (µg/L)
Groundwater	Tricholorethene	5	6.3	5	371
	cis-1,2-Dichloroethene	70	--	70	--
	trans-1,2-Dichloroethene	100	440	100	27,143
	1,1-Dichloroethene	7	230	7	13,571
	1,1,2-Trichloroethane	5	7.7	5	457
	Methylene Chloride	5	5,500	5	328,571
	Vinyl Chloride	2	1.60	2	386

FIGURE

FIGURE 1
PROJECT MILESTONE SCHEDULE
GENERAL TIME FACILITY ATHENS GEORGIA

No.	TASK	2013				2014				2015				2016				2017			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	VRP Application Submittal																				
2	Delineation	COMPLETE																			
3	Annual Groundwater and Surface Water Sampling																				
4	Initiate Supplemental Remedial Activities (In-Situ Bioremediation)																				
5	Semiannual Reporting																				
6	Compliance Status Report Submittal																				

NOTES: VRP application was approved on April 16, 2014
October Semiannual Progress Report Submittals include the annual groundwater and surface water sampling and anlaysis

ATTACHMENT A

TRC Pilot Test Report

HALEY ALDRICH

12th Floor East Tower
Centre Square
1500 Market Street
Philadelphia, PA 19102

215.246.3447 PHONE
215.665.5748 FAX

www.TRCsolutions.com

June 29, 2015

Mr. Sean McGowan
Carpenter Technology Corporation
101 West Bern Street
Reading, PA 19601

Subject: Former General Time Facility
Athens, Georgia
ERD Pilot Test Report

Dear Mr. McGowan:

TRC Environmental Corp. (TRC) conducted a pilot test for Enhanced Reductive Dechlorination of trichloroethylene (TCE) beneath the building at the former General Time facility on November 12, 2014. This report presents the pilot test design, implementation and subsequent groundwater sampling results.

Pilot Test Goal

The goal of the pilot test was to evaluate the effectiveness and efficiency of utilizing a soluble and readily degradable substrate (sodium lactate) to enhance the rate of TCE dechlorination in groundwater underlying the Site in the vicinity of MW-16I. The short term pilot test was designed to evaluate the effective radius of influence and substrate utilization rates for lactate amendment of groundwater.

Pilot Test Design

TRC utilized water from the Municipal water service to the building, amended the water with sodium lactate and injected the water into MW-16I. The pilot test was designed to deliver 1,200 gallons of water amended with 90 gallons of 60% lactate, followed by 100 to 200 gallons of water to flush the well screen.

Pilot Test Implementation

The pilot test was implemented on November 12, 2014 with notice to Georgia Environmental Protection Division (Attachment 1) for Underground Injection Control program compliance.

Pre- and Post-Injection Monitoring

Pre-injection groundwater sampling was performed on the day of the lactate injection during the timeframe for installation of pilot test equipment. Geo Lab of Dracula, Georgia provided and operated the injection equipment for the Pilot Test. Pre-injection sampling included MW-16I, HAMP-6, and HAMP-7. Attachment 2 presents a field diagram of the well locations relative to the room of the former manufacturing facility in which the pilot test was performed.

The November 12, 2014 pre-test groundwater sampling parameters included:

- VOC by USEPA Method 8260B
- Dissolved Iron via USEPA Method 6010B
- Wet chemistry for Sulfate, Total Kjeldahl Nitrogen, and Total Organic Carbon

Post-injection groundwater sampling was performed on:

- January 8, 2014 for monitoring wells MW-16I, HAMP-3, HAMP-4, HAMP-6, and HAMP-7. This sampling round included adding HAMP-3 and HAMP-4 to the program to provide coverage for the pilot test area.
- February 25, 2015 for monitoring wells MW-16I, HAMP-3, HAMP-4, HAMP-6, HAMP-7 and, MW-2I. MW-2I is located outside the former manufacturing building and downgradient of the pilot test area.
- April 30, 2015 for monitoring wells MW-16I, HAMP-3, HAMP-4, HAMP-6, and HAMP-7.

All post-injection monitoring groundwater sampling included laboratory analyses for the following parameters.

- VOC by USEPA Method 8260B
- Dissolved Iron via USEPA Method 6010B
- Wet chemistry for Sulfate, Total Kjeldahl Nitrogen, and Total Organic Carbon, Nitrate, Nitrite, and Alkalinity

All laboratory analyses for this pilot test were performed by Eurofins Lancaster Laboratories, LLC of Lancaster, Pennsylvania. Laboratory analytical reports are presented in Attachment 3.

Table 1 summarizes the analytical sampling results as well as presents a summary of field parameter analyses performed to evaluate field stabilization prior to collecting groundwater

samples. All sampling points were purged until stabilization of field parameters. The field parameter values provided on Table 1 represent the final stable field measurements.

Results

Post remediation groundwater monitoring was initiated January 8, 2014, approximately 2 months following the injection event. The January 8, 2015 sampling data indicated that MW-16I, the injection well, exhibited a significant increase in Total Organic Carbon (TOC) from a baseline value of 5.9 mg/l to 5,380 mg/l in response to the amendment injection. This indicates that the desired delivery of soluble lactate substrate was accomplished. The resulting TOC concentration exceeded the anticipated design in-formation lactate concentration of 1,800 mg/l, suggesting a lower saturated zone dispersion than originally anticipated.

Of interest is the decrease in sulfate from a pre-test concentration of 186 mg/l to 128 mg/l during January 2015 and 111 mg/l during February 2015. Both sulfate-reducing and TCE-reducing bacteria complete for substrate in the natural environment. Typically TCE reducing bacteria are not as aggressive as sulfate reducing bacteria. The decreasing sulfate concentrations suggests that conditions in the vicinity of MW-16I favor complete TCE reduction once dissolved sulfate is consumed in the vicinity of ME-16I. The rapid increase in acetone in MW-16I for the January sampling event indicates that lactate is being degraded. It is anticipated that the positive increase in acetone is a degradation product of lactate. For full scale TCE ERD projects, acetone is generally short-lived and is degraded along with TCE.

It is noted that TOC decreases to baseline conditions, from 5,380 mg/l to 14.3 in MW-16I by the time of the April 2015 sampling event. It is further noted that the decrease in TOC concentration in MW-16I observed during February 2015 from 5,380 mg/l to 292 mg/l is coupled with a corresponding increase in TOC concentration in HAMP-3 from 22.5 mg/l to 2,490 mg/l followed by additional increase to 5,700 mg/l observed during April 2015. This suggests that the TOC migrated from MW-16I to HAMP 3 over the course of a few months. Attachment 4 presents a hydrograph for the middle Oconee River near Athens, GA from the United States Geological Survey (USGS) interactive National Water Information System: Web Interface webpage. The hydrograph indicates some significant spikes in stream discharge during the winter months of 2015. This suggests that significant precipitation is occurring during the pilot test and an increase in groundwater gradient that was sufficient to push the TOC from the vicinity of MW-16I the distance of 20 to 25 feet to HAMP 3. The following summarizes changes in depth to groundwater throughout the pilot test:

Depth to Groundwater Change During Pilot Test

	Depth To Groundwater (ft)				Change in Groundwater (ft)				
Well/Date	11/12	1/6	2/23	4/30	Nov to Jan	Nov to Feb	Nov to Apr	Jan to Feb	Jan to Apr
MW-16I	21.28	19.52	19.23	17.60	1.76	2.05	3.68	0.29	1.92
HAMP-3	NM	16.42	15.31	15.21	-	-	-	1.11	1.21
HAMP-4	NM	16.42	15.94	15.95	-	-	-	0.48	0.47
HAMP-6	18.11	16.60	16.40	14.65	1.51	1.71	3.46	0.20	1.95
HAMP-7	18.18	16.26	15.61	14.85	1.92	2.57	3.33	0.65	1.41

The Table above indicates an overall increase in groundwater elevation in MW-16I of 3.68 feet from November 2014 to April 2015 with slightly smaller changes in groundwater elevation in HAMP-6 and HAMP-7 indicating a possible mound in the vicinity of MW-16I. The smallest groundwater change is noted for HAMP-4 for the period January 2015 through April 2015 of 0.47 feet versus a change in depth to groundwater of 1.92 feet in MW-16I during the same timeframe. In general it appears that changes in depth to water during the pilot test confirm an increased gradient away from MW-16I. It is anticipated that the surface elevation of the HAMP points will be measured during upcoming events, but at the time of this test, well casing elevation data is not available for the wells inside the building except for MW-16I. It is noted that MW-16I is the only well with a stickup (approximately 2 ft.), all other wells are flush-mounted.

It is noted that nitrate decreases to non-detect in MW-16I during the pilot test which is indicative of microbial growth. Additionally, TCE concentrations in MW-16I are generally steady at approximately 10,000 to 12,000 ug/l but increase to 18,000 ug/l during the April 2015 sampling event. Similarly, TCE concentrations increase from 760 ug/l to 3200 ug/l at HAMP-3 during the course of the pilot test. The TCE concentration variability observed during the pilot test are typical of pilot test results at other sites. This variability in TCE is consistent with historical concentrations in MW-16I with the highest concentration detected over the last 5 years of 25,100 ug/l during 2012. The presence of cis 1,2 dichloroethylene (cDCE) at concentrations roughly 50% of the TCE concentrations indicates that TCE degradation is occurring.

HAMP-3 and HAMP-4 also exhibited TCE and TOC variation similar to MW-16I during the pilot test. The increase in TOC in HAMP 3 and HAMP-4 was accompanied by increases in ferrous iron and decreases in sulfate concentrations. The changes in ferrous iron and sulfate are indicative of decreasing Oxidation Reduction Potential (ORP) and increase microbiological activity in the vicinity of these wells. The increase in TOC observed in HAMP-3 and HAMP-4 is accompanied by an increase in cDCE/TCE ratio as shown at the bottom of Table 1.

In summary, the addition of TOC in MW-16I initially resulted in decreased ORP and decrease in sulfate concentrations in the vicinity of the well indicating initiation of a bio-reactive zone favorable to degradation of TCE. The rainfall pulse that occurred shortly after initiation of the pilot test resulted in rapid transportation of TOC to HAMP-3 and HAMP-4. The delivery of TOC to HAMP-3 and HAMP-4 resulted in decreased ORP and increase in cDCE/TCE ratio.

Conclusions

A pilot test to evaluate the effectiveness of enhancing reductive dechlorination of TCE was initiated via one-time amendment of groundwater in the vicinity of MW-16I with a soluble source of TOC in the form of dilute sodium lactate. The following conclusions are made based upon review of the data:

- The data indicate that delivery of soluble TOC initially resulted in decreasing concentrations of sulfate in the vicinity of MW-16I. Due to competition for substrate between sulfate-reducing and TCE-reducing bacteria, it is not until sulfate is utilized that similar decreases in TCE concentrations are typically observed. The rebound in sulfate concentrations in the vicinity of MW-16I and the movement of TOC from MW-16I and HAMP-3 indicate that the TOC did not remain in place for a sufficient amount of time to observe an effect on TCE concentrations.
- Increases in acetone concentrations are likely to represent a degradation product of lactate indicating the presence of a microbial population that favors TCE degradation. This coupled with the presence of TCE degradation products of reductive dechlorination (cDCE and vinyl chloride) indicate that TCE reducing bacteria are present in the formation and that it is possible to enhance reductive dechlorination of TCE via addition of soluble TOC.
- The decreasing ORP, nitrate, and sulfate trend as well as increasing ferrous iron trend in conjunction with delivery of TOC is indicative of increase anaerobic microbial activity demonstrating favorable conditions for TCE degradation.
- Increases in cDCE/TCE ratios in conjunction with TOC delivery indicates conditions favorable for TCE degradation.
- Rapid movement of TOC, away from MW-16I, in response to the spike in rainfall, resulted in conditions less favorable to TCE degradation in the immediate vicinity of MW-16I. A larger scale remedial effort would have to take in to consideration a means of keeping TOC in the treatment zone vicinity. The pilot test indicates that groundwater amendment with a soluble lactate substrate is likely to promote in-situ TCE degradation.

We thank you for the opportunity to work with you on this project.

Sincerely,

TRC Environmental Corporation,

Michael Edelman, P.G.
Project Director
215.563.2122 x 14990

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

Location Name	MW-16I										
Sample Date	8/28/2012	9/7/2012	9/14/2012	9/20/2012	9/27/2012	10/25/2012	12/12/2012	11/12/2014	1/6/2014	2/23/2015	4/30/2015
Field Parameters											
Depth to Water (ft)								21.28	19.52	19.23	17.6
Conductivity, Field (µS/cm)	720	860	818	892	736	788	673	400	5040	1190	783
Dissolved Oxygen, Field (mg/L)	0.97	0.28	0.27	0.19	0.17	0.71	1.29	0	0	1.3	0
ORP, Field (mV)	192.5	-28.1	-44.7	-24.5	-67	172.1	126	232	-42	-77	-73
pH, Field (NTU)	5.25	5.36	5.31	5.30	5.28	5.14	5.42	5.70	6.35	6.88	6.57
Temperature, Field (Deg C)	21.28	21.70	21.21	21.03	20.86	20.56	20.39	19.52	19.70	19.00	19.10
General Chemistry (mg/L)											
Nitrate	**5.8**	**~**	**~**	**~**	**7.1**	**6.2**	**6.1**	**~**	**< 0.1**	**< 0.1**	**0.66**
Nitrite (as N)	**0.23**	~	~	~	**0.29**	**0.28**	**0.30**	**~**	**< 0.05**	**< 0.05**	**< 0.05**
Nitrite/Nitrate Nitrogen	**6.0**	**~**	**~**	**~**	**7.4**	**6.5**	**6.4**	**~**			
Sulfate	**191**	~	~	~	**234**	**4.2**	**172**	**186**	**128**	**111**	**156**
Ferrous Iron	< 0.50	~	~	~	< 0.50	< 0.50	< 0.50	<0.2	**5.39**	**6.1**	**5.87**
Total Organic Carbon (TOC)	**52.8**	~	~	~	**	**15.0**	**48.3**	**5.9**	**5380.0**	**292**	**14.3**
TKN								**< 1.0**	**43.2**	**1.7**	**1.8**
HCO3								**~**	**~**	**604**	**180**
Dissolved Gases(ug/L)											
Methane	**47.3**	~	~	~	**37.5**	**40.6**	**28.4**	**~**	**~**	**~**	**~**
Ethane	< 6.2	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~	~
Ethene	< 6.2	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~	~
Volatile Organic Compounds (ug/L)											
Acetone	< 2,500	~	~	~	< 2,500	< 5,000	< 5,000	< 200	**12000**	**2300**	**540**
2-Butanone	< 500	~	~	~	< 500	< 1,000	< 1,000	< 100	< 100	< 50	< 100
1,1,2-Trichloroethane	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
1,1-Dichloroethane	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
1,1-Dichloroethene	< 100	~	~	~	< 100	< 200	< 200	**11**	< 10	**12**	**16**
Benzene	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
Chloroform (Trichloromethane)	< 100	~	~	~	< 100	< 200	< 200	< 10	**11**	< 5	< 10
cis-1,2-Dichloroethene	**8,010**	~	~	~	**8,600**	**8,960**	**6,530**	**6,000**	**3,400**	**6,400**	**9,400**
m,p-Xylenes	< 200	~	~	~	< 200	< 400	< 400	< 10	< 10	**15**	**18**
Methylene chloride	< 200	~	~	~	< 200	< 400	< 400	< 40	< 40	< 20	< 40
Naphthalene	< 100	~	~	~	< 100	< 200	< 200	~	~	~	~
o-Xylene	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	**15**	**18**
Tetrachloroethene	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
Toluene	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
trans-1,2-Dichloroethene	< 100	~	~	~	< 100	< 200	< 200	**20**	**20**	**24**	**26**
Trichloroethene	**18,500**	~	~	~	**24,300**	**25,100**	**21,700**	**12,000**	**10,000**	**12,000**	**18,000**
Trichlorofluoromethane (CFC-11)	< 100	~	~	~	< 100	< 200	< 200	< 10	< 10	< 5	< 10
Vinyl chloride	**112**	~	~	~	**115**	< 200	< 200	**120**	**86**	**180**	**280**
Ratio cisDCE/TCE	0.43				0.35	0.36	0.30	0.50	0.34	0.53	0.52

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

Location Name	HAMP-3									
Sample Date	8/28/2012	9/7/2012	9/14/2012	9/20/2012	9/27/2012	10/25/2012	12/12/2012	1/6/2015	2/23/2015	4/30/2015
Field Parameters										
Depth to Water (ft)								16.42	15.31	15.21
Conductivity, Field (µS/cm)	209	139	136	139	136	139	132	225	4000	9,160
Dissolved Oxygen, Field (mg/L)	1.27	1.09	0.95	0.90	0.61	1.22	1.28	0.50	4.60	1.03
ORP, Field (mV)	-110.3	-30.3	-52.4	-20.9	-33	125.4	40.9	31	3	-56
pH, Field (NTU)	6.18	5.76	5.67	5.68	5.59	5.46	5.69	5.6	6.6	6.19
Temperature, Field (Deg C)	21.48	21.16	20.48	20.51	20.44	20.37	19.88	19.45	18.03	18,89
General Chemistry (mg/L)										
Nitrate	**1.9**	**~**	**~**	**~**	**1.2**	**1.1**	**0.88**	**0.31**	< 0.1	< 0.1
Nitrite (as N)	**0.029**	~	~	~	< 0.02	< 0.02	< 0.02	< 0.05	< 0.05	< 0.05
Nitrite/Nitrate Nitrogen	**1.9**	**~**	**~**	**~**	**1.2**	**1.1**	**0.88**			
Sulfate	**42.9**	~	~	~	**24.2**	**21.7**	**22.0**	**21.5**	**47.6**	**13**
Ferrous Iron	< 0.50	~	~	~	< 0.50	< 0.50	< 0.50	**2.74**	**23.6**	**104**
Total Organic Carbon (TOC)	**73.5**	~	~	~	**	**2.6**	**2.7**	**22.5**	**2480**	**5700**
TKN								< 1.0	< 1.0	< 5.0
HCO3								**~**	**1190**	**3740**
Dissolved Gases(ug/L)										
Methane	< 6.6	~	~	~	< 6.6	< 6.6	< 6.6	~	~	~
Ethane	< 6.2	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~
Ethene	< 6.2	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~
Volatile Organic Compounds (ug/L)										
Acetone	< 25	~	~	~	< 250	< 25	< 50	**330**	**18000**	**9,500**
2-Butanone	< 5	~	~	~	< 50	< 5	< 10	< 10	**30**	**630**
1,1,2-Trichloroethane	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
1,1-Dichloroethane	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
1,1-Dichloroethene	< 10	~	~	~	**1.0**	< 1.0	< 2.0	**2**	**2**	< 5
Benzene	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
Chloroform (Trichloromethane)	< 10	~	~	~	**1.5**	**1.3**	< 2.0	**2**	**7**	**9**
cis-1,2-Dichloroethene	**404**	~	~	~	**69.6**	**130**	**56.5**	**270**	**500**	**1,500**
m,p-Xylenes	< 20	~	~	~	< 2.0	< 2.0	< 4.0	< 1	< 1	< 5
Methylene chloride	< 20	~	~	~	< 2.0	< 2.0	< 4.0	< 4	< 4	< 20
Naphthalene	< 10	~	~	~	< 1.0	< 1.0	< 2.0	~	~	~
o-Xylene	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
Tetrachloroethene	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
Toluene	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
trans-1,2-Dichloroethene	< 10	~	~	~	**1.1**	**1.1**	< 2.0	**2**	**3**	**6**
Trichloroethene	**1,110**	~	~	~	**166**	**266**	**189**	**760**	**1200**	**3,200**
Trichlorofluoromethane (CFC-11)	< 10	~	~	~	< 1.0	< 1.0	< 2.0	< 1	< 1	< 5
Vinyl chloride	< 10	~	~	~	< 1.0	**3.2**	< 2.0	**3**	**16**	**39**
Ratio cisDCE/TCE	0.36				0.42	0.49	0.30	0.36	0.42	0.47

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

Location Name	HAMP-4									
Sample Date	8/28/2012	9/7/2012	9/14/2012	9/20/2012	9/27/2012	10/25/2012	12/12/2012	1/6/2015	2/23/2015	4/30/2015
Field Parameters										
Depth to Water (ft)								16.42	15.94	15.95
Conductivity, Field (µS/cm)	344	158	155	154	158	153	143	321	185	691
Dissolved Oxygen, Field (mg/L)	0.75	0.74	0.61	0.54	0.39	1.10	1.38	0.00		1.62
ORP, Field (mV)	-240.4	-73.2	-32.8	-48.5	-29.8	156.5	58.7	118	9	-99
pH, Field (NTU)	5.82	5.84	5.65	5.72	5.59	5.46	5.66	5.8	6.8	6.56
Temperature, Field (Deg C)	21.41	20.94	20.29	20.18	20.18	20.11	19.66	19.74	18.2	18.28
General Chemistry (mg/L)										
Nitrate	**3.3**	~	~	~	**1.3**	**1.2**	**1.2**	**1.7**	**0.64**	**1.1**
Nitrite (as N)	**0.056**	~	~	~	< 0.02	< 0.02	< 0.02	< 0.05	< 0.05	< 0.05
Nitrite/Nitrate Nitrogen	**3.4**	~	~	~	**1.3**	**1.2**	**1.2**			
Sulfate	**68.6**	~	~	~	**33.3**	**28.6**	**28.8**	**73.7**	**39**	**59**
Ferrous Iron	< 0.50	~	~	~	< 0.50	< 0.50	< 0.50	**10.8**	**0.530**	**3.37**
Total Organic Carbon (TOC)	**46.5**	~	~	~	**	**2.1**	**2.1**	**10.8**	**3.3**	**78**
TKN								**< 1.0**	**< 1.0**	**< 1.0**
HCO3									**83.4**	**286**
Dissolved Gases(ug/L)										
Methane	**14.8**	~	~	~	< 6.6	< 6.6	**10.0**	~	~	~
Ethane	< 6.2	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~
Ethene	**6.7**	~	~	~	< 6.2	< 6.2	< 6.2	~	~	~
Volatile Organic Compounds (ug/L)										
Acetone	< 125	~	~	~	< 25	< 125	< 125	< 100	**36**	**440**
2-Butanone	< 25	~	~	~	< 5	< 25	< 25	< 5	< 10	< 50
1,1,2-Trichloroethane	**1.5**	~	~	~	< 5	< 5	< 5	< 5	< 1	< 5
1,1-Dichloroethane	**2.7**	~	~	~	< 5	< 5	< 5	< 5	**2**	< 5
1,1-Dichloroethene	**7.1**	~	~	~	< 5	< 5	< 5	**8**	**7**	**9**
Benzene	< 1.0	~	~	~	< 5	< 5	< 5	< 5	< 1	< 5
Chloroform (Trichloromethane)	**1.8**	~	~	~	< 5	< 5	< 5	< 5	**1**	< 5
cis-1,2-Dichloroethene	**1,010**	~	~	~	**403**	**400**	**554**	**3900**	**2400**	**3,300**
m,p-Xylenes	< 2.0	~	~	~	< 10	< 10	< 10	< 5	**2**	< 5
Methylene chloride	**6.3**	~	~	~	< 10	< 10	< 10	< 20	< 4	< 20
Naphthalene	**5.5**	~	~	~	< 5	< 5	< 5	~	~	~
o-Xylene	**2.9**	~	~	~	< 5	< 5	< 5	< 5	**2**	< 5
Tetrachloroethene	< 1.0	~	~	~	< 5	< 5	< 5	< 5	< 1	< 5
Toluene	< 1.0	~	~	~	< 5	< 5	< 5	< 5	< 1	< 5
trans-1,2-Dichloroethene	**9.4**	~	~	~	< 5	< 5	< 5	**26**	**20**	< 5
Trichloroethene	**4,680**	~	~	~	**768**	**739**	**946**	**4400**	**2700**	**5,200**
Trichlorofluoromethane (CFC-11)	< 1.0	~	~	~	< 5	< 5	< 5	< 5	< 1	< 5
Vinyl chloride	**28.6**	~	~	~	**10.9**	**10.7**	**8.2**	**96**	**77**	**170**
Ratio cisDCE/TCE	0.22				0.52	0.54	0.59	0.89	0.89	0.63

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

Location Name	HAMP-6				
Sample Date	12/13/2012	11/12/2014	1/6/2015	2/23/2015	4/30/2015
Field Parameters					
Depth to Water (ft)		18.11	16.61	16.4	14.65
Conductivity, Field (µS/cm)	941	226	203	122	321
Dissolved Oxygen, Field (mg/L)	0.58	0	0	0.8	0
ORP, Field (mV)	38.1	35	142	114	63
pH, Field (NTU)	5.88	5.97	5.27	5.8	5.64
Temperature, Field (Deg C)	20.19	19.5	19.67	19	19.26
General Chemistry (mg/L)					
Nitrate	**2.6**	**~**	**3.1**	**3.3**	**3.5**
Nitrite (as N)	**0.078**	**~**	< 0.05	< 0.05	< 0.05
Nitrite/Nitrate Nitrogen	**2.7**	**~**			
Sulfate	**78.1**	**47**	**35.9**	**37.4**	**37.9**
Ferrous Iron	**3.8**	**2.62**	**3.05**	**6.30**	< 0.200
Total Organic Carbon (TOC)	**412**	**38.5**	**6.9**	< 1.0	**1.2**
TKN		< 1.0	< 1.0	< 1.0	< 0.1
HCO3		**~**	**~**	**32.8**	**35.3**
Dissolved Gases(ug/L)					
Methane	**8.5**	**~**	**~**	**~**	~
Ethane	< 6.2	~	~	~	~
Ethene	< 6.2	~	~	~	~
					~
Volatile Organic Compounds (ug/L)					
Acetone	**7,020**	< 100	< 200	< 40	< 200
2-Butanone	**128**	< 50	< 100	< 20	< 100
1,1,2-Trichloroethane	< 1.0	< 5	< 10	< 2	< 10
1,1-Dichloroethane	**1.7**	< 5	< 10	< 2	< 10
1,1-Dichloroethene	**3.5**	**5**	< 10	**3**	< 10
Benzene	< 1.0	< 5	< 10	< 2	< 10
Chloroform (Trichloromethane)	**3.5**	< 5	< 10	**3**	< 10
cis-1,2-Dichloroethene	**364**	**760**	**1300**	**1200**	**1,900**
m,p-Xylenes	< 2.0	< 5	< 10	< 2	< 10
Methylene chloride	< 2.0	< 20	< 40	< 8	< 40
Naphthalene	< 1.0	~	~	~	~
o-Xylene	< 1.0	< 5	< 10	< 2	< 10
Tetrachloroethene	< 1.0	< 5	< 10	< 2	< 10
Toluene	< 1.0	< 5	< 10	< 2	< 10
trans-1,2-Dichloroethene	**11.1**	**12**	**10**	**11**	**12**
Trichloroethene	**2,930**	**3,800**	**6,000**	**5000**	**7,100**
Trichlorofluoromethane (CFC-11)	< 1.0	< 5	< 10	< 2	< 10
Vinyl chloride	**6.2**	**11**	**24**	**24**	**41**
Ratio cisDCE/TCE	0.12	0.20	0.22	0.24	0.27

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

Location Name	HAMP-7				
Sample Date	12/13/2012	11/12/2014	1/6/2015	2/23/2015	4/30/2015
Field Parameters					
Depth to Water (ft)		18.18	16.26	15.61	14.85
Conductivity, Field (µS/cm)	253	141	278	204	205
Dissolved Oxygen, Field (mg/L)	1.34	0	0.1	0.9	0
ORP, Field (mV)	-110	220	75	88	21
pH, Field (NTU)	6.09	5.86	5.4	5.9	5.61
Temperature, Field (Deg C)	20.06	19.52	19.7	19	18.84
General Chemistry (mg/L)					
Nitrate	**3.4**	**~**	**2.5**	**3.8**	**4**
Nitrite (as N)	**0.091**	**~**	< 0.05	< 0.05	< 0.05
Nitrite/Nitrate Nitrogen	**3.5**	**~**			
Sulfate	**33.9**	**26.6**	**52.1**	**69.7**	**63.6**
Ferrous Iron	< 0.50	~	**1.59**	**0.565**	**0.677**
Total Organic Carbon (TOC)	**4.3**	< 1.0	**11.8**	**4.3**	**5.1**
TKN		< 1.0	< 1.0	< 1.0	< 1.0
HCO3			**~**	**44.3**	**46**
Dissolved Gases(ug/L)					
Methane	< 6.6	~	~	~	~
Ethane	< 6.2	~	~	~	~
Ethene	< 6.2	~	~	~	~
Volatile Organic Compounds (ug/L)					
Acetone	< 1,250	< 40	< 100	< 40	< 100
2-Butanone	< 5	< 20	< 50	< 20	< 50
1,1,2-Trichloroethane	< 1.0	< 2	< 5	< 2	< 5
1,1-Dichloroethane	< 1.0	< 2	< 5	**2**	< 5
1,1-Dichloroethene	**2.1**	< 2	< 5	**4**	**5**
Benzene	< 1.0	< 2	< 5	< 2	< 5
Chloroform (Trichloromethane)	**2.4**	< 2	< 5	**2**	< 5
cis-1,2-Dichloroethene	**380**	**530**	**630**	**670**	**1,100**
m,p-Xylenes	< 2.0	< 2	< 5	< 2	< 5
Methylene chloride	< 2.0	< 8	< 20	< 8	< 20
Naphthalene	**1.2**	**~**	**~**	~	~
o-Xylene	**1.1**	< 2	< 5	< 2	< 5
Tetrachloroethene	< 1.0	< 2	< 5	< 2	< 5
Toluene	< 1.0	< 2	< 5	< 2	< 5
trans-1,2-Dichloroethene	**7.5**	**6**	**7**	**10**	**11**
Trichloroethene	**2550**	**2400**	**3900**	**4400**	**5,900**
Trichlorofluoromethane (CFC-11)	< 1.0	< 2	< 5	< 2	< 5
Vinyl chloride	**7.3**	**8**	**13**	**13**	**27**
Ratio cisDCE/TCE	0.15	0.22	0.16	0.15	0.19

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Table 1
Summary of Pilot Test Groundwater Data versus Historical Data

	Location Name	MW-2I
	Sample Date	2/23/2015
Field Parameters		
Depth to Water (ft)		17.32
Conductivity, Field (µS/cm)		0.055
Dissolved Oxygen, Field (mg/L)		0.43
ORP, Field (mV)		148
pH, Field (NTU)		6.16
Temperature, Field (Deg C)		18.3
General Chemistry (mg/L)		
Nitrate		**1.5**
Nitrite (as N)		< 0.050
Nitrite/Nitrate Nitrogen		
Sulfate		< 5.0
Ferrous Iron		< 0.200
Total Organic Carbon (TOC)		< 1.0
TKN		< 1.0
HCO3		**33.2**
Dissolved Gases(ug/L)		
Methane		~
Ethane		~
Ethene		~
Volatile Organic Compounds (ug/L)		
Acetone		< 100
2-Butanone		< 50
1,1,2-Trichloroethane		< 5
1,1-Dichloroethane		< 5
1,1-Dichloroethene		**13**
Benzene		< 5
Chloroform (Trichloromethane)		< 5
cis-1,2-Dichloroethene		**1,300**
m,p-Xylenes		< 5
Methylene chloride		< 20
Naphthalene		~
o-Xylene		< 5
Tetrachloroethene		< 5
Toluene		< 5
trans-1,2-Dichloroethene		**26**
Trichloroethene		**14,000**
Trichlorofluoromethane (CFC-11)		< 5
Vinyl chloride		< 5
	Ratio cisDCE/TCE	0.09285714

Notes and Abbreviations:

1. Results shown in **bold** were detected.
2. < - Not detected above the laboratory detection limit.
3. Only detected compounds are shown in table.
4. ~ - Samples not collected for analysis.
5. Baseline samples collected on 28 August 2012.
6. ** - TOC samples discarded at lab due to lab contamination.

Attachment 1
UIC Notification

1601 Market Street
Suite 2555
Philadelphia, PA 19103

215.563.2122 PHONE
215.563.2339 FAX

www.trcsolutions.com

November 4, 2014

VIA EMAIL

Mr. Vijan Rabhar
Georgia Environmental Protection Division,
Regulatory Support Program
UIC Unit
Suite 1062 East Tower
2 M.L. King, Jr. Dr.
Atlanta, Georgia, 30334

Subject: **Former General Time Facility**
HSI NO. 10355
Athens, Georgia
Enhanced Reductive Dechlorination Pilot Test
UIC Pilot Test Registration

Dear Mr. Rabhar:

Thank you for discussing the project with me on October 14, 2014. As discussed, TRC is preparing to conduct a pilot test for Enhanced Reductive Dechlorination (ERD) of trichloroethylene (TCE) beneath the building at the Former General Time Facility on behalf of Carpenter Technology.

Pilot Test Goal

The goal of the pilot test is to evaluate the effectiveness and efficiency of utilizing a soluble and readily degradable substrate (sodium lactate) to enhance the rate of TCE dechlorination in groundwater underlying the Site. The short term pilot test is designed to evaluate the effective radius of influence and substrate utilization rates for lactate amendment of groundwater.

Pilot Test Procedure

TRC proposes to utilize water from the Municipal water service to the building, amend the water with sodium lactate and inject the water into MW-16I which is located in the residual source area. Based on the successful bench scale testing of sodium lactate, the targeted in-situ substrate (Total Organic Carbon (TOC) or total fatty acid) concentration will be approximately 1,800 mg/l. This correlates to injection of 90 gallons of 60% lactate at the projected injection rate. The

overall injection rate will be approximately 3 gallons per minute (gpm) of amended water over the two day period.

Pre- and Post-Injection Monitoring

Pre injection Sampling – collect baseline groundwater samples from MW-16I, HAMP-1, and HAMP-2. Two months after injection – Collect post injection samples for the same wells. All groundwater samples are to be analyzed for Volatile Organic Compound via USEPA Method 8260, Total Organic Carbon, Sulfate, and volatile gasses – ethane and ethane. Groundwater wells are to be purged of three well volumes using low-flow sampling technique at an anticipated discharge rate of 1-gallon per minute.

We plan to start the project on November 12, 2014. Attached is the UIC pilot test form. Mr. Steven Webb, a licensed Georgia Engineer, will serve as the Professional Engineer on this project. Michael Edelman will be the project manager. Please feel free to contact either person as follows:

Steve Webb – 864.234.9363
Mike Edelman – 215-563-2122 ext. 4990

Thank you, again, for discussing the project with me.

Sincerely,

TRC Environmental Corporation,

Michael Edelman
Project Director

C: Sean McGowan, Carpenter Technology
Allan Nix, GA EPD
Steve Webb, TRC

1.0 **Purpose**

This procedure allows Class V Injection Pilot Test wells to be constructed and operated for up to 90 days prior to obtaining a UIC permit. Recognizing that pilot testing is needed to conduct the most efficient and effective method for remediation of ground water contamination at a specific site, this procedure provides the administrative criteria needed to account for all Class V pilot tests under its scope. The procedure also provides a controlled, efficient way for ensuring that the Class V injection wells will be tracked and only used for pilot testing with the expectation that injection wells proposed in the final remediation plan (CAP) will be permitted per the appropriate.

2.0 **Scope**

This procedure applies only to Class V wells. The injected media will meet the Clean Air Act standards for air quality, the Georgia rules for Underground Injection Control, Chapter 391-6-3-.13, the Georgia Rules for Water Quality Control (Revised), and the Georgia Rules for Safe Drinking Water (Revised). The procedure does not replace the requirements for permitting injection wells, but allows consultants flexibility in evaluating the most efficient, economical and effective remediation method for a corrective action plan (CAP). The pilot tests are allowed for up to, but not to exceed, 90 days after which time a UIC permit must be applied for per the appropriate UIC procedure.

3.0 **Definitions**

3.1 Class V Pilot Test Well (UIC-PTW) is a short term (less than 90 days) experimental injection well related to UST (or other) remediation plans.

4.0 **Procedure**

4.1 Upon receiving notification of the intent to construct a UIC-PTW by a facility owner, or from any other state or federal agency, the responsible EPD associate will forward the form, found on Attachment A of this procedure, to the facility owner as appropriate. The responsible EPD associate will ensure that sections 1.0 through 8.0 are properly filled out. - The form will be sent to the UIC coordinator when UIC-PTW operation begins.

4.2 The UIC coordinator will update the UIC Class V inventory within five working days of receiving the notification form The UIC Coordinator will be responsible for filling out sections 8.1 through 11.0 and for notifying the owner of the UIC-PTW well to stop injecting if the 90 days have been reached and a UIC permit application has not been received.

	Facility	Operator
1.0 Address		
1.1 Name	General Time	TRC
1.2 Street Address	100 Newton Bridge Road	30 Patewood Drive, Suite 300, Patewood Plaza One
1.3 City, State	Athens, GA	Greenville, SC
1.4 ZIP Code	30605	29615
1.5 Telephone	610-208-3018	215-563-2122 x4990

2.0 Location: Latitude: 38.380 Longitude: 83.394

3.0 What is the contaminant in the Ground Water? Chlorinated VOC's

4.0 Georgia Licensed Water Well Contractor or Bonded Driller: Geolabs

5.0 Professional Engineer or Geologist: Steven Webb, PhD, P.E.

6.0 Well Data Table

	Injection Wells	Monitoring Wells
6.1 Number Wells	1	5
6.2 Well Depth(s)	30 - feet	30 - feet
6.3 Well Diameter	2 - inches	1 - inch
6.4 Volume in/out	2,100 gals	NA
6.5 Sampling freq.	NA	Monthly

7.0 Responsible EPD Associate for site: Mr. Allan Nix, P.G.

8.0 Date injection started: _____

8.1 Date* injection stopped: _____

8.2 Reason Injection Stopped? _____

8.3 Date these injection wells were logged in to the UIC Class V Well inventory and file: _____

9.0 UIC Class V Well Inventory Number: _____

10.0 UST/HWMB CAP tracking number: _____

11.0 Pending UIC Class V Permit Number: _____

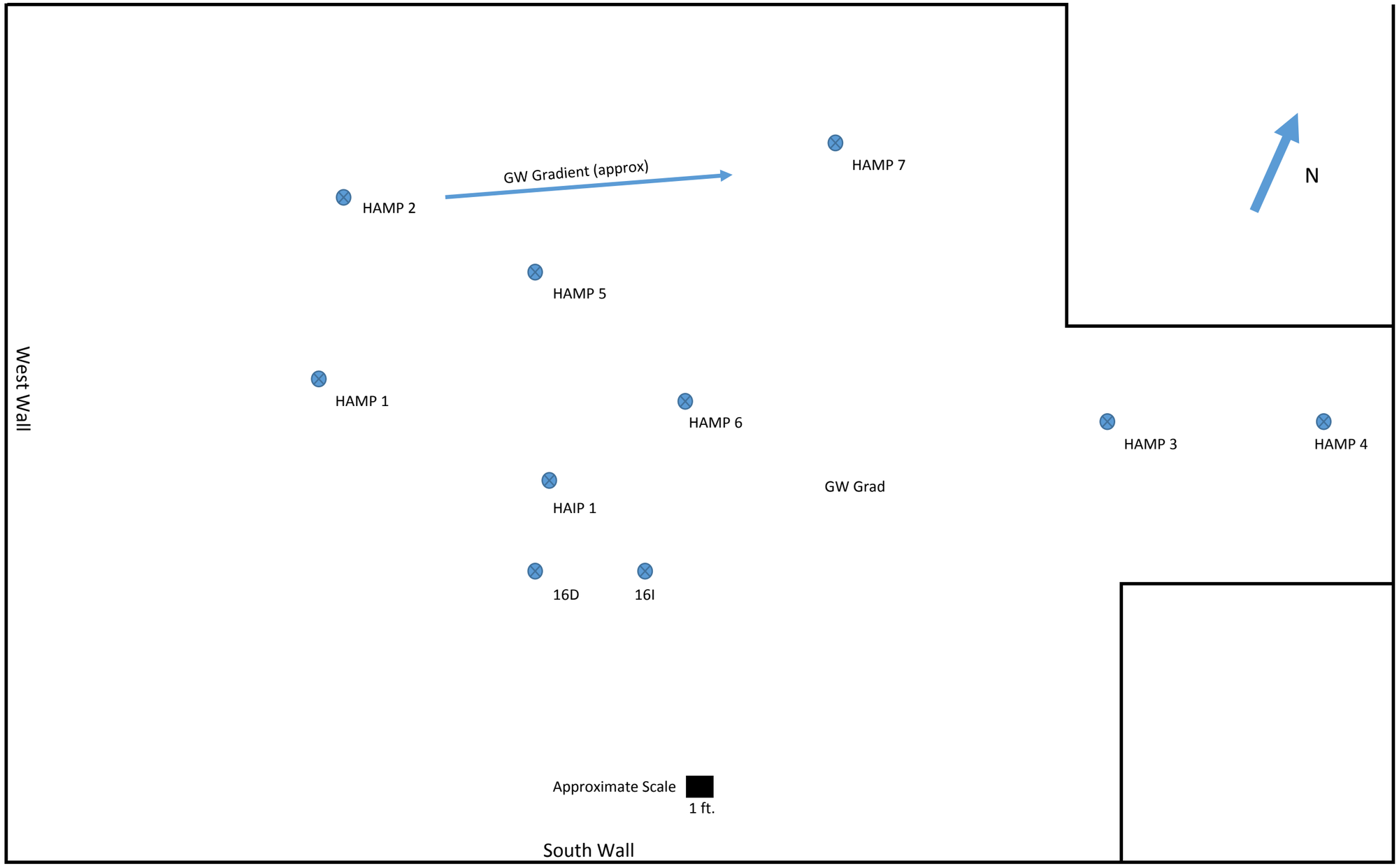
*Note: This pilot test well form is valid only for 90 days from the start of injection.

**Submit this form to:

Georgia Environmental Protection Division,
Regulatory Support Program
UIC Unit
Suite 1062 East Tower
2 M.L. King, Jr. Dr.
Atlanta, Georgia, 30334

Attachment 2
Field Map of Well locations for Pilot Test

Former General Time Facility
Athens, Georgia
Approximate Well Locations - Former Centrifuge Room
Not Surveyed - Based On Field Measurements



Attachment 3
Analytical Laboratory Reports

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

November 25, 2014

Project: Athens

Submittal Date: 11/13/2014
Group Number: 1518387
PO Number: BSLAB13
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
MW-16I Grab Groundwater Sample	7674077
HAMP 6 Grab Groundwater Sample	7674078
HAMP 7 Grab Groundwater Sample	7674079

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	Carpenter Technology Corp.	Attn: Ann Kalbach
ELECTRONIC COPY TO	TRC Solutions	Attn: Mike Edelman

Respectfully Submitted,

Luz I. Garcia
Specialist

(717) 556-7262

Sample Description: MW-16I Grab Groundwater Sample
Athens

LL Sample # WW 7674077
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 09:50 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTA16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 200	200	10
10335	Benzene	71-43-2	< 10	10	10
10335	Bromodichloromethane	75-27-4	< 10	10	10
10335	Bromoform	75-25-2	< 40	40	10
10335	Bromomethane	74-83-9	< 10	10	10
10335	2-Butanone	78-93-3	< 100	100	10
10335	Carbon Disulfide	75-15-0	< 50	50	10
10335	Carbon Tetrachloride	56-23-5	< 10	10	10
10335	Chlorobenzene	108-90-7	< 10	10	10
10335	Chloroethane	75-00-3	< 10	10	10
10335	Chloroform	67-66-3	< 10	10	10
10335	Chloromethane	74-87-3	< 10	10	10
10335	Cyclohexane	110-82-7	< 50	50	10
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 50	50	10
10335	Dibromochloromethane	124-48-1	< 10	10	10
10335	1,2-Dibromoethane	106-93-4	< 10	10	10
10335	1,2-Dichlorobenzene	95-50-1	< 50	50	10
10335	1,3-Dichlorobenzene	541-73-1	< 50	50	10
10335	1,4-Dichlorobenzene	106-46-7	< 50	50	10
10335	Dichlorodifluoromethane	75-71-8	< 10	10	10
10335	1,1-Dichloroethane	75-34-3	< 10	10	10
10335	1,2-Dichloroethane	107-06-2	< 10	10	10
10335	1,1-Dichloroethene	75-35-4	11	10	10
10335	cis-1,2-Dichloroethene	156-59-2	6,000	100	100
10335	trans-1,2-Dichloroethene	156-60-5	20	10	10
10335	1,2-Dichloropropane	78-87-5	< 10	10	10
10335	cis-1,3-Dichloropropene	10061-01-5	< 10	10	10
10335	trans-1,3-Dichloropropene	10061-02-6	< 10	10	10
10335	Ethylbenzene	100-41-4	< 10	10	10
10335	Freon 113	76-13-1	< 100	100	10
10335	2-Hexanone	591-78-6	< 100	100	10
10335	Isopropylbenzene	98-82-8	< 50	50	10
10335	Methyl Acetate	79-20-9	< 50	50	10
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 10	10	10
10335	4-Methyl-2-pentanone	108-10-1	< 100	100	10
10335	Methylcyclohexane	108-87-2	< 50	50	10
10335	Methylene Chloride	75-09-2	< 40	40	10
10335	Styrene	100-42-5	< 50	50	10
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 10	10	10
10335	Tetrachloroethene	127-18-4	< 10	10	10
10335	Toluene	108-88-3	< 10	10	10
10335	1,2,4-Trichlorobenzene	120-82-1	< 50	50	10
10335	1,1,1-Trichloroethane	71-55-6	< 10	10	10
10335	1,1,2-Trichloroethane	79-00-5	< 10	10	10
10335	Trichloroethene	79-01-6	12,000	100	100
10335	Trichlorofluoromethane	75-69-4	< 10	10	10
10335	Vinyl Chloride	75-01-4	120	10	10
10335	Xylene (Total)	1330-20-7	< 10	10	10
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	< 0.200	0.200	1

Sample Description: MW-16I Grab Groundwater Sample
Athens

LL Sample # WW 7674077
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 09:50 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTA16

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate		14808-79-8	186	20.0	20
		EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen		n.a.	< 1.0	1.0	1
		SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon		n.a.	5.9	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 16:18	Sara E Johnson	10
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 16:39	Sara E Johnson	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E143201AA	11/16/2014 16:18	Sara E Johnson	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	E143201AA	11/16/2014 16:39	Sara E Johnson	100
01754	Iron	SW-846 6010B	1	143181848009	11/19/2014 12:17	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	143181848009	11/15/2014 12:47	James L Mertz	1
00228	Sulfate	EPA 300.0	1	14318347602A	11/15/2014 16:34	Sandra J Miller	20
00217	Kjeldahl Nitrogen	EPA 351.2	1	14327108101A	11/24/2014 08:34	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	14325049501B	11/21/2014 03:57	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	14327108101A	11/23/2014 16:30	Joseph E McKenzie	1

Sample Description: HAMP 6 Grab Groundwater Sample
Athens

LL Sample # WW 7674078
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 10:45 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTAH6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 100	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	5	5	5
10335	cis-1,2-Dichloroethene	156-59-2	760	5	5
10335	trans-1,2-Dichloroethene	156-60-5	12	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	3,800	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	11	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	2.62	0.200	1

Sample Description: HAMP 6 Grab Groundwater Sample
Athens

LL Sample # WW 7674078
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 10:45 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTAH6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	47.0	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	38.5	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 16:59	Sara E Johnson	5
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 17:20	Sara E Johnson	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E143201AA	11/16/2014 16:59	Sara E Johnson	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	E143201AA	11/16/2014 17:20	Sara E Johnson	50
01754	Iron	SW-846 6010B	1	143181848009	11/19/2014 12:22	Eric L Eby	1
01848	WW SW846 ICP Digest (tot rec)	SW-846 3005A	1	143181848009	11/15/2014 12:47	James L Mertz	1
00228	Sulfate	EPA 300.0	1	14322347901A	11/18/2014 09:19	Sandra J Miller	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	14327108101A	11/24/2014 08:35	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	14325049501B	11/21/2014 04:10	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	14327108101A	11/23/2014 16:30	Joseph E McKenzie	1

Sample Description: HAMP 7 Grab Groundwater Sample
Athens

LL Sample # WW 7674079
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 11:30 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTAH7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 40	40	2
10335	Benzene	71-43-2	< 2	2	2
10335	Bromodichloromethane	75-27-4	< 2	2	2
10335	Bromoform	75-25-2	< 8	8	2
10335	Bromomethane	74-83-9	< 2	2	2
10335	2-Butanone	78-93-3	< 20	20	2
10335	Carbon Disulfide	75-15-0	< 10	10	2
10335	Carbon Tetrachloride	56-23-5	< 2	2	2
10335	Chlorobenzene	108-90-7	< 2	2	2
10335	Chloroethane	75-00-3	< 2	2	2
10335	Chloroform	67-66-3	< 2	2	2
10335	Chloromethane	74-87-3	< 2	2	2
10335	Cyclohexane	110-82-7	< 10	10	2
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 10	10	2
10335	Dibromochloromethane	124-48-1	< 2	2	2
10335	1,2-Dibromoethane	106-93-4	< 2	2	2
10335	1,2-Dichlorobenzene	95-50-1	< 10	10	2
10335	1,3-Dichlorobenzene	541-73-1	< 10	10	2
10335	1,4-Dichlorobenzene	106-46-7	< 10	10	2
10335	Dichlorodifluoromethane	75-71-8	< 2	2	2
10335	1,1-Dichloroethane	75-34-3	< 2	2	2
10335	1,2-Dichloroethane	107-06-2	< 2	2	2
10335	1,1-Dichloroethene	75-35-4	< 2	2	2
10335	cis-1,2-Dichloroethene	156-59-2	530	20	20
10335	trans-1,2-Dichloroethene	156-60-5	6	2	2
10335	1,2-Dichloropropane	78-87-5	< 2	2	2
10335	cis-1,3-Dichloropropene	10061-01-5	< 2	2	2
10335	trans-1,3-Dichloropropene	10061-02-6	< 2	2	2
10335	Ethylbenzene	100-41-4	< 2	2	2
10335	Freon 113	76-13-1	< 20	20	2
10335	2-Hexanone	591-78-6	< 20	20	2
10335	Isopropylbenzene	98-82-8	< 10	10	2
10335	Methyl Acetate	79-20-9	< 10	10	2
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 2	2	2
10335	4-Methyl-2-pentanone	108-10-1	< 20	20	2
10335	Methylcyclohexane	108-87-2	< 10	10	2
10335	Methylene Chloride	75-09-2	< 8	8	2
10335	Styrene	100-42-5	< 10	10	2
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 2	2	2
10335	Tetrachloroethene	127-18-4	< 2	2	2
10335	Toluene	108-88-3	< 2	2	2
10335	1,2,4-Trichlorobenzene	120-82-1	< 10	10	2
10335	1,1,1-Trichloroethane	71-55-6	< 2	2	2
10335	1,1,2-Trichloroethane	79-00-5	< 2	2	2
10335	Trichloroethene	79-01-6	2,400	20	20
10335	Trichlorofluoromethane	75-69-4	< 2	2	2
10335	Vinyl Chloride	75-01-4	8	2	2
10335	Xylene (Total)	1330-20-7	< 2	2	2
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	26.6	5.0	5

Sample Description: HAMP 7 Grab Groundwater Sample
Athens

LL Sample # WW 7674079
LL Group # 1518387
Account # 00435

Project Name: Athens

Collected: 11/12/2014 11:30 by ME

Submitted: 11/13/2014 09:05
Reported: 11/25/2014 09:47

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CTAH7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 351.2**		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	< 1.0	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 17:40	Sara E Johnson	2
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	E143201AA	11/16/2014 18:00	Sara E Johnson	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	E143201AA	11/16/2014 17:40	Sara E Johnson	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	E143201AA	11/16/2014 18:00	Sara E Johnson	20
00228	Sulfate	EPA 300.0	1	14322347901A	11/18/2014 09:35	Sandra J Miller	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	14327108101A	11/24/2014 08:37	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	14325049501B	11/21/2014 04:24	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	14327108101A	11/23/2014 16:30	Joseph E McKenzie	1

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1518387
Reported: 11/25/14 at 09:47 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: E143201AA	Sample number(s): 7674077-7674079							
Acetone	< 20	20.	ug/l	91	93	55-129	3	30
Benzene	< 1	1.	ug/l	95	95	78-120	0	30
Bromodichloromethane	< 1	1.	ug/l	92	93	73-120	1	30
Bromoform	< 4	4.	ug/l	89	88	61-120	0	30
Bromomethane	< 1	1.	ug/l	90	89	53-130	1	30
2-Butanone	< 10	10.	ug/l	90	91	54-133	0	30
Carbon Disulfide	< 5	5.	ug/l	67	68	58-126	2	30
Carbon Tetrachloride	< 1	1.	ug/l	93	94	74-130	1	30
Chlorobenzene	< 1	1.	ug/l	98	98	80-120	0	30
Chloroethane	< 1	1.	ug/l	91	91	56-120	1	30
Chloroform	< 1	1.	ug/l	95	95	80-122	0	30
Chloromethane	< 1	1.	ug/l	81	83	63-120	2	30
Cyclohexane	< 5	5.	ug/l	88	88	62-121	0	30
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	104	98	56-120	6	30
Dibromochloromethane	< 1	1.	ug/l	95	95	72-120	0	30
1,2-Dibromoethane	< 1	1.	ug/l	97	99	80-120	2	30
1,2-Dichlorobenzene	< 5	5.	ug/l	97	96	80-120	1	30
1,3-Dichlorobenzene	< 5	5.	ug/l	98	98	80-120	1	30
1,4-Dichlorobenzene	< 5	5.	ug/l	98	97	80-120	1	30
Dichlorodifluoromethane	< 1	1.	ug/l	87	86	55-127	1	30
1,1-Dichloroethane	< 1	1.	ug/l	94	93	80-120	0	30
1,2-Dichloroethane	< 1	1.	ug/l	96	96	65-135	0	30
1,1-Dichloroethene	< 1	1.	ug/l	82	84	76-124	2	30
cis-1,2-Dichloroethene	< 1	1.	ug/l	94	93	80-120	1	30
trans-1,2-Dichloroethene	< 1	1.	ug/l	92	90	80-120	2	30
1,2-Dichloropropane	< 1	1.	ug/l	93	96	80-120	3	30
cis-1,3-Dichloropropene	< 1	1.	ug/l	94	95	80-120	1	30
trans-1,3-Dichloropropene	< 1	1.	ug/l	96	97	76-120	1	30
Ethylbenzene	< 1	1.	ug/l	98	98	79-120	0	30
Freon 113	< 10	10.	ug/l	80	80	67-127	1	30
2-Hexanone	< 10	10.	ug/l	94	97	57-127	2	30
Isopropylbenzene	< 5	5.	ug/l	97	97	80-120	0	30
Methyl Acetate	< 5	5.	ug/l	94	93	54-138	2	30
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	92	94	75-120	2	30
4-Methyl-2-pentanone	< 10	10.	ug/l	93	93	51-124	0	30
Methylcyclohexane	< 5	5.	ug/l	100	99	66-126	2	30
Methylene Chloride	< 4	4.	ug/l	89	89	80-120	0	30
Styrene	< 5	5.	ug/l	97	95	80-120	2	30
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	98	98	70-120	0	30
Tetrachloroethene	< 1	1.	ug/l	96	94	80-120	2	30
Toluene	< 1	1.	ug/l	96	97	80-120	0	30
1,2,4-Trichlorobenzene	< 5	5.	ug/l	97	97	73-120	0	30
1,1,1-Trichloroethane	< 1	1.	ug/l	85	84	66-126	1	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1518387
Reported: 11/25/14 at 09:47 AM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1,2-Trichloroethane	< 1	1.	ug/l	97	96	80-120	0	30
Trichloroethene	< 1	1.	ug/l	96	96	80-120	0	30
Trichlorofluoromethane	< 1	1.	ug/l	90	91	58-135	1	30
Vinyl Chloride	< 1	1.	ug/l	88	88	63-120	0	30
Xylene (Total)	< 1	1.	ug/l	98	97	80-120	1	30
Batch number: 143181848009	Sample number(s): 7674077-7674078							
Iron	< 0.200	0.200	mg/l	99		80-120		
Batch number: 14318347602A	Sample number(s): 7674077							
Sulfate	< 1.0	1.0	mg/l	103		90-110		
Batch number: 14322347901A	Sample number(s): 7674078-7674079							
Sulfate	< 1.0	1.0	mg/l	103		90-110		
Batch number: 14325049501B	Sample number(s): 7674077-7674079							
Total Organic Carbon	< 1.0	1.0	mg/l	103		91-113		
Batch number: 14327108101A	Sample number(s): 7674077-7674079							
Kjeldahl Nitrogen	< 1.0	1.0	mg/l	109		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 143181848009	Sample number(s): 7674077-7674078 UNSPK: P673004 BKG: P673004								
Iron	97	99	75-125	1	20	0.677	0.686	1 (1)	20
Batch number: 14318347602A	Sample number(s): 7674077 UNSPK: 7674077 BKG: 7674077								
Sulfate	95		90-110			186	187	1	20
Batch number: 14322347901A	Sample number(s): 7674078-7674079 UNSPK: P677620 BKG: P677620								
Sulfate	95		90-110			23.3	22.3	5 (1)	20
Batch number: 14325049501B	Sample number(s): 7674077-7674079 UNSPK: P674116 BKG: P674116								
Total Organic Carbon	117		63-142			5.7	5.7	1	4
Batch number: 14327108101A	Sample number(s): 7674077-7674079 UNSPK: P669568 BKG: P669568								
Kjeldahl Nitrogen	135 (2)		90-110			906	902	0	20

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: E143201AA

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1518387
Reported: 11/25/14 at 09:47 AM

Surrogate Quality Control

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7674077	99	102	99	97
7674078	98	101	100	97
7674079	99	102	99	99
Blank	98	102	101	96
LCS	98	98	100	99
LCSD	97	99	101	101
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

eurofins | Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

January 19, 2015

Project: Carpenter Site, Athens GA

Submittal Date: 01/08/2015
Group Number: 1529692
PO Number: BSLAB13
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
TBLK-15101 Water	7732772
MW-16I Grab Water	7732773
HAMP-7 Grab Water	7732774
HAMP-6 Grab Water	7732775
HAMP-3 Grab Water	7732776
HAMP-4 Grab Water	7732777

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

ELECTRONIC COPY TO	Carpenter Technology Corp.	Attn: Ann Kalbach
ELECTRONIC COPY TO	Carpenter Technology Corp.-PA	Attn: Mike Reichardt

Respectfully Submitted,

(717) 556-7262

Sample Description: TBLK-15101 Water
Carpenter Site - Athens, GA

LL Sample # WW 7732772
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CAR-T

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 20	20	1
10335	Benzene	71-43-2	< 1	1	1
10335	Bromodichloromethane	75-27-4	< 1	1	1
10335	Bromoform	75-25-2	< 4	4	1
10335	Bromomethane	74-83-9	< 1	1	1
10335	2-Butanone	78-93-3	< 10	10	1
10335	Carbon Disulfide	75-15-0	< 5	5	1
10335	Carbon Tetrachloride	56-23-5	< 1	1	1
10335	Chlorobenzene	108-90-7	< 1	1	1
10335	Chloroethane	75-00-3	< 1	1	1
10335	Chloroform	67-66-3	< 1	1	1
10335	Chloromethane	74-87-3	< 1	1	1
10335	Cyclohexane	110-82-7	< 5	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10335	Dibromochloromethane	124-48-1	< 1	1	1
10335	1,2-Dibromoethane	106-93-4	< 1	1	1
10335	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10335	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10335	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10335	Dichlorodifluoromethane	75-71-8	< 1	1	1
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	1,2-Dichloroethane	107-06-2	< 1	1	1
10335	1,1-Dichloroethene	75-35-4	< 1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	< 1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	< 1	1	1
10335	1,2-Dichloropropane	78-87-5	< 1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	< 1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	< 1	1	1
10335	Ethylbenzene	100-41-4	< 1	1	1
10335	Freon 113	76-13-1	< 10	10	1
10335	2-Hexanone	591-78-6	< 10	10	1
10335	Isopropylbenzene	98-82-8	< 5	5	1
10335	Methyl Acetate	79-20-9	< 5	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
10335	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10335	Methylcyclohexane	108-87-2	< 5	5	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	Styrene	100-42-5	< 5	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 1	1	1
10335	Tetrachloroethene	127-18-4	< 1	1	1
10335	Toluene	108-88-3	< 1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 1	1	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	< 1	1	1
10335	Trichlorofluoromethane	75-69-4	< 1	1	1
10335	Vinyl Chloride	75-01-4	< 1	1	1
10335	Xylene (Total)	1330-20-7	< 1	1	1

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: TBLK-15101 Water
Carpenter Site - Athens, GA

LL Sample # WW 7732772
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

CAR-T

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150121AA	01/12/2015 16:49	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150121AA	01/12/2015 16:49	Linda C Pape	1

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732773
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 15:00 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	12,000	2,000	100
10335	Benzene	71-43-2	< 10	10	10
10335	Bromodichloromethane	75-27-4	< 10	10	10
10335	Bromoform	75-25-2	< 40	40	10
10335	Bromomethane	74-83-9	< 10	10	10
10335	2-Butanone	78-93-3	< 100	100	10
10335	Carbon Disulfide	75-15-0	< 50	50	10
10335	Carbon Tetrachloride	56-23-5	< 10	10	10
10335	Chlorobenzene	108-90-7	< 10	10	10
10335	Chloroethane	75-00-3	< 10	10	10
10335	Chloroform	67-66-3	11	10	10
10335	Chloromethane	74-87-3	< 10	10	10
10335	Cyclohexane	110-82-7	< 50	50	10
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 50	50	10
10335	Dibromochloromethane	124-48-1	< 10	10	10
10335	1,2-Dibromoethane	106-93-4	< 10	10	10
10335	1,2-Dichlorobenzene	95-50-1	< 50	50	10
10335	1,3-Dichlorobenzene	541-73-1	< 50	50	10
10335	1,4-Dichlorobenzene	106-46-7	< 50	50	10
10335	Dichlorodifluoromethane	75-71-8	< 10	10	10
10335	1,1-Dichloroethane	75-34-3	< 10	10	10
10335	1,2-Dichloroethane	107-06-2	< 10	10	10
10335	1,1-Dichloroethene	75-35-4	< 10	10	10
10335	cis-1,2-Dichloroethene	156-59-2	3,400	100	100
10335	trans-1,2-Dichloroethene	156-60-5	20	10	10
10335	1,2-Dichloropropane	78-87-5	< 10	10	10
10335	cis-1,3-Dichloropropene	10061-01-5	< 10	10	10
10335	trans-1,3-Dichloropropene	10061-02-6	< 10	10	10
10335	Ethylbenzene	100-41-4	< 10	10	10
10335	Freon 113	76-13-1	< 100	100	10
10335	2-Hexanone	591-78-6	< 100	100	10
10335	Isopropylbenzene	98-82-8	< 50	50	10
10335	Methyl Acetate	79-20-9	< 50	50	10
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 10	10	10
10335	4-Methyl-2-pentanone	108-10-1	< 100	100	10
10335	Methylcyclohexane	108-87-2	< 50	50	10
10335	Methylene Chloride	75-09-2	< 40	40	10
10335	Styrene	100-42-5	< 50	50	10
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 10	10	10
10335	Tetrachloroethene	127-18-4	< 10	10	10
10335	Toluene	108-88-3	< 10	10	10
10335	1,2,4-Trichlorobenzene	120-82-1	< 50	50	10
10335	1,1,1-Trichloroethane	71-55-6	< 10	10	10
10335	1,1,2-Trichloroethane	79-00-5	< 10	10	10
10335	Trichloroethene	79-01-6	10,000	100	100
10335	Trichlorofluoromethane	75-69-4	< 10	10	10
10335	Vinyl Chloride	75-01-4	86	10	10
10335	Xylene (Total)	1330-20-7	< 10	10	10
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	5.39	0.200	1

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732773
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 15:00 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	128	20.0	20
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	43.2	10.0	10
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	5,380	100	100

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.
Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for TOC.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 13:42	Linda C Pape	10
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 14:05	Linda C Pape	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150091AA	01/09/2015 13:42	Linda C Pape	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150091AA	01/09/2015 14:05	Linda C Pape	100
01754	Iron	SW-846 6010B	1	150091848001	01/12/2015 12:42	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150091848001	01/11/2015 21:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15008987131B	01/08/2015 17:34	Clinton M Wilson	20
00217	Kjeldahl Nitrogen	EPA 351.2	1	15016108101A	01/19/2015 09:02	Joseph E McKenzie	10
00220	Nitrate Nitrogen	EPA 353.2	1	15010106101A	01/10/2015 16:59	Drew M Gerhart	1
00219	Nitrite Nitrogen	EPA 353.2	1	15008105101A	01/08/2015 12:44	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15012049505A	01/15/2015 03:36	James S Mathiot	100
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15016108101A	01/16/2015 10:45	Nancy J Shoop	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732774
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 16:15 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 100	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	< 5	5	5
10335	cis-1,2-Dichloroethene	156-59-2	630	5	5
10335	trans-1,2-Dichloroethene	156-60-5	7	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	3,900	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	13	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	1.59	0.200	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732774
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 16:15 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	52.1	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	2.5	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	11.8	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 14:28	Linda C Pape	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 14:52	Linda C Pape	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150091AA	01/09/2015 14:28	Linda C Pape	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150091AA	01/09/2015 14:52	Linda C Pape	50
01754	Iron	SW-846 6010B	1	150091848001	01/12/2015 12:47	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150091848001	01/11/2015 21:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15008987131B	01/08/2015 16:50	Clinton M Wilson	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15016108101A	01/19/2015 09:03	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15010106101A	01/10/2015 17:00	Drew M Gerhart	1
00219	Nitrite Nitrogen	EPA 353.2	1	15008105101A	01/08/2015 12:48	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15012049505A	01/13/2015 04:13	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15016108101A	01/16/2015 10:45	Nancy J Shoop	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732775
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 17:00 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 200	200	10
10335	Benzene	71-43-2	< 10	10	10
10335	Bromodichloromethane	75-27-4	< 10	10	10
10335	Bromoform	75-25-2	< 40	40	10
10335	Bromomethane	74-83-9	< 10	10	10
10335	2-Butanone	78-93-3	< 100	100	10
10335	Carbon Disulfide	75-15-0	< 50	50	10
10335	Carbon Tetrachloride	56-23-5	< 10	10	10
10335	Chlorobenzene	108-90-7	< 10	10	10
10335	Chloroethane	75-00-3	< 10	10	10
10335	Chloroform	67-66-3	< 10	10	10
10335	Chloromethane	74-87-3	< 10	10	10
10335	Cyclohexane	110-82-7	< 50	50	10
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 50	50	10
10335	Dibromochloromethane	124-48-1	< 10	10	10
10335	1,2-Dibromoethane	106-93-4	< 10	10	10
10335	1,2-Dichlorobenzene	95-50-1	< 50	50	10
10335	1,3-Dichlorobenzene	541-73-1	< 50	50	10
10335	1,4-Dichlorobenzene	106-46-7	< 50	50	10
10335	Dichlorodifluoromethane	75-71-8	< 10	10	10
10335	1,1-Dichloroethane	75-34-3	< 10	10	10
10335	1,2-Dichloroethane	107-06-2	< 10	10	10
10335	1,1-Dichloroethene	75-35-4	< 10	10	10
10335	cis-1,2-Dichloroethene	156-59-2	1,300	10	10
10335	trans-1,2-Dichloroethene	156-60-5	10	10	10
10335	1,2-Dichloropropane	78-87-5	< 10	10	10
10335	cis-1,3-Dichloropropene	10061-01-5	< 10	10	10
10335	trans-1,3-Dichloropropene	10061-02-6	< 10	10	10
10335	Ethylbenzene	100-41-4	< 10	10	10
10335	Freon 113	76-13-1	< 100	100	10
10335	2-Hexanone	591-78-6	< 100	100	10
10335	Isopropylbenzene	98-82-8	< 50	50	10
10335	Methyl Acetate	79-20-9	< 50	50	10
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 10	10	10
10335	4-Methyl-2-pentanone	108-10-1	< 100	100	10
10335	Methylcyclohexane	108-87-2	< 50	50	10
10335	Methylene Chloride	75-09-2	< 40	40	10
10335	Styrene	100-42-5	< 50	50	10
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 10	10	10
10335	Tetrachloroethene	127-18-4	< 10	10	10
10335	Toluene	108-88-3	< 10	10	10
10335	1,2,4-Trichlorobenzene	120-82-1	< 50	50	10
10335	1,1,1-Trichloroethane	71-55-6	< 10	10	10
10335	1,1,2-Trichloroethane	79-00-5	< 10	10	10
10335	Trichloroethene	79-01-6	6,000	100	100
10335	Trichlorofluoromethane	75-69-4	< 10	10	10
10335	Vinyl Chloride	75-01-4	24	10	10
10335	Xylene (Total)	1330-20-7	< 10	10	10
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	3.05	0.200	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732775
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 17:00 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	35.9	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	3.1	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	6.9	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 15:16	Linda C Pape	10
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 15:39	Linda C Pape	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150091AA	01/09/2015 15:16	Linda C Pape	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150091AA	01/09/2015 15:39	Linda C Pape	100
01754	Iron	SW-846 6010B	1	150091848001	01/12/2015 11:53	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150091848001	01/11/2015 21:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15008987131B	01/08/2015 17:49	Clinton M Wilson	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15016108101A	01/19/2015 09:05	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15010106101A	01/10/2015 17:01	Drew M Gerhart	1
00219	Nitrite Nitrogen	EPA 353.2	1	15008105101A	01/08/2015 12:49	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15012049505A	01/12/2015 02:49	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15016108101A	01/16/2015 10:45	Nancy J Shoop	1

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732776
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 17:55 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	330	20	1
10335	Benzene	71-43-2	< 1	1	1
10335	Bromodichloromethane	75-27-4	< 1	1	1
10335	Bromoform	75-25-2	< 4	4	1
10335	Bromomethane	74-83-9	< 1	1	1
10335	2-Butanone	78-93-3	< 10	10	1
10335	Carbon Disulfide	75-15-0	< 5	5	1
10335	Carbon Tetrachloride	56-23-5	< 1	1	1
10335	Chlorobenzene	108-90-7	< 1	1	1
10335	Chloroethane	75-00-3	< 1	1	1
10335	Chloroform	67-66-3	2	1	1
10335	Chloromethane	74-87-3	< 1	1	1
10335	Cyclohexane	110-82-7	< 5	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10335	Dibromochloromethane	124-48-1	< 1	1	1
10335	1,2-Dibromoethane	106-93-4	< 1	1	1
10335	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10335	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10335	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10335	Dichlorodifluoromethane	75-71-8	< 1	1	1
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	1,2-Dichloroethane	107-06-2	< 1	1	1
10335	1,1-Dichloroethene	75-35-4	2	1	1
10335	cis-1,2-Dichloroethene	156-59-2	270	10	10
10335	trans-1,2-Dichloroethene	156-60-5	2	1	1
10335	1,2-Dichloropropane	78-87-5	< 1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	< 1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	< 1	1	1
10335	Ethylbenzene	100-41-4	< 1	1	1
10335	Freon 113	76-13-1	< 10	10	1
10335	2-Hexanone	591-78-6	< 10	10	1
10335	Isopropylbenzene	98-82-8	< 5	5	1
10335	Methyl Acetate	79-20-9	< 5	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
10335	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10335	Methylcyclohexane	108-87-2	< 5	5	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	Styrene	100-42-5	< 5	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 1	1	1
10335	Tetrachloroethene	127-18-4	< 1	1	1
10335	Toluene	108-88-3	< 1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 1	1	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	760	10	10
10335	Trichlorofluoromethane	75-69-4	< 1	1	1
10335	Vinyl Chloride	75-01-4	3	1	1
10335	Xylene (Total)	1330-20-7	< 1	1	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	2.74	0.200	1

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732776
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 17:55 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	21.5	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	0.31	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	22.5	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 16:03	Linda C Pape	1
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 16:27	Linda C Pape	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150091AA	01/09/2015 16:03	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150091AA	01/09/2015 16:27	Linda C Pape	10
01754	Iron	SW-846 6010B	1	150091848001	01/12/2015 12:51	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150091848001	01/11/2015 21:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15008987131B	01/08/2015 18:04	Clinton M Wilson	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15016108101A	01/19/2015 09:06	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15010106101A	01/10/2015 17:02	Drew M Gerhart	1
00219	Nitrite Nitrogen	EPA 353.2	1	15008105101A	01/08/2015 12:51	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15012049505A	01/12/2015 03:02	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15016108101A	01/16/2015 10:45	Nancy J Shoop	1

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732777
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 18:30 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 100	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	8	5	5
10335	cis-1,2-Dichloroethene	156-59-2	3,900	50	50
10335	trans-1,2-Dichloroethene	156-60-5	26	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	4,400	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	96	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	10.8	0.200	1

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7732777
LL Group # 1529692
Account # 00435

Project Name: Carpenter Site, Athens GA

Collected: 01/06/2015 18:30 by BM

Submitted: 01/08/2015 12:00
Reported: 01/19/2015 21:08

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	73.7	10.0	10
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	1.7	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	10.8	1.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/15.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 16:50	Linda C Pape	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150091AA	01/09/2015 17:14	Linda C Pape	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150091AA	01/09/2015 16:50	Linda C Pape	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150091AA	01/09/2015 17:14	Linda C Pape	50
01754	Iron	SW-846 6010B	1	150091848001	01/12/2015 12:55	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150091848001	01/11/2015 21:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15008987131B	01/09/2015 23:51	Clinton M Wilson	10
00217	Kjeldahl Nitrogen	EPA 351.2	1	15016108101A	01/19/2015 09:14	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15010106101A	01/10/2015 13:13	Drew M Gerhart	1
00219	Nitrite Nitrogen	EPA 353.2	1	15008105101A	01/08/2015 12:52	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15012049505A	01/12/2015 03:16	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15016108101A	01/16/2015 10:45	Nancy J Shoop	1

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: T150091AA	Sample number(s): 7732773-7732777							
Acetone	< 20	20.	ug/l	90		55-129		
Benzene	< 1	1.	ug/l	104		78-120		
Bromodichloromethane	< 1	1.	ug/l	100		73-120		
Bromoform	< 4	4.	ug/l	86		61-120		
Bromomethane	< 1	1.	ug/l	103		53-130		
2-Butanone	< 10	10.	ug/l	102		54-133		
Carbon Disulfide	< 5	5.	ug/l	87		58-126		
Carbon Tetrachloride	< 1	1.	ug/l	115		74-130		
Chlorobenzene	< 1	1.	ug/l	100		80-120		
Chloroethane	< 1	1.	ug/l	97		56-120		
Chloroform	< 1	1.	ug/l	108		80-122		
Chloromethane	< 1	1.	ug/l	102		63-120		
Cyclohexane	< 5	5.	ug/l	106		62-121		
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	91		56-120		
Dibromochloromethane	< 1	1.	ug/l	92		72-120		
1,2-Dibromoethane	< 1	1.	ug/l	103		80-120		
1,2-Dichlorobenzene	< 5	5.	ug/l	99		80-120		
1,3-Dichlorobenzene	< 5	5.	ug/l	100		80-120		
1,4-Dichlorobenzene	< 5	5.	ug/l	101		80-120		
Dichlorodifluoromethane	< 1	1.	ug/l	117		55-127		
1,1-Dichloroethane	< 1	1.	ug/l	105		80-120		
1,2-Dichloroethane	< 1	1.	ug/l	111		65-135		
1,1-Dichloroethene	< 1	1.	ug/l	100		76-124		
cis-1,2-Dichloroethene	< 1	1.	ug/l	103		80-120		
trans-1,2-Dichloroethene	< 1	1.	ug/l	100		80-120		
1,2-Dichloropropane	< 1	1.	ug/l	103		80-120		
cis-1,3-Dichloropropene	< 1	1.	ug/l	101		80-120		
trans-1,3-Dichloropropene	< 1	1.	ug/l	100		76-120		
Ethylbenzene	< 1	1.	ug/l	104		79-120		
Freon 113	< 10	10.	ug/l	90		67-127		
2-Hexanone	< 10	10.	ug/l	99		57-127		
Isopropylbenzene	< 5	5.	ug/l	110		80-120		
Methyl Acetate	< 5	5.	ug/l	99		54-138		
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	101		75-120		
4-Methyl-2-pentanone	< 10	10.	ug/l	100		51-124		
Methylcyclohexane	< 5	5.	ug/l	100		66-126		
Methylene Chloride	< 4	4.	ug/l	99		80-120		
Styrene	< 5	5.	ug/l	100		80-120		
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	91		70-120		
Tetrachloroethene	< 1	1.	ug/l	104		80-120		
Toluene	< 1	1.	ug/l	103		80-120		
1,2,4-Trichlorobenzene	< 5	5.	ug/l	98		73-120		
1,1,1-Trichloroethane	< 1	1.	ug/l	108		66-126		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1,2-Trichloroethane	< 1	1.	ug/l	95		80-120		
Trichloroethene	< 1	1.	ug/l	105		80-120		
Trichlorofluoromethane	< 1	1.	ug/l	102		58-135		
Vinyl Chloride	< 1	1.	ug/l	105		63-120		
Xylene (Total)	< 1	1.	ug/l	103		80-120		
Batch number: T150121AA	Sample number(s): 7732772							
Acetone	< 20	20.	ug/l	95	96	55-129	2	30
Benzene	< 1	1.	ug/l	104	101	78-120	4	30
Bromodichloromethane	< 1	1.	ug/l	114	108	73-120	5	30
Bromoform	< 4	4.	ug/l	93	91	61-120	2	30
Bromomethane	< 1	1.	ug/l	111	111	53-130	0	30
2-Butanone	< 10	10.	ug/l	106	105	54-133	0	30
Carbon Disulfide	< 5	5.	ug/l	83	77	58-126	8	30
Carbon Tetrachloride	< 1	1.	ug/l	138*	130	74-130	6	30
Chlorobenzene	< 1	1.	ug/l	100	99	80-120	1	30
Chloroethane	< 1	1.	ug/l	104	108	56-120	4	30
Chloroform	< 1	1.	ug/l	122	114	80-122	7	30
Chloromethane	< 1	1.	ug/l	112	115	63-120	2	30
Cyclohexane	< 5	5.	ug/l	106	105	62-121	1	30
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	102	101	56-120	1	30
Dibromochloromethane	< 1	1.	ug/l	98	97	72-120	1	30
1,2-Dibromoethane	< 1	1.	ug/l	101	103	80-120	3	30
1,2-Dichlorobenzene	< 5	5.	ug/l	100	98	80-120	2	30
1,3-Dichlorobenzene	< 5	5.	ug/l	94	96	80-120	2	30
1,4-Dichlorobenzene	< 5	5.	ug/l	99	99	80-120	0	30
Dichlorodifluoromethane	< 1	1.	ug/l	144*	131*	55-127	9	30
1,1-Dichloroethane	< 1	1.	ug/l	111	107	80-120	4	30
1,2-Dichloroethane	< 1	1.	ug/l	133	123	65-135	8	30
1,1-Dichloroethene	< 1	1.	ug/l	104	97	76-124	7	30
cis-1,2-Dichloroethene	< 1	1.	ug/l	107	99	80-120	9	30
trans-1,2-Dichloroethene	< 1	1.	ug/l	103	102	80-120	2	30
1,2-Dichloropropane	< 1	1.	ug/l	108	105	80-120	3	30
cis-1,3-Dichloropropene	< 1	1.	ug/l	106	101	80-120	5	30
trans-1,3-Dichloropropene	< 1	1.	ug/l	109	105	76-120	4	30
Ethylbenzene	< 1	1.	ug/l	105	105	79-120	0	30
Freon 113	< 10	10.	ug/l	98	96	67-127	1	30
2-Hexanone	< 10	10.	ug/l	105	106	57-127	1	30
Isopropylbenzene	< 5	5.	ug/l	110	109	80-120	1	30
Methyl Acetate	< 5	5.	ug/l	107	103	54-138	3	30
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	109	107	75-120	2	30
4-Methyl-2-pentanone	< 10	10.	ug/l	108	106	51-124	2	30
Methylcyclohexane	< 5	5.	ug/l	96	92	66-126	4	30
Methylene Chloride	< 4	4.	ug/l	105	98	80-120	6	30
Styrene	< 5	5.	ug/l	104	101	80-120	3	30
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	92	89	70-120	4	30
Tetrachloroethene	< 1	1.	ug/l	97	99	80-120	2	30
Toluene	< 1	1.	ug/l	103	105	80-120	1	30
1,2,4-Trichlorobenzene	< 5	5.	ug/l	94	95	73-120	1	30
1,1,1-Trichloroethane	< 1	1.	ug/l	121	121	66-126	0	30
1,1,2-Trichloroethane	< 1	1.	ug/l	97	97	80-120	1	30
Trichloroethene	< 1	1.	ug/l	109	106	80-120	3	30
Trichlorofluoromethane	< 1	1.	ug/l	130	123	58-135	6	30
Vinyl Chloride	< 1	1.	ug/l	116	118	63-120	2	30
Xylene (Total)	< 1	1.	ug/l	103	103	80-120	0	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 150091848001	Sample number(s): 7732773-7732777							
Iron	< 0.200	0.200	mg/l	100		80-120		
Batch number: 15008105101A	Sample number(s): 7732773-7732777							
Nitrite Nitrogen	< 0.050	0.050	mg/l	100		90-110		
Batch number: 15008987131B	Sample number(s): 7732773-7732777							
Sulfate	< 1.0	1.0	mg/l	104	106	90-110	2	20
Batch number: 15010106101A	Sample number(s): 7732773-7732777							
Nitrate Nitrogen	< 0.10	0.10	mg/l	94		90-110		
Batch number: 15012049505A	Sample number(s): 7732773-7732777							
Total Organic Carbon	< 1.0	1.0	mg/l	100		91-113		
Batch number: 15016108101A	Sample number(s): 7732773-7732777							
Kjeldahl Nitrogen	< 1.0	1.0	mg/l	101		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: T150091AA	Sample number(s): 7732773-7732777 UNSPK: P732104								
Acetone	93	93	35-144	0	30				
Benzene	108	111	72-134	2	30				
Bromodichloromethane	111	112	73-125	0	30				
Bromoform	95	90	48-118	6	30				
Bromomethane	108	106	47-129	1	30				
2-Butanone	107	104	44-135	3	30				
Carbon Disulfide	93	86	53-149	7	30				
Carbon Tetrachloride	144	135	75-148	6	30				
Chlorobenzene	108	105	87-124	2	30				
Chloroethane	103	104	55-130	1	30				
Chloroform	121	120	81-134	1	30				
Chloromethane	108	111	61-125	2	30				
Cyclohexane	120	113	63-151	6	30				
1,2-Dibromo-3-chloropropane	104	94	50-123	10	30				
Dibromochloromethane	97	97	74-116	0	30				
1,2-Dibromoethane	107	104	77-116	3	30				
1,2-Dichlorobenzene	103	101	84-119	2	30				
1,3-Dichlorobenzene	99	102	86-121	3	30				
1,4-Dichlorobenzene	107	105	85-121	1	30				
Dichlorodifluoromethane	142	124	58-156	14	30				
1,1-Dichloroethane	113	111	84-129	2	30				
1,2-Dichloroethane	125	128	63-142	2	30				
1,1-Dichloroethene	109	103	79-137	6	30				
cis-1,2-Dichloroethene	105	108	80-141	3	30				
trans-1,2-Dichloroethene	107	108	86-131	1	30				
1,2-Dichloropropane	110	108	83-124	1	30				
cis-1,3-Dichloropropene	104	104	70-116	0	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
trans-1,3-Dichloropropene	108	108	74-119	0	30				
Ethylbenzene	118	114	71-134	3	30				
Freon 113	103	96	89-148	7	30				
2-Hexanone	107	103	38-131	3	30				
Isopropylbenzene	117	116	75-128	1	30				
Methyl Acetate	100	98	51-137	2	30				
Methyl Tertiary Butyl Ether	101	102	72-126	1	30				
4-Methyl-2-pentanone	105	103	45-128	2	30				
Methylcyclohexane	105	103	80-156	1	30				
Methylene Chloride	102	99	78-133	3	30				
Styrene	109	108	78-125	1	30				
1,1,2,2-Tetrachloroethane	92	92	72-128	0	30				
Tetrachloroethene	112	112	80-128	0	30				
Toluene	111	110	80-125	1	30				
1,2,4-Trichlorobenzene	107	97	56-137	9	30				
1,1,1-Trichloroethane	126	123	69-140	3	30				
1,1,2-Trichloroethane	100	98	71-141	3	30				
Trichloroethene	116	113	88-133	2	30				
Trichlorofluoromethane	126	117	63-163	7	30				
Vinyl Chloride	113	106	66-133	6	30				
Xylene (Total)	108	110	79-125	1	30				
Batch number: T150121AA	Sample number(s): 7732772 UNSPK: P731449								
Acetone	67	69	35-144	3	30				
Benzene	111	111	72-134	0	30				
Bromodichloromethane	119	116	73-125	3	30				
Bromoform	89	87	48-118	2	30				
Bromomethane	81	71	47-129	12	30				
2-Butanone	91	94	44-135	4	30				
Carbon Disulfide	15*	15*	53-149	2	30				
Carbon Tetrachloride	134	135	75-148	0	30				
Chlorobenzene	105	110	87-124	4	30				
Chloroethane	104	104	55-130	0	30				
Chloroform	121	118	81-134	2	30				
Chloromethane	106	107	61-125	2	30				
Cyclohexane	109	110	63-151	1	30				
1,2-Dibromo-3-chloropropane	93	94	50-123	0	30				
Dibromochloromethane	103	100	74-116	3	30				
1,2-Dibromoethane	104	108	77-116	4	30				
1,2-Dichlorobenzene	104	99	84-119	5	30				
1,3-Dichlorobenzene	101	104	86-121	3	30				
1,4-Dichlorobenzene	109	106	85-121	3	30				
Dichlorodifluoromethane	142	141	58-156	1	30				
1,1-Dichloroethane	110	108	84-129	2	30				
1,2-Dichloroethane	132	130	63-142	1	30				
1,1-Dichloroethene	95	95	79-137	0	30				
cis-1,2-Dichloroethene	102	103	80-141	1	30				
trans-1,2-Dichloroethene	100	99	86-131	2	30				
1,2-Dichloropropane	113	111	83-124	2	30				
cis-1,3-Dichloropropene	98	94	70-116	3	30				
trans-1,3-Dichloropropene	105	103	74-119	2	30				
Ethylbenzene	114	116	71-134	1	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Freon 113	92	95	89-148	3	30				
2-Hexanone	97	101	38-131	5	30				
Isopropylbenzene	113	114	75-128	1	30				
Methyl Acetate	83	90	51-137	9	30				
Methyl Tertiary Butyl Ether	95	98	72-126	2	30				
4-Methyl-2-pentanone	100	102	45-128	1	30				
Methylcyclohexane	104	100	80-156	3	30				
Methylene Chloride	98	95	78-133	3	30				
Styrene	104	110	78-125	5	30				
1,1,2,2-Tetrachloroethane	82	75	72-128	9	30				
Tetrachloroethene	195*	203*	80-128	4	30				
Toluene	112	113	80-125	1	30				
1,2,4-Trichlorobenzene	108	112	56-137	4	30				
1,1,1-Trichloroethane	126	122	69-140	3	30				
1,1,2-Trichloroethane	98	106	71-141	7	30				
Trichloroethene	138*	141*	88-133	2	30				
Trichlorofluoromethane	129	124	63-163	4	30				
Vinyl Chloride	112	111	66-133	1	30				
Xylene (Total)	108	112	79-125	3	30				
Batch number: 150091848001	Sample number(s): 7732773-7732777 UNSPK: 7732775 BKG: 7732775								
Iron	153*	173*	75-125	4	20	3.05	3.05	0	20
Batch number: 15008105101A	Sample number(s): 7732773-7732777 UNSPK: 7732773 BKG: 7732773								
Nitrite Nitrogen	102		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 15008987131B	Sample number(s): 7732773-7732777 UNSPK: 7732774 BKG: 7732774								
Sulfate	111*		90-110			52.1	52.8	1	20
Batch number: 15010106101A	Sample number(s): 7732773-7732777 UNSPK: P732908 BKG: P732908								
Nitrate Nitrogen	184*		90-110			< 0.10	< 0.10	0 (1)	2
Batch number: 15012049505A	Sample number(s): 7732773-7732777 UNSPK: P733032 BKG: P733032								
Total Organic Carbon	102		63-142			6.2	6.3	1	4
Batch number: 15016108101A	Sample number(s): 7732773-7732777 UNSPK: 7732776 BKG: 7732776								
Kjeldahl Nitrogen	105		90-110			< 1.0	< 1.0	0 (1)	20

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TCL 4.3 VOCs 8260B
Batch number: T150091AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7732773	109	103	98	102
7732774	112	102	99	104
7732775	111	109	98	103

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1529692
Reported: 01/19/15 at 09:08 PM

Surrogate Quality Control

7732776	112	102	99	104
7732777	111	102	101	103
Blank	99	103	101	99
LCS	102	102	96	101
MS	104	100	98	106
MSD	106	102	98	107
Limits:	80-116	77-113	80-113	78-113

Analysis Name: TCL 4.3 VOCs 8260B
Batch number: T150121AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7732772	111	100	94	104
Blank	112	107	96	103
LCS	112	103	100	111
LCSD	108	102	101	108
MS	104	101	99	105
MSD	103	102	99	108
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 49572

Group Number(s): 1529692

Client: TRC Environmental

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	01/08/2015 12:00
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	GA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Brandy Barclay (2299) at 12:11 on 01/08/2015

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	0.1	DT	Wet	Y	Bagged	N

General Comments: rec'd 1 metals batch QC no ID on label (MW-16I)

2425 New Holland Pike
Lancaster, PA 17605-2425
T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers		Inorganic Qualifiers	
A	TIC is a possible aldol-condensation product	**B**	Value is <CRDL, but ≥IDL
B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	**N**	Spike sample not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
N	Presumptive evidence of a compound (TICs only)	**U**	Compound was not detected
P	Concentration difference between primary and confirmation columns >25%	**W**	Post digestion spike out of control limits
U	Compound was not detected	*****	Duplicate analysis not within control limits
X,Y,Z	Defined in case narrative	**+**	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

March 05, 2015

Project: Athens GA

Submittal Date: 02/25/2015
Group Number: 1540958
PO Number: BSLAB13
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
MW-16I Grab Water	7784129
HAMP-7 Grab Water	7784130
HAMP-6 Grab Water	7784131
HAMP-3 Grab Water	7784132
HAMP-4 Grab Water	7784133
MW-21 Grab Water	7784134
TBLK-15035 Water	7784135

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

ELECTRONIC COPY TO	Carpenter Technology Corp.	Attn: Ann Kalbach
ELECTRONIC COPY TO	Carpenter Technology Corp.-PA	Attn: Mike Reichardt

Respectfully Submitted,

(717) 556-7262

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784129
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 12:20 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	2,300	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	12	5	5
10335	cis-1,2-Dichloroethene	156-59-2	6,400	50	50
10335	trans-1,2-Dichloroethene	156-60-5	24	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	12,000	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	180	5	5
10335	Xylene (Total)	1330-20-7	15	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	6.10	0.200	1

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784129
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 12:20 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate		14808-79-8	111	20.0	20
		EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen		n.a.	1.7	1.0	1
		EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen		14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon		n.a.	292	10.0	10
		SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5		n.a.	604	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 19:26	Linda C Pape	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 19:50	Linda C Pape	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 19:26	Linda C Pape	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150571AA	02/26/2015 19:50	Linda C Pape	50
01754	Iron	SW-846 6010B	1	150571848002	02/27/2015 08:49	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 12:37	Drew M Gerhart	20
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:09	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:06	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 11:54	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/01/2015 22:39	James S Mathiot	10
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202A	02/27/2015 17:48	Yolunder Y Bunch	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784130
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 12:45 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 40	40	2
10335	Benzene	71-43-2	< 2	2	2
10335	Bromodichloromethane	75-27-4	< 2	2	2
10335	Bromoform	75-25-2	< 8	8	2
10335	Bromomethane	74-83-9	< 2	2	2
10335	2-Butanone	78-93-3	< 20	20	2
10335	Carbon Disulfide	75-15-0	< 10	10	2
10335	Carbon Tetrachloride	56-23-5	< 2	2	2
10335	Chlorobenzene	108-90-7	< 2	2	2
10335	Chloroethane	75-00-3	< 2	2	2
10335	Chloroform	67-66-3	2	2	2
10335	Chloromethane	74-87-3	< 2	2	2
10335	Cyclohexane	110-82-7	< 10	10	2
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 10	10	2
10335	Dibromochloromethane	124-48-1	< 2	2	2
10335	1,2-Dibromoethane	106-93-4	< 2	2	2
10335	1,2-Dichlorobenzene	95-50-1	< 10	10	2
10335	1,3-Dichlorobenzene	541-73-1	< 10	10	2
10335	1,4-Dichlorobenzene	106-46-7	< 10	10	2
10335	Dichlorodifluoromethane	75-71-8	< 2	2	2
10335	1,1-Dichloroethane	75-34-3	2	2	2
10335	1,2-Dichloroethane	107-06-2	< 2	2	2
10335	1,1-Dichloroethene	75-35-4	4	2	2
10335	cis-1,2-Dichloroethene	156-59-2	670	20	20
10335	trans-1,2-Dichloroethene	156-60-5	10	2	2
10335	1,2-Dichloropropane	78-87-5	< 2	2	2
10335	cis-1,3-Dichloropropene	10061-01-5	< 2	2	2
10335	trans-1,3-Dichloropropene	10061-02-6	< 2	2	2
10335	Ethylbenzene	100-41-4	< 2	2	2
10335	Freon 113	76-13-1	< 20	20	2
10335	2-Hexanone	591-78-6	< 20	20	2
10335	Isopropylbenzene	98-82-8	< 10	10	2
10335	Methyl Acetate	79-20-9	< 10	10	2
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 2	2	2
10335	4-Methyl-2-pentanone	108-10-1	< 20	20	2
10335	Methylcyclohexane	108-87-2	< 10	10	2
10335	Methylene Chloride	75-09-2	< 8	8	2
10335	Styrene	100-42-5	< 10	10	2
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 2	2	2
10335	Tetrachloroethene	127-18-4	< 2	2	2
10335	Toluene	108-88-3	< 2	2	2
10335	1,2,4-Trichlorobenzene	120-82-1	< 10	10	2
10335	1,1,1-Trichloroethane	71-55-6	< 2	2	2
10335	1,1,2-Trichloroethane	79-00-5	< 2	2	2
10335	Trichloroethene	79-01-6	4,400	20	20
10335	Trichlorofluoromethane	75-69-4	< 2	2	2
10335	Vinyl Chloride	75-01-4	13	2	2
10335	Xylene (Total)	1330-20-7	< 2	2	2
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.565	0.200	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784130
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 12:45 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	69.7	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	3.8	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	4.3	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	44.3	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 20:14	Linda C Pape	2
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 20:37	Linda C Pape	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 20:14	Linda C Pape	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150571AA	02/26/2015 20:37	Linda C Pape	20
01754	Iron	SW-846 6010B	1	150571848002	02/27/2015 08:54	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 12:51	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:10	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:07	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 11:55	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/01/2015 22:52	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202A	02/27/2015 18:07	Yolunder Y Bunch	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784131
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 13:20 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 40	40	2
10335	Benzene	71-43-2	< 2	2	2
10335	Bromodichloromethane	75-27-4	< 2	2	2
10335	Bromoform	75-25-2	< 8	8	2
10335	Bromomethane	74-83-9	< 2	2	2
10335	2-Butanone	78-93-3	< 20	20	2
10335	Carbon Disulfide	75-15-0	< 10	10	2
10335	Carbon Tetrachloride	56-23-5	< 2	2	2
10335	Chlorobenzene	108-90-7	< 2	2	2
10335	Chloroethane	75-00-3	< 2	2	2
10335	Chloroform	67-66-3	3	2	2
10335	Chloromethane	74-87-3	< 2	2	2
10335	Cyclohexane	110-82-7	< 10	10	2
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 10	10	2
10335	Dibromochloromethane	124-48-1	< 2	2	2
10335	1,2-Dibromoethane	106-93-4	< 2	2	2
10335	1,2-Dichlorobenzene	95-50-1	< 10	10	2
10335	1,3-Dichlorobenzene	541-73-1	< 10	10	2
10335	1,4-Dichlorobenzene	106-46-7	< 10	10	2
10335	Dichlorodifluoromethane	75-71-8	< 2	2	2
10335	1,1-Dichloroethane	75-34-3	< 2	2	2
10335	1,2-Dichloroethane	107-06-2	< 2	2	2
10335	1,1-Dichloroethene	75-35-4	3	2	2
10335	cis-1,2-Dichloroethene	156-59-2	1,200	20	20
10335	trans-1,2-Dichloroethene	156-60-5	11	2	2
10335	1,2-Dichloropropane	78-87-5	< 2	2	2
10335	cis-1,3-Dichloropropene	10061-01-5	< 2	2	2
10335	trans-1,3-Dichloropropene	10061-02-6	< 2	2	2
10335	Ethylbenzene	100-41-4	< 2	2	2
10335	Freon 113	76-13-1	< 20	20	2
10335	2-Hexanone	591-78-6	< 20	20	2
10335	Isopropylbenzene	98-82-8	< 10	10	2
10335	Methyl Acetate	79-20-9	< 10	10	2
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 2	2	2
10335	4-Methyl-2-pentanone	108-10-1	< 20	20	2
10335	Methylcyclohexane	108-87-2	< 10	10	2
10335	Methylene Chloride	75-09-2	< 8	8	2
10335	Styrene	100-42-5	< 10	10	2
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 2	2	2
10335	Tetrachloroethene	127-18-4	< 2	2	2
10335	Toluene	108-88-3	< 2	2	2
10335	1,2,4-Trichlorobenzene	120-82-1	< 10	10	2
10335	1,1,1-Trichloroethane	71-55-6	< 2	2	2
10335	1,1,2-Trichloroethane	79-00-5	< 2	2	2
10335	Trichloroethene	79-01-6	5,000	20	20
10335	Trichlorofluoromethane	75-69-4	< 2	2	2
10335	Vinyl Chloride	75-01-4	24	2	2
10335	Xylene (Total)	1330-20-7	< 2	2	2
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	6.30	0.200	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784131
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 13:20 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate		14808-79-8	37.4	5.0	5
		EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen		n.a.	< 1.0	1.0	1
		EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen		14797-55-8	3.3	0.10	1
00219	Nitrite Nitrogen		14797-65-0	< 0.050	0.050	1
		SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon		n.a.	< 1.0	1.0	1
		SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5		n.a.	32.8	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 21:01	Linda C Pape	2
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 21:25	Linda C Pape	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 21:01	Linda C Pape	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150571AA	02/26/2015 21:25	Linda C Pape	20
01754	Iron	SW-846 6010B	1	150571848002	02/27/2015 08:58	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 13:06	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:12	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:09	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 11:56	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/01/2015 23:33	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202A	02/27/2015 17:54	Yolunder Y Bunch	1

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784132
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 14:00 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	18,000	2,000	100
10335	Benzene	71-43-2	< 1	1	1
10335	Bromodichloromethane	75-27-4	< 1	1	1
10335	Bromoform	75-25-2	< 4	4	1
10335	Bromomethane	74-83-9	< 1	1	1
10335	2-Butanone	78-93-3	30	10	1
10335	Carbon Disulfide	75-15-0	< 5	5	1
10335	Carbon Tetrachloride	56-23-5	< 1	1	1
10335	Chlorobenzene	108-90-7	< 1	1	1
10335	Chloroethane	75-00-3	< 1	1	1
10335	Chloroform	67-66-3	7	1	1
10335	Chloromethane	74-87-3	< 1	1	1
10335	Cyclohexane	110-82-7	< 5	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10335	Dibromochloromethane	124-48-1	< 1	1	1
10335	1,2-Dibromoethane	106-93-4	< 1	1	1
10335	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10335	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10335	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10335	Dichlorodifluoromethane	75-71-8	< 1	1	1
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	1,2-Dichloroethane	107-06-2	< 1	1	1
10335	1,1-Dichloroethene	75-35-4	2	1	1
10335	cis-1,2-Dichloroethene	156-59-2	500	100	100
10335	trans-1,2-Dichloroethene	156-60-5	3	1	1
10335	1,2-Dichloropropane	78-87-5	< 1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	< 1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	< 1	1	1
10335	Ethylbenzene	100-41-4	< 1	1	1
10335	Freon 113	76-13-1	< 10	10	1
10335	2-Hexanone	591-78-6	< 10	10	1
10335	Isopropylbenzene	98-82-8	< 5	5	1
10335	Methyl Acetate	79-20-9	< 5	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
10335	4-Methyl-2-pentanone	108-10-1	11	10	1
10335	Methylcyclohexane	108-87-2	< 5	5	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	Styrene	100-42-5	< 5	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 1	1	1
10335	Tetrachloroethene	127-18-4	< 1	1	1
10335	Toluene	108-88-3	< 1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 1	1	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	1,200	100	100
10335	Trichlorofluoromethane	75-69-4	< 1	1	1
10335	Vinyl Chloride	75-01-4	16	1	1
10335	Xylene (Total)	1330-20-7	< 1	1	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	23.6	1.00	5

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784132
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 14:00 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	47.6	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	2,480	25.0	25
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	1,190	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 21:48	Linda C Pape	1
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150582AA	02/27/2015 21:03	Amanda K Richards	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 21:48	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150582AA	02/27/2015 21:03	Amanda K Richards	100
01754	Iron	SW-846 6010B	1	150571848002	03/04/2015 02:19	Elaine F Stoltzfus	5
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 13:20	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:13	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:10	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 11:58	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/01/2015 23:47	James S Mathiot	25
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202A	02/27/2015 18:22	Yolunder Y Bunch	1

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784133
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 14:35 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	36	20	1
10335	Benzene	71-43-2	< 1	1	1
10335	Bromodichloromethane	75-27-4	< 1	1	1
10335	Bromoform	75-25-2	< 4	4	1
10335	Bromomethane	74-83-9	< 1	1	1
10335	2-Butanone	78-93-3	< 10	10	1
10335	Carbon Disulfide	75-15-0	< 5	5	1
10335	Carbon Tetrachloride	56-23-5	< 1	1	1
10335	Chlorobenzene	108-90-7	< 1	1	1
10335	Chloroethane	75-00-3	< 1	1	1
10335	Chloroform	67-66-3	1	1	1
10335	Chloromethane	74-87-3	< 1	1	1
10335	Cyclohexane	110-82-7	< 5	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10335	Dibromochloromethane	124-48-1	< 1	1	1
10335	1,2-Dibromoethane	106-93-4	< 1	1	1
10335	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10335	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10335	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10335	Dichlorodifluoromethane	75-71-8	< 1	1	1
10335	1,1-Dichloroethane	75-34-3	2	1	1
10335	1,2-Dichloroethane	107-06-2	< 1	1	1
10335	1,1-Dichloroethene	75-35-4	7	1	1
10335	cis-1,2-Dichloroethene	156-59-2	2,400	10	10
10335	trans-1,2-Dichloroethene	156-60-5	20	1	1
10335	1,2-Dichloropropane	78-87-5	< 1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	< 1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	< 1	1	1
10335	Ethylbenzene	100-41-4	< 1	1	1
10335	Freon 113	76-13-1	< 10	10	1
10335	2-Hexanone	591-78-6	< 10	10	1
10335	Isopropylbenzene	98-82-8	< 5	5	1
10335	Methyl Acetate	79-20-9	< 5	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
10335	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10335	Methylcyclohexane	108-87-2	< 5	5	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	Styrene	100-42-5	< 5	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 1	1	1
10335	Tetrachloroethene	127-18-4	< 1	1	1
10335	Toluene	108-88-3	< 1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 1	1	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	2,700	10	10
10335	Trichlorofluoromethane	75-69-4	< 1	1	1
10335	Vinyl Chloride	75-01-4	77	1	1
10335	Xylene (Total)	1330-20-7	2	1	1
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.530	0.200	1

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784133
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 14:35 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	39.3	10.0	10
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	0.64	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	3.3	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	83.4	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 22:35	Linda C Pape	1
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 22:58	Linda C Pape	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 22:35	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T150571AA	02/26/2015 22:58	Linda C Pape	10
01754	Iron	SW-846 6010B	1	150571848002	02/27/2015 09:15	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 13:34	Drew M Gerhart	10
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:15	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:11	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 11:59	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/02/2015 00:15	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202B	02/27/2015 17:17	Yolunder Y Bunch	1

Sample Description: MW-21 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784134
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

-MW21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 100	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	13	5	5
10335	cis-1,2-Dichloroethene	156-59-2	1,300	5	5
10335	trans-1,2-Dichloroethene	156-60-5	26	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	14,000	100	100
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	< 5	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	< 0.200	0.200	1

Sample Description: MW-21 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7784134
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015 by DS

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

-MW21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	< 5.0	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	1.5	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	< 1.0	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	33.2	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150581AA	02/27/2015 14:52	Linda C Pape	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	W150601AA	03/01/2015 10:51	Sarah A Guill	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150581AA	02/27/2015 14:52	Linda C Pape	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	W150601AA	03/01/2015 10:51	Sarah A Guill	100
01754	Iron	SW-846 6010B	1	150571848002	02/27/2015 09:19	Joanne M Gates	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	150571848002	02/26/2015 22:00	Annamaria Kuhns	1
00228	Sulfate	EPA 300.0	1	15057667901A	02/26/2015 13:48	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15058108101A	03/04/2015 13:16	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15057106102A	02/26/2015 15:12	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15056105107A	02/25/2015 12:00	Joseph E McKenzie	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15057049506A	03/02/2015 00:28	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15058108101A	02/27/2015 10:20	Nancy J Shoop	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15058003202A	02/27/2015 18:29	Yolunder Y Bunch	1

Sample Description: TBLK-15035 Water
Carpenter Site - Athens, GA

LL Sample # WW 7784135
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

ATHET

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 20	20	1
10335	Benzene	71-43-2	< 1	1	1
10335	Bromodichloromethane	75-27-4	< 1	1	1
10335	Bromoform	75-25-2	< 4	4	1
10335	Bromomethane	74-83-9	< 1	1	1
10335	2-Butanone	78-93-3	< 10	10	1
10335	Carbon Disulfide	75-15-0	< 5	5	1
10335	Carbon Tetrachloride	56-23-5	< 1	1	1
10335	Chlorobenzene	108-90-7	< 1	1	1
10335	Chloroethane	75-00-3	< 1	1	1
10335	Chloroform	67-66-3	< 1	1	1
10335	Chloromethane	74-87-3	< 1	1	1
10335	Cyclohexane	110-82-7	< 5	5	1
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 5	5	1
10335	Dibromochloromethane	124-48-1	< 1	1	1
10335	1,2-Dibromoethane	106-93-4	< 1	1	1
10335	1,2-Dichlorobenzene	95-50-1	< 5	5	1
10335	1,3-Dichlorobenzene	541-73-1	< 5	5	1
10335	1,4-Dichlorobenzene	106-46-7	< 5	5	1
10335	Dichlorodifluoromethane	75-71-8	< 1	1	1
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	1,2-Dichloroethane	107-06-2	< 1	1	1
10335	1,1-Dichloroethene	75-35-4	< 1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	< 1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	< 1	1	1
10335	1,2-Dichloropropane	78-87-5	< 1	1	1
10335	cis-1,3-Dichloropropene	10061-01-5	< 1	1	1
10335	trans-1,3-Dichloropropene	10061-02-6	< 1	1	1
10335	Ethylbenzene	100-41-4	< 1	1	1
10335	Freon 113	76-13-1	< 10	10	1
10335	2-Hexanone	591-78-6	< 10	10	1
10335	Isopropylbenzene	98-82-8	< 5	5	1
10335	Methyl Acetate	79-20-9	< 5	5	1
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
10335	4-Methyl-2-pentanone	108-10-1	< 10	10	1
10335	Methylcyclohexane	108-87-2	< 5	5	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	Styrene	100-42-5	< 5	5	1
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 1	1	1
10335	Tetrachloroethene	127-18-4	< 1	1	1
10335	Toluene	108-88-3	< 1	1	1
10335	1,2,4-Trichlorobenzene	120-82-1	< 5	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 1	1	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	< 1	1	1
10335	Trichlorofluoromethane	75-69-4	< 1	1	1
10335	Vinyl Chloride	75-01-4	< 1	1	1
10335	Xylene (Total)	1330-20-7	< 1	1	1

Sample Description: TBLK-15035 Water
Carpenter Site - Athens, GA

LL Sample # WW 7784135
LL Group # 1540958
Account # 00435

Project Name: Athens GA

Collected: 02/23/2015

Submitted: 02/25/2015 09:50
Reported: 03/05/2015 09:55

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

ATHET

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T150571AA	02/26/2015 14:18	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T150571AA	02/26/2015 14:18	Linda C Pape	1

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: T150571AA	Sample number(s): 7784129-7784133,7784135							
Acetone	< 20	20.	ug/l	93		55-129		
Benzene	< 1	1.	ug/l	102		78-120		
Bromodichloromethane	< 1	1.	ug/l	97		73-120		
Bromoform	< 4	4.	ug/l	96		52-123		
Bromomethane	< 1	1.	ug/l	73		53-130		
2-Butanone	< 10	10.	ug/l	94		54-133		
Carbon Disulfide	< 5	5.	ug/l	87		58-126		
Carbon Tetrachloride	< 1	1.	ug/l	98		74-130		
Chlorobenzene	< 1	1.	ug/l	101		80-120		
Chloroethane	< 1	1.	ug/l	82		56-120		
Chloroform	< 1	1.	ug/l	98		80-120		
Chloromethane	< 1	1.	ug/l	97		63-120		
Cyclohexane	< 5	5.	ug/l	102		60-129		
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	100		56-120		
Dibromochloromethane	< 1	1.	ug/l	104		72-120		
1,2-Dibromoethane	< 1	1.	ug/l	106		80-120		
1,2-Dichlorobenzene	< 5	5.	ug/l	101		80-120		
1,3-Dichlorobenzene	< 5	5.	ug/l	100		80-120		
1,4-Dichlorobenzene	< 5	5.	ug/l	100		80-120		
Dichlorodifluoromethane	< 1	1.	ug/l	97		55-127		
1,1-Dichloroethane	< 1	1.	ug/l	101		80-120		
1,2-Dichloroethane	< 1	1.	ug/l	101		72-127		
1,1-Dichloroethene	< 1	1.	ug/l	100		76-124		
cis-1,2-Dichloroethene	< 1	1.	ug/l	102		80-120		
trans-1,2-Dichloroethene	< 1	1.	ug/l	103		80-120		
1,2-Dichloropropane	< 1	1.	ug/l	104		80-120		
cis-1,3-Dichloropropene	< 1	1.	ug/l	100		80-120		
trans-1,3-Dichloropropene	< 1	1.	ug/l	105		76-120		
Ethylbenzene	< 1	1.	ug/l	108		80-120		
Freon 113	< 10	10.	ug/l	88		67-127		
2-Hexanone	< 10	10.	ug/l	81		50-131		
Isopropylbenzene	< 5	5.	ug/l	104		80-120		
Methyl Acetate	< 5	5.	ug/l	102		64-131		
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	91		75-120		
4-Methyl-2-pentanone	< 10	10.	ug/l	76		51-124		
Methylcyclohexane	< 5	5.	ug/l	105		66-126		
Methylene Chloride	< 4	4.	ug/l	100		80-120		
Styrene	< 5	5.	ug/l	104		80-120		
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	106		70-120		
Tetrachloroethene	< 1	1.	ug/l	100		80-120		
Toluene	< 1	1.	ug/l	107		80-120		
1,2,4-Trichlorobenzene	< 5	5.	ug/l	94		73-120		
1,1,1-Trichloroethane	< 1	1.	ug/l	94		66-126		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1,2-Trichloroethane	< 1	1.	ug/l	109		80-120		
Trichloroethene	< 1	1.	ug/l	101		80-120		
Trichlorofluoromethane	< 1	1.	ug/l	88		58-135		
Vinyl Chloride	< 1	1.	ug/l	103		69-120		
Xylene (Total)	< 1	1.	ug/l	103		80-120		
Batch number: T150581AA	Sample number(s): 7784134							
Acetone	< 20	20.	ug/l	93	96	55-129	3	30
Benzene	< 1	1.	ug/l	102	106	78-120	3	30
Bromodichloromethane	< 1	1.	ug/l	99	102	73-120	3	30
Bromoform	< 4	4.	ug/l	94	92	52-123	2	30
Bromomethane	< 1	1.	ug/l	83	81	53-130	3	30
2-Butanone	< 10	10.	ug/l	96	97	54-133	2	30
Carbon Disulfide	< 5	5.	ug/l	85	87	58-126	2	30
Carbon Tetrachloride	< 1	1.	ug/l	95	100	74-130	5	30
Chlorobenzene	< 1	1.	ug/l	98	99	80-120	1	30
Chloroethane	< 1	1.	ug/l	91	91	56-120	0	30
Chloroform	< 1	1.	ug/l	100	104	80-120	3	30
Chloromethane	< 1	1.	ug/l	107	106	63-120	1	30
Cyclohexane	< 5	5.	ug/l	101	105	60-129	4	30
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	106	104	56-120	2	30
Dibromochloromethane	< 1	1.	ug/l	104	103	72-120	1	30
1,2-Dibromoethane	< 1	1.	ug/l	102	103	80-120	1	30
1,2-Dichlorobenzene	< 5	5.	ug/l	102	101	80-120	2	30
1,3-Dichlorobenzene	< 5	5.	ug/l	98	99	80-120	0	30
1,4-Dichlorobenzene	< 5	5.	ug/l	102	103	80-120	1	30
Dichlorodifluoromethane	< 1	1.	ug/l	101	101	55-127	0	30
1,1-Dichloroethane	< 1	1.	ug/l	100	104	80-120	4	30
1,2-Dichloroethane	< 1	1.	ug/l	104	106	72-127	2	30
1,1-Dichloroethene	< 1	1.	ug/l	99	101	76-124	2	30
cis-1,2-Dichloroethene	< 1	1.	ug/l	99	104	80-120	5	30
trans-1,2-Dichloroethene	< 1	1.	ug/l	101	104	80-120	4	30
1,2-Dichloropropane	< 1	1.	ug/l	104	106	80-120	2	30
cis-1,3-Dichloropropene	< 1	1.	ug/l	99	103	80-120	4	30
trans-1,3-Dichloropropene	< 1	1.	ug/l	103	104	76-120	2	30
Ethylbenzene	< 1	1.	ug/l	107	107	80-120	0	30
Freon 113	< 10	10.	ug/l	88	90	67-127	3	30
2-Hexanone	< 10	10.	ug/l	80	80	50-131	0	30
Isopropylbenzene	< 5	5.	ug/l	101	102	80-120	1	30
Methyl Acetate	< 5	5.	ug/l	102	101	64-131	1	30
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	90	91	75-120	1	30
4-Methyl-2-pentanone	< 10	10.	ug/l	77	79	51-124	2	30
Methylcyclohexane	< 5	5.	ug/l	105	106	66-126	1	30
Methylene Chloride	< 4	4.	ug/l	100	104	80-120	4	30
Styrene	< 5	5.	ug/l	101	100	80-120	1	30
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	109	110	70-120	0	30
Tetrachloroethene	< 1	1.	ug/l	93	98	80-120	5	30
Toluene	< 1	1.	ug/l	106	107	80-120	1	30
1,2,4-Trichlorobenzene	< 5	5.	ug/l	96	94	73-120	2	30
1,1,1-Trichloroethane	< 1	1.	ug/l	94	97	66-126	3	30
1,1,2-Trichloroethane	< 1	1.	ug/l	105	105	80-120	0	30
Trichlorofluoromethane	< 1	1.	ug/l	99	100	58-135	1	30
Vinyl Chloride	< 1	1.	ug/l	112	112	69-120	0	30
Xylene (Total)	< 1	1.	ug/l	99	100	80-120	1	30
Batch number: T150582AA	Sample number(s): 7784132							

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Acetone	< 20	20.	ug/l	94		55-129		
cis-1,2-Dichloroethene	< 1	1.	ug/l	98		80-120		
Trichloroethene	< 1	1.	ug/l	98		80-120		
Batch number: W150601AA	Sample number(s): 7784134							
Trichloroethene	< 1	1.	ug/l	97	98	80-120	1	30
Batch number: 150571848002	Sample number(s): 7784129-7784134							
Iron	< 0.200	0.200	mg/l	99		80-120		
Batch number: 15056105107A	Sample number(s): 7784129-7784134							
Nitrite Nitrogen	< 0.050	0.050	mg/l	102		90-110		
Batch number: 15057049506A	Sample number(s): 7784129-7784134							
Total Organic Carbon	< 1.0	1.0	mg/l	103		91-113		
Batch number: 15057106102A	Sample number(s): 7784129-7784134							
Nitrate Nitrogen	< 0.10	0.10	mg/l	102		90-110		
Batch number: 15057667901A	Sample number(s): 7784129-7784134							
Sulfate	< 1.0	1.0	mg/l	96	99	90-110	3	20
Batch number: 15058108101A	Sample number(s): 7784129-7784134							
Kjeldahl Nitrogen	< 1.0	1.0	mg/l	96		90-110		
Batch number: 15058003202A	Sample number(s): 7784129-7784132,7784134							
Total Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	100		90-110		
Batch number: 15058003202B	Sample number(s): 7784133							
Total Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	100		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: T150571AA	Sample number(s): 7784129-7784133,7784135 UNSPK: P784056								
Acetone	94	94	35-144	0	30				
Benzene	111	111	72-134	0	30				
Bromodichloromethane	103	102	73-125	1	30				
Bromoform	95	94	48-118	1	30				
Bromomethane	85	88	47-129	3	30				
2-Butanone	93	94	44-135	1	30				
Carbon Disulfide	96	97	53-149	2	30				
Carbon Tetrachloride	106	107	75-148	2	30				
Chlorobenzene	105	105	87-124	1	30				
Chloroethane	96	101	55-130	4	30				
Chloroform	107	107	81-134	0	30				
Chloromethane	112	109	61-125	3	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Cyclohexane	114	116	63-151	1	30				
1,2-Dibromo-3-chloropropane	99	101	50-123	2	30				
Dibromochloromethane	102	104	74-116	2	30				
1,2-Dibromoethane	103	104	77-116	1	30				
1,2-Dichlorobenzene	101	103	84-119	2	30				
1,3-Dichlorobenzene	103	104	86-121	1	30				
1,4-Dichlorobenzene	105	105	85-121	0	30				
Dichlorodifluoromethane	113	111	58-156	2	30				
1,1-Dichloroethane	106	108	84-129	2	30				
1,2-Dichloroethane	107	107	63-142	0	30				
1,1-Dichloroethene	112	112	79-137	0	30				
cis-1,2-Dichloroethene	106	108	80-141	2	30				
trans-1,2-Dichloroethene	109	112	86-131	3	30				
1,2-Dichloropropane	108	110	83-124	2	30				
cis-1,3-Dichloropropene	104	104	70-116	1	30				
trans-1,3-Dichloropropene	107	110	74-119	2	30				
Ethylbenzene	118	117	71-134	1	30				
Freon 113	95	100	89-148	4	30				
2-Hexanone	79	80	38-131	0	30				
Isopropylbenzene	108	108	75-128	0	30				
Methyl Acetate	99	99	51-137	0	30				
Methyl Tertiary Butyl Ether	92	93	72-126	1	30				
4-Methyl-2-pentanone	76	76	45-128	1	30				
Methylcyclohexane	115	116	80-156	0	30				
Methylene Chloride	107	108	78-133	1	30				
Styrene	107	108	78-125	1	30				
1,1,2,2-Tetrachloroethane	107	108	72-128	1	30				
Tetrachloroethene	105	105	80-128	1	30				
Toluene	115	117	80-125	1	30				
1,2,4-Trichlorobenzene	92	98	56-137	6	30				
1,1,1-Trichloroethane	104	104	69-140	1	30				
1,1,2-Trichloroethane	109	108	71-141	1	30				
Trichloroethene	109	112	88-133	3	30				
Trichlorofluoromethane	108	111	63-163	2	30				
Vinyl Chloride	118	119	66-133	1	30				
Xylene (Total)	107	107	79-125	0	30				
Batch number: T150581AA	Sample number(s): 7784134 UNSPK: P781508								
Acetone	111	105	35-144	5	30				
Benzene	113	112	72-134	1	30				
Bromodichloromethane	106	102	73-125	4	30				
Bromoform	97	97	48-118	0	30				
Bromomethane	89	87	47-129	3	30				
2-Butanone	99	96	44-135	2	30				
Carbon Disulfide	95	94	53-149	1	30				
Carbon Tetrachloride	109	108	75-148	1	30				
Chlorobenzene	106	104	87-124	2	30				
Chloroethane	99	97	55-130	2	30				
Chloroform	110	106	81-134	4	30				
Chloromethane	117	115	61-125	2	30				
Cyclohexane	116	113	63-151	2	30				
1,2-Dibromo-3-chloropropane	107	104	50-123	3	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Dibromochloromethane	108	106	74-116	2	30				
1,2-Dibromoethane	107	106	77-116	1	30				
1,2-Dichlorobenzene	105	104	84-119	0	30				
1,3-Dichlorobenzene	106	105	86-121	1	30				
1,4-Dichlorobenzene	103	106	85-121	3	30				
Dichlorodifluoromethane	114	113	58-156	1	30				
1,1-Dichloroethane	108	108	84-129	0	30				
1,2-Dichloroethane	109	106	63-142	3	30				
1,1-Dichloroethene	110	110	79-137	0	30				
cis-1,2-Dichloroethene	109	107	80-141	2	30				
trans-1,2-Dichloroethene	113	108	86-131	4	30				
1,2-Dichloropropane	112	109	83-124	3	30				
cis-1,3-Dichloropropene	104	104	70-116	1	30				
trans-1,3-Dichloropropene	110	109	74-119	0	30				
Ethylbenzene	120	120	71-134	0	30				
Freon 113	99	97	89-148	2	30				
2-Hexanone	87	86	38-131	2	30				
Isopropylbenzene	111	115	75-128	3	30				
Methyl Acetate	110	107	51-137	3	30				
Methyl Tertiary Butyl Ether	92	92	72-126	0	30				
4-Methyl-2-pentanone	81	78	45-128	4	30				
Methylcyclohexane	121	117	80-156	4	30				
Methylene Chloride	107	105	78-133	2	30				
Styrene	108	110	78-125	1	30				
1,1,2,2-Tetrachloroethane	110	109	72-128	0	30				
Tetrachloroethene	106	107	80-128	0	30				
Toluene	116	117	80-125	1	30				
1,2,4-Trichlorobenzene	98	99	56-137	1	30				
1,1,1-Trichloroethane	105	103	69-140	2	30				
1,1,2-Trichloroethane	112	112	71-141	0	30				
Trichlorofluoromethane	113	113	63-163	0	30				
Vinyl Chloride	124	121	66-133	3	30				
Xylene (Total)	110	110	79-125	0	30				
Batch number: T150582AA	Sample number(s): 7784132 UNSPK: P786333								
Acetone	94	91	35-144	4	30				
cis-1,2-Dichloroethene	106	100	80-141	6	30				
Trichloroethene	108	104	88-133	3	30				
Batch number: 150571848002	Sample number(s): 7784129-7784134 UNSPK: P784748 BKG: P784748								
Iron	100	102	75-125	1	20	< 0.200	< 0.200	0 (1)	20
Batch number: 15056105107A	Sample number(s): 7784129-7784134 UNSPK: 7784134 BKG: 7784134								
Nitrite Nitrogen	96		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 15057049506A	Sample number(s): 7784129-7784134 UNSPK: 7784130 BKG: 7784130								
Total Organic Carbon	110		63-142			4.3	4.4	0 (1)	4
Batch number: 15057106102A	Sample number(s): 7784129-7784134 UNSPK: P782575 BKG: P782575								
Nitrate Nitrogen	82*		90-110			< 0.10	< 0.10	200* (1)	2
Batch number: 15057667901A	Sample number(s): 7784129-7784134 UNSPK: P785001 BKG: P785001								

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1540958
Reported: 03/05/15 at 09:55 AM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Sulfate	94		90-110			356	346	3	20
Batch number: 15058108101A	Sample number(s): 7784129-7784134 UNSPK: 7784134 BKG: 7784134								
Kjeldahl Nitrogen	98		90-110			< 1.0	< 1.0	0 (1)	20
Batch number: 15058003202A	Sample number(s): 7784129-7784132,7784134 UNSPK: P783938 BKG: P783938								
Total Alkalinity to pH 4.5	70	69	17-146	0	5	268	267	0	5
Batch number: 15058003202B	Sample number(s): 7784133 UNSPK: P783938 BKG: 7784133								
Total Alkalinity to pH 4.5	70	69	17-146	0	5	83.4	83.1	0	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TCL 4.3 VOCs 8260B
Batch number: T150571AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7784129	97	97	103	109
7784130	97	98	101	108
7784131	98	95	102	109
7784132	97	96	104	110
7784133	98	98	100	107
7784135	98	98	104	106
Blank	98	100	103	107
LCS	96	98	103	109
MS	96	98	105	110
MSD	95	99	104	110
Limits:	80-116	77-113	80-113	78-113

Analysis Name: TCL 4.3 VOCs 8260B
Batch number: T150581AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7784134	98	97	102	110
Blank	99	101	103	107
LCS	96	95	103	111
LCSD	97	99	103	109
MS	95	97	105	112
MSD	96	99	108	113
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 57522

Group Number(s): 1540958

Client: TRC ENV

CARPENTER SITE ATHENS, GA

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	02/25/2015 9:50
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	GA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Corey Eshleman (3647) at 10:45 on 02/25/2015

Samples Chilled Details: CARPENTER SITE ATHENS, GA

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	1.1	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and the < Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, ISO17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

May 13, 2015

Project: Athens GA

Submittal Date: 05/01/2015
Group Number: 1557878
PO Number: BSLAB13
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
MW-16I Grab Water	7870278
HAMP-7 Grab Water	7870279
HAMP-6 Grab Water	7870280
HAMP-3 Grab Water	7870281
HAMP-4 Grab Water	7870282

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

ELECTRONIC COPY TO Carpenter Technology Corp.-PA Attn: Mike Reichardt

Respectfully Submitted,

Lyssa M. Longenecker
Specialist

(717) 556-7321

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870278
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 10:00 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	540	200	10
10335	Benzene	71-43-2	< 10	10	10
10335	Bromodichloromethane	75-27-4	< 10	10	10
10335	Bromoform	75-25-2	< 40	40	10
10335	Bromomethane	74-83-9	< 10	10	10
10335	2-Butanone	78-93-3	< 100	100	10
10335	Carbon Disulfide	75-15-0	< 50	50	10
10335	Carbon Tetrachloride	56-23-5	< 10	10	10
10335	Chlorobenzene	108-90-7	< 10	10	10
10335	Chloroethane	75-00-3	< 10	10	10
10335	Chloroform	67-66-3	< 10	10	10
10335	Chloromethane	74-87-3	< 10	10	10
10335	Cyclohexane	110-82-7	< 50	50	10
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 50	50	10
10335	Dibromochloromethane	124-48-1	< 10	10	10
10335	1,2-Dibromoethane	106-93-4	< 10	10	10
10335	1,2-Dichlorobenzene	95-50-1	< 50	50	10
10335	1,3-Dichlorobenzene	541-73-1	< 50	50	10
10335	1,4-Dichlorobenzene	106-46-7	< 50	50	10
10335	Dichlorodifluoromethane	75-71-8	< 10	10	10
10335	1,1-Dichloroethane	75-34-3	< 10	10	10
10335	1,2-Dichloroethane	107-06-2	< 10	10	10
10335	1,1-Dichloroethene	75-35-4	16	10	10
10335	cis-1,2-Dichloroethene	156-59-2	9,400	100	100
10335	trans-1,2-Dichloroethene	156-60-5	26	10	10
10335	1,2-Dichloropropane	78-87-5	< 10	10	10
10335	cis-1,3-Dichloropropene	10061-01-5	< 10	10	10
10335	trans-1,3-Dichloropropene	10061-02-6	< 10	10	10
10335	Ethylbenzene	100-41-4	< 10	10	10
10335	Freon 113	76-13-1	< 100	100	10
10335	2-Hexanone	591-78-6	< 100	100	10
10335	Isopropylbenzene	98-82-8	< 50	50	10
10335	Methyl Acetate	79-20-9	< 50	50	10
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 10	10	10
10335	4-Methyl-2-pentanone	108-10-1	< 100	100	10
10335	Methylcyclohexane	108-87-2	< 50	50	10
10335	Methylene Chloride	75-09-2	< 40	40	10
10335	Styrene	100-42-5	< 50	50	10
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 10	10	10
10335	Tetrachloroethene	127-18-4	< 10	10	10
10335	Toluene	108-88-3	< 10	10	10
10335	1,2,4-Trichlorobenzene	120-82-1	< 50	50	10
10335	1,1,1-Trichloroethane	71-55-6	< 10	10	10
10335	1,1,2-Trichloroethane	79-00-5	< 10	10	10
10335	Trichloroethene	79-01-6	18,000	100	100
10335	Trichlorofluoromethane	75-69-4	< 10	10	10
10335	Vinyl Chloride	75-01-4	280	10	10
10335	Xylene (Total)	1330-20-7	18	10	10
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	5.87	0.200	1

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: MW-16I Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870278
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 10:00 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

MW16I

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	156	20.0	20
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	1.8	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	0.66	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	14.3	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	180	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 19:26	Kevin A Sposito	10
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 19:50	Kevin A Sposito	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151291AA	05/09/2015 19:26	Kevin A Sposito	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T151291AA	05/09/2015 19:50	Kevin A Sposito	100
01754	Iron	SW-846 6010B	1	151251848002	05/06/2015 19:39	Katlin N Cataldi	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	151251848002	05/06/2015 11:04	James L Mertz	1
00228	Sulfate	EPA 300.0	1	15121667901B	05/01/2015 18:08	Drew M Gerhart	20
00217	Kjeldahl Nitrogen	EPA 351.2	1	15130108101A	05/11/2015 11:31	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15130106101B	05/10/2015 21:10	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15121105101A	05/01/2015 15:45	Venia B McFadden	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15125049501A	05/06/2015 06:20	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15130108101A	05/10/2015 14:15	Joseph E McKenzie	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15124003105A	05/05/2015 14:54	Michele L Graham	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870279
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 10:50 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 200	200	10
10335	Benzene	71-43-2	< 10	10	10
10335	Bromodichloromethane	75-27-4	< 10	10	10
10335	Bromoform	75-25-2	< 40	40	10
10335	Bromomethane	74-83-9	< 10	10	10
10335	2-Butanone	78-93-3	< 100	100	10
10335	Carbon Disulfide	75-15-0	< 50	50	10
10335	Carbon Tetrachloride	56-23-5	< 10	10	10
10335	Chlorobenzene	108-90-7	< 10	10	10
10335	Chloroethane	75-00-3	< 10	10	10
10335	Chloroform	67-66-3	< 10	10	10
10335	Chloromethane	74-87-3	< 10	10	10
10335	Cyclohexane	110-82-7	< 50	50	10
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 50	50	10
10335	Dibromochloromethane	124-48-1	< 10	10	10
10335	1,2-Dibromoethane	106-93-4	< 10	10	10
10335	1,2-Dichlorobenzene	95-50-1	< 50	50	10
10335	1,3-Dichlorobenzene	541-73-1	< 50	50	10
10335	1,4-Dichlorobenzene	106-46-7	< 50	50	10
10335	Dichlorodifluoromethane	75-71-8	< 10	10	10
10335	1,1-Dichloroethane	75-34-3	< 10	10	10
10335	1,2-Dichloroethane	107-06-2	< 10	10	10
10335	1,1-Dichloroethene	75-35-4	< 10	10	10
10335	cis-1,2-Dichloroethene	156-59-2	1,900	10	10
10335	trans-1,2-Dichloroethene	156-60-5	12	10	10
10335	1,2-Dichloropropane	78-87-5	< 10	10	10
10335	cis-1,3-Dichloropropene	10061-01-5	< 10	10	10
10335	trans-1,3-Dichloropropene	10061-02-6	< 10	10	10
10335	Ethylbenzene	100-41-4	< 10	10	10
10335	Freon 113	76-13-1	< 100	100	10
10335	2-Hexanone	591-78-6	< 100	100	10
10335	Isopropylbenzene	98-82-8	< 50	50	10
10335	Methyl Acetate	79-20-9	< 50	50	10
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 10	10	10
10335	4-Methyl-2-pentanone	108-10-1	< 100	100	10
10335	Methylcyclohexane	108-87-2	< 50	50	10
10335	Methylene Chloride	75-09-2	< 40	40	10
10335	Styrene	100-42-5	< 50	50	10
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 10	10	10
10335	Tetrachloroethene	127-18-4	< 10	10	10
10335	Toluene	108-88-3	< 10	10	10
10335	1,2,4-Trichlorobenzene	120-82-1	< 50	50	10
10335	1,1,1-Trichloroethane	71-55-6	< 10	10	10
10335	1,1,2-Trichloroethane	79-00-5	< 10	10	10
10335	Trichloroethene	79-01-6	7,100	100	100
10335	Trichlorofluoromethane	75-69-4	< 10	10	10
10335	Vinyl Chloride	75-01-4	41	10	10
10335	Xylene (Total)	1330-20-7	< 10	10	10
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	< 0.200	0.200	1

Sample Description: HAMP-7 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870279
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 10:50 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP7

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	37.9	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	3.5	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	1.2	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	35.3	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 20:14	Kevin A Sposito	10
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 20:37	Kevin A Sposito	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151291AA	05/09/2015 20:14	Kevin A Sposito	10
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T151291AA	05/09/2015 20:37	Kevin A Sposito	100
01754	Iron	SW-846 6010B	1	151221848007	05/05/2015 23:54	Elaine F Stoltzfus	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	151221848007	05/04/2015 16:44	James L Mertz	1
00228	Sulfate	EPA 300.0	1	15121667901B	05/01/2015 18:24	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15130108101A	05/11/2015 11:33	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15130106101B	05/10/2015 21:13	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15121105101A	05/01/2015 15:46	Venia B McFadden	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15125049501A	05/05/2015 06:51	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15130108101A	05/10/2015 14:15	Joseph E McKenzie	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15124003105A	05/05/2015 15:53	Michele L Graham	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870280
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 11:40 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	< 100	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	5	5	5
10335	cis-1,2-Dichloroethene	156-59-2	1,100	5	5
10335	trans-1,2-Dichloroethene	156-60-5	11	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	5,900	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	27	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	0.677	0.200	1

Sample Description: HAMP-6 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870280
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 11:40 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP6

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	63.6	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	4.0	0.50	5
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	5.1	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	46.0	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 21:01	Kevin A Sposito	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 21:25	Kevin A Sposito	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151291AA	05/09/2015 21:01	Kevin A Sposito	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T151291AA	05/09/2015 21:25	Kevin A Sposito	50
01754	Iron	SW-846 6010B	1	151221848007	05/05/2015 23:57	Elaine F Stoltzfus	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	151221848007	05/04/2015 16:44	James L Mertz	1
00228	Sulfate	EPA 300.0	1	15121667901B	05/01/2015 17:18	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15130108101A	05/11/2015 11:35	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15130106101A	05/10/2015 23:03	Joseph E McKenzie	5
00219	Nitrite Nitrogen	EPA 353.2	1	15121105101A	05/01/2015 15:48	Venia B McFadden	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15125049501A	05/05/2015 07:07	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15130108101A	05/10/2015 14:15	Joseph E McKenzie	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15124003105A	05/05/2015 16:00	Michele L Graham	1

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870281
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 12:20 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	9,500	400	20
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	630	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	9	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	< 5	5	5
10335	cis-1,2-Dichloroethene	156-59-2	1,500	5	5
10335	trans-1,2-Dichloroethene	156-60-5	6	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	3,200	20	20
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	39	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5

A preserved vial was submitted for analysis. However, the pH at the time of analysis was 7.

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870281
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 12:20 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	104	1.00	5
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	13.0	5.0	5
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 5.0	5.0	1
	Reporting limits were raised due to interference from the sample matrix.				
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	< 0.10	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	5,700	100	100
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	3,740	10.0	5

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.
Preservation requirements were not met. The pH was out of range upon receipt at the laboratory and after adding the maximum amount of preservative, the pH was still out of range for TKN and TOC.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 21:49	Kevin A Sposito	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 22:13	Kevin A Sposito	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151291AA	05/09/2015 21:49	Kevin A Sposito	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T151291AA	05/09/2015 22:13	Kevin A Sposito	20
01754	Iron	SW-846 6010B	1	151221848007	05/07/2015 18:13	Suzanne M Will	5
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	151221848007	05/04/2015 16:44	James L Mertz	1
00228	Sulfate	EPA 300.0	1	15121667901B	05/01/2015 18:41	Drew M Gerhart	5
00217	Kjeldahl Nitrogen	EPA 351.2	1	15130108101A	05/11/2015 11:37	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15130106101B	05/10/2015 21:16	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15121105101A	05/01/2015 15:49	Venia B McFadden	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15125049501A	05/06/2015 06:35	James S Mathiot	100
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15130108101A	05/10/2015 14:15	Joseph E McKenzie	1

Sample Description: HAMP-3 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870281
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 12:20 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP3

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	2	15126002101A	05/06/2015 15:13	Michele L Graham	5

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870282
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 13:00 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	Acetone	67-64-1	440	100	5
10335	Benzene	71-43-2	< 5	5	5
10335	Bromodichloromethane	75-27-4	< 5	5	5
10335	Bromoform	75-25-2	< 20	20	5
10335	Bromomethane	74-83-9	< 5	5	5
10335	2-Butanone	78-93-3	< 50	50	5
10335	Carbon Disulfide	75-15-0	< 25	25	5
10335	Carbon Tetrachloride	56-23-5	< 5	5	5
10335	Chlorobenzene	108-90-7	< 5	5	5
10335	Chloroethane	75-00-3	< 5	5	5
10335	Chloroform	67-66-3	< 5	5	5
10335	Chloromethane	74-87-3	< 5	5	5
10335	Cyclohexane	110-82-7	< 25	25	5
10335	1,2-Dibromo-3-chloropropane	96-12-8	< 25	25	5
10335	Dibromochloromethane	124-48-1	< 5	5	5
10335	1,2-Dibromoethane	106-93-4	< 5	5	5
10335	1,2-Dichlorobenzene	95-50-1	< 25	25	5
10335	1,3-Dichlorobenzene	541-73-1	< 25	25	5
10335	1,4-Dichlorobenzene	106-46-7	< 25	25	5
10335	Dichlorodifluoromethane	75-71-8	< 5	5	5
10335	1,1-Dichloroethane	75-34-3	< 5	5	5
10335	1,2-Dichloroethane	107-06-2	< 5	5	5
10335	1,1-Dichloroethene	75-35-4	9	5	5
10335	cis-1,2-Dichloroethene	156-59-2	3,300	50	50
10335	trans-1,2-Dichloroethene	156-60-5	28	5	5
10335	1,2-Dichloropropane	78-87-5	< 5	5	5
10335	cis-1,3-Dichloropropene	10061-01-5	< 5	5	5
10335	trans-1,3-Dichloropropene	10061-02-6	< 5	5	5
10335	Ethylbenzene	100-41-4	< 5	5	5
10335	Freon 113	76-13-1	< 50	50	5
10335	2-Hexanone	591-78-6	< 50	50	5
10335	Isopropylbenzene	98-82-8	< 25	25	5
10335	Methyl Acetate	79-20-9	< 25	25	5
10335	Methyl Tertiary Butyl Ether	1634-04-4	< 5	5	5
10335	4-Methyl-2-pentanone	108-10-1	< 50	50	5
10335	Methylcyclohexane	108-87-2	< 25	25	5
10335	Methylene Chloride	75-09-2	< 20	20	5
10335	Styrene	100-42-5	< 25	25	5
10335	1,1,2,2-Tetrachloroethane	79-34-5	< 5	5	5
10335	Tetrachloroethene	127-18-4	< 5	5	5
10335	Toluene	108-88-3	< 5	5	5
10335	1,2,4-Trichlorobenzene	120-82-1	< 25	25	5
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	5
10335	1,1,2-Trichloroethane	79-00-5	< 5	5	5
10335	Trichloroethene	79-01-6	5,200	50	50
10335	Trichlorofluoromethane	75-69-4	< 5	5	5
10335	Vinyl Chloride	75-01-4	170	5	5
10335	Xylene (Total)	1330-20-7	< 5	5	5
Metals	**SW-846 6010B**		**mg/l**	**mg/l**	
01754	Iron	7439-89-6	3.37	0.200	1

Sample Description: HAMP-4 Grab Water
Carpenter Site - Athens, GA

LL Sample # WW 7870282
LL Group # 1557878
Account # 00435

Project Name: Athens GA

Collected: 04/30/2015 13:00 by WP

Submitted: 05/01/2015 09:10
Reported: 05/13/2015 13:38

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

HAMP4

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00228	Sulfate	14808-79-8	59.0	10.0	10
	EPA 351.2		**mg/l**	**mg/l**	
00217	Kjeldahl Nitrogen	n.a.	< 1.0	1.0	1
	EPA 353.2		**mg/l**	**mg/l**	
00220	Nitrate Nitrogen	14797-55-8	1.1	0.10	1
00219	Nitrite Nitrogen	14797-65-0	< 0.050	0.050	1
	SM 5310 C-2000		**mg/l**	**mg/l**	
00273	Total Organic Carbon	n.a.	78.0	1.0	1
	SM 2320 B-1997		**mg/l as CaCO3**	**mg/l as CaCO3**	
12150	Total Alkalinity to pH 4.5	n.a.	286	2.0	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 22:37	Kevin A Sposito	5
10335	TCL 4.3 VOCs 8260B	SW-846 8260B	1	T151291AA	05/09/2015 23:00	Kevin A Sposito	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151291AA	05/09/2015 22:37	Kevin A Sposito	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	T151291AA	05/09/2015 23:00	Kevin A Sposito	50
01754	Iron	SW-846 6010B	1	151221848007	05/06/2015 00:11	Elaine F Stoltzfus	1
01848	ICP-WW, 3005A (tot rec) - U3	SW-846 3005A	1	151221848007	05/04/2015 16:44	James L Mertz	1
00228	Sulfate	EPA 300.0	1	15121667901B	05/01/2015 18:58	Drew M Gerhart	10
00217	Kjeldahl Nitrogen	EPA 351.2	1	15130108101A	05/11/2015 11:39	Joseph E McKenzie	1
00220	Nitrate Nitrogen	EPA 353.2	1	15130106101B	05/10/2015 21:20	Joseph E McKenzie	1
00219	Nitrite Nitrogen	EPA 353.2	1	15121105101A	05/01/2015 15:50	Venia B McFadden	1
00273	Total Organic Carbon	SM 5310 C-2000	1	15125049501A	05/05/2015 08:08	James S Mathiot	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	15130108101A	05/10/2015 14:15	Joseph E McKenzie	1
12150	Total Alkalinity to pH 4.5	SM 2320 B-1997	1	15124003104A	05/05/2015 13:14	Michele L Graham	1

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1557878
Reported: 05/13/2015 13:38

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: T151291AA	Sample number(s): 7870278-7870282							
Acetone	< 20	20.	ug/l	100		55-129		
Benzene	< 1	1.	ug/l	106		78-120		
Bromodichloromethane	< 1	1.	ug/l	115		73-120		
Bromoform	< 4	4.	ug/l	104		52-123		
Bromomethane	< 1	1.	ug/l	98		53-130		
2-Butanone	< 10	10.	ug/l	104		54-133		
Carbon Disulfide	< 5	5.	ug/l	82		58-126		
Carbon Tetrachloride	< 1	1.	ug/l	111		74-130		
Chlorobenzene	< 1	1.	ug/l	93		80-120		
Chloroethane	< 1	1.	ug/l	83		56-120		
Chloroform	< 1	1.	ug/l	114		80-120		
Chloromethane	< 1	1.	ug/l	111		63-120		
Cyclohexane	< 5	5.	ug/l	103		60-129		
1,2-Dibromo-3-chloropropane	< 5	5.	ug/l	117		56-120		
Dibromochloromethane	< 1	1.	ug/l	108		72-120		
1,2-Dibromoethane	< 1	1.	ug/l	97		80-120		
1,2-Dichlorobenzene	< 5	5.	ug/l	97		80-120		
1,3-Dichlorobenzene	< 5	5.	ug/l	93		80-120		
1,4-Dichlorobenzene	< 5	5.	ug/l	97		80-120		
Dichlorodifluoromethane	< 1	1.	ug/l	109		55-127		
1,1-Dichloroethane	< 1	1.	ug/l	93		80-120		
1,2-Dichloroethane	< 1	1.	ug/l	103		72-127		
1,1-Dichloroethene	< 1	1.	ug/l	87		76-124		
cis-1,2-Dichloroethene	< 1	1.	ug/l	95		80-120		
trans-1,2-Dichloroethene	< 1	1.	ug/l	94		80-120		
1,2-Dichloropropane	< 1	1.	ug/l	94		80-120		
cis-1,3-Dichloropropene	< 1	1.	ug/l	102		80-120		
trans-1,3-Dichloropropene	< 1	1.	ug/l	98		76-120		
Ethylbenzene	< 1	1.	ug/l	100		80-120		
Freon 113	< 10	10.	ug/l	89		67-127		
2-Hexanone	< 10	10.	ug/l	77		50-131		
Isopropylbenzene	< 5	5.	ug/l	93		80-120		
Methyl Acetate	< 5	5.	ug/l	110		64-131		
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	95		75-120		
4-Methyl-2-pentanone	< 10	10.	ug/l	82		51-124		
Methylcyclohexane	< 5	5.	ug/l	113		66-126		
Methylene Chloride	< 4	4.	ug/l	104		80-120		
Styrene	< 5	5.	ug/l	89		80-120		
1,1,2,2-Tetrachloroethane	< 1	1.	ug/l	117		70-120		
Tetrachloroethene	< 1	1.	ug/l	124*		80-120		
Toluene	< 1	1.	ug/l	97		80-120		
1,2,4-Trichlorobenzene	< 5	5.	ug/l	95		73-120		
1,1,1-Trichloroethane	< 1	1.	ug/l	97		66-126		

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1557878
Reported: 05/13/2015 13:38

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1,2-Trichloroethane	< 1	1.	ug/l	95		80-120		
Trichloroethene	< 1	1.	ug/l	101		80-120		
Trichlorofluoromethane	< 1	1.	ug/l	94		58-135		
Vinyl Chloride	< 1	1.	ug/l	97		69-120		
Xylene (Total)	< 1	1.	ug/l	89		80-120		
Batch number: 151221848007	Sample number(s): 7870279-7870282							
Iron	< 0.200	0.200	mg/l	103		80-120		
Batch number: 151251848002	Sample number(s): 7870278							
Iron	< 0.200	0.200	mg/l	102		80-120		
Batch number: 15121105101A	Sample number(s): 7870278-7870282							
Nitrite Nitrogen	< 0.050	0.050	mg/l	101		90-110		
Batch number: 15121667901B	Sample number(s): 7870278-7870282							
Sulfate	< 1.0	1.0	mg/l	102		90-110		
Batch number: 15125049501A	Sample number(s): 7870278-7870282							
Total Organic Carbon	< 1.0	1.0	mg/l	100		91-113		
Batch number: 15130106101A	Sample number(s): 7870280							
Nitrate Nitrogen	< 0.10	0.10	mg/l	99		90-110		
Batch number: 15130106101B	Sample number(s): 7870278-7870279,7870281-7870282							
Nitrate Nitrogen	< 0.10	0.10	mg/l	99		90-110		
Batch number: 15130108101A	Sample number(s): 7870278-7870282							
Kjeldahl Nitrogen	< 1.0	1.0	mg/l	101		90-110		
Batch number: 15124003104A	Sample number(s): 7870282							
Total Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	99		90-110		
Batch number: 15124003105A	Sample number(s): 7870278-7870280							
Total Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	99		90-110		
Batch number: 15126002101A	Sample number(s): 7870281							
Total Alkalinity to pH 4.5	< 2.0	2.0	mg/l as CaCO3	97		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: T151291AA	Sample number(s): 7870278-7870282 UNSPK: P867212								
Acetone	95	96	35-144	1	30				
Benzene	117	117	72-134	1	30				
Bromodichloromethane	128*	124	73-125	3	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1557878
Reported: 05/13/2015 13:38

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Bromoform	99	103	48-118	4	30				
Bromomethane	111	112	47-129	1	30				
2-Butanone	105	105	44-135	0	30				
Carbon Disulfide	79	80	53-149	1	30				
Carbon Tetrachloride	126	129	75-148	2	30				
Chlorobenzene	97	101	87-124	4	30				
Chloroethane	101	102	55-130	1	30				
Chloroform	128	126	81-134	1	30				
Chloromethane	132*	135*	61-125	2	30				
Cyclohexane	110	112	63-151	2	30				
1,2-Dibromo-3-chloropropane	115	114	50-123	1	30				
Dibromochloromethane	109	110	74-116	2	30				
1,2-Dibromoethane	96	100	77-116	3	30				
1,2-Dichlorobenzene	97	99	84-119	1	30				
1,3-Dichlorobenzene	97	98	86-121	1	30				
1,4-Dichlorobenzene	101	100	85-121	0	30				
Dichlorodifluoromethane	127	134	58-156	6	30				
1,1-Dichloroethane	101	97	84-129	3	30				
1,2-Dichloroethane	116	116	63-142	0	30				
1,1-Dichloroethene	88	92	79-137	4	30				
cis-1,2-Dichloroethene	102	104	80-141	2	30				
trans-1,2-Dichloroethene	102	103	86-131	0	30				
1,2-Dichloropropane	104	104	83-124	1	30				
cis-1,3-Dichloropropene	110	111	70-116	1	30				
trans-1,3-Dichloropropene	106	106	74-119	0	30				
Ethylbenzene	105	110	71-134	4	30				
Freon 113	96	98	89-148	2	30				
2-Hexanone	78	80	38-131	3	30				
Isopropylbenzene	97	100	75-128	3	30				
Methyl Acetate	110	111	51-137	1	30				
Methyl Tertiary Butyl Ether	97	98	72-126	1	30				
4-Methyl-2-pentanone	89	87	45-128	2	30				
Methylcyclohexane	129	131	80-156	1	30				
Methylene Chloride	105	109	78-133	3	30				
Styrene	94	98	78-125	4	30				
1,1,2,2-Tetrachloroethane	123	119	72-128	3	30				
Tetrachloroethene	95	98	80-128	3	30				
Toluene	101	105	80-125	4	30				
1,2,4-Trichlorobenzene	91	93	56-137	2	30				
1,1,1-Trichloroethane	110	108	69-140	1	30				
1,1,2-Trichloroethane	96	97	71-141	1	30				
Trichloroethene	110	110	88-133	1	30				
Trichlorofluoromethane	114	116	63-163	1	30				
Vinyl Chloride	112	115	66-133	3	30				
Xylene (Total)	95	97	79-125	2	30				
Batch number: 151221848007	Sample number(s): 7870279-7870282 UNSPK: P872005 BKG: P872005								
Iron	193 (2)	207 (2)	75-125	0	20	95.9	100	5	20
Batch number: 151251848002	Sample number(s): 7870278 UNSPK: 7870278 BKG: 7870278								
Iron	94 (2)	99 (2)	75-125	1	20	5.87	5.79	1	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1557878
Reported: 05/13/2015 13:38

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 15121105101A	Sample number(s): 7870278-7870282 UNSPK: 7870282 BKG: 7870282								
Nitrite Nitrogen	101		90-110			< 0.050	< 0.050	0 (1)	20
Batch number: 15121667901B	Sample number(s): 7870278-7870282 UNSPK: 7870280 BKG: 7870280								
Sulfate	119*		90-110			63.6	63.7	0	20
Batch number: 15125049501A	Sample number(s): 7870278-7870282 UNSPK: 7870280 BKG: 7870280								
Total Organic Carbon	98		63-142			5.1	4.9	3 (1)	4
Batch number: 15130106101A	Sample number(s): 7870280 UNSPK: P868485 BKG: P868485								
Nitrate Nitrogen	103		90-110			7.4	7.5	2	2
Batch number: 15130106101B	Sample number(s): 7870278-7870279,7870281-7870282 UNSPK: 7870278 BKG: 7870278								
Nitrate Nitrogen	98		90-110			0.69	0.69	0	2
Batch number: 15130108101A	Sample number(s): 7870278-7870282 UNSPK: P867589 BKG: P867589								
Kjeldahl Nitrogen	96		90-110			28.0	26.2	7	20
Batch number: 15124003104A	Sample number(s): 7870282 UNSPK: P872246 BKG: P872246								
Total Alkalinity to pH 4.5	97		90-110			9.1	10.4	13* (1)	5
Batch number: 15124003105A	Sample number(s): 7870278-7870280 UNSPK: P872242 BKG: P872242								
Total Alkalinity to pH 4.5	68*		90-110			133	138	4	5
Batch number: 15126002101A	Sample number(s): 7870281 UNSPK: P875386 BKG: P875386								
Total Alkalinity to pH 4.5	97	97	90-110	0	5	127	131	2	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TCL 4.3 VOCs 8260B
Batch number: T151291AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7870278	113	100	94	99
7870279	115	100	94	100
7870280	114	99	91	98
7870281	113	100	92	97
7870282	115	97	92	97
Blank	110	97	93	96
LCS	111	100	93	98
MS	111	97	92	100
MSD	112	98	93	101
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1557878
Reported: 05/13/2015 13:38

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 67884

Group Number(s): 1557878

Client: TRC Environmental

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	05/01/2015 9:10
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	GA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Brandy Barclay (2299) at 10:03 on 05/01/2015

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	2.0	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and the < Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, ISO17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ATTACHMENT B

Downgradient Qualifying Properties

HALEY ALDRICH

ADDITIONAL QUALIFYING PROPERTIES (COPY THIS PAGE AS NEEDED)

PROPERTY INFORMATION			
TAX PARCEL ID	114 029	PROPERTY SIZE (ACRES)	3.29
PROPERTY ADDRESS	500 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.979	LONGITUDE (decimal format)	83.388
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Lotus International	PHONE #	
MAILING ADDRESS	5 Dairy Pak Road		
CITY	Athens	STATE/ZIPCODE	GA/30605

PROPERTY INFORMATION			
TAX PARCEL ID	112 002	PROPERTY SIZE (ACRES)	21.05
PROPERTY ADDRESS	205 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.979	LONGITUDE (decimal format)	83.391
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Georgia Power Company	PHONE #	
MAILING ADDRESS	241 Ralph McGill Blvd NE		
CITY	Atlanta	STATE/ZIPCODE	GA/30308

PROPERTY INFORMATION			
TAX PARCEL ID	112 001	PROPERTY SIZE (ACRES)	8.28
PROPERTY ADDRESS	600 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.980	LONGITUDE (decimal format)	83.389
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Blue Ridge Paper Products	PHONE #	
MAILING ADDRESS	PO Box 4000		
CITY	Canton	STATE/ZIPCODE	NC/28716

ADDITIONAL QUALIFYING PROPERTIES (COPY THIS PAGE AS NEEDED)

PROPERTY INFORMATION			
TAX PARCEL ID	114 026	PROPERTY SIZE (ACRES)	2.4
PROPERTY ADDRESS	Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.978	LONGITUDE (decimal format)	83.390
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Porterfield Family Parnters LP	PHONE #	
MAILING ADDRESS	1190 Mitchell Bridge Rd		
CITY	Athens	STATE/ZIPCODE	GA/30606

PROPERTY INFORMATION			
TAX PARCEL ID	114 027	PROPERTY SIZE (ACRES)	0.88
PROPERTY ADDRESS	290 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.978	LONGITUDE (decimal format)	83.390
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Paul M Stanzi	PHONE #	
MAILING ADDRESS	440 Westview Drive		
CITY	Athens	STATE/ZIPCODE	GA/30606

PROPERTY INFORMATION			
TAX PARCEL ID	112 001A	PROPERTY SIZE (ACRES)	16.13
PROPERTY ADDRESS	0 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.983	LONGITUDE (decimal format)	83.389
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Charles S Olvey	PHONE #	
MAILING ADDRESS	PO Box 80065		
CITY	Athens	STATE/ZIPCODE	GA/30608

ADDITIONAL QUALIFYING PROPERTIES (COPY THIS PAGE AS NEEDED)

PROPERTY INFORMATION			
TAX PARCEL ID	161 029	PROPERTY SIZE (ACRES)	13
PROPERTY ADDRESS	720 Dairy Pak Road		
CITY	Athens	COUNTY	Clarke
STATE	GA	ZIPCODE	30605
LATITUDE (decimal format)	33.979	LONGITUDE (decimal format)	83.387
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Athens - Clarke County	PHONE #	
MAILING ADDRESS	PO Box 1868		
CITY	Athens	STATE/ZIPCODE	GA/30603

PROPERTY INFORMATION			
TAX PARCEL ID		PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS			
CITY		COUNTY	
STATE		ZIPCODE	
LATITUDE (decimal format)		LONGITUDE (decimal format)	
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)		PHONE #	
MAILING ADDRESS			
CITY		STATE/ZIPCODE	

PROPERTY INFORMATION			
TAX PARCEL ID		PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS			
CITY		COUNTY	
STATE		ZIPCODE	
LATITUDE (decimal format)		LONGITUDE (decimal format)	
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)		PHONE #	
MAILING ADDRESS			
CITY		STATE/ZIPCODE	

ATTACHMENT C

J&E model calculations

HALEY ALDRICH

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES: X

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES:

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016		Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	15.24	213	213	0	0	A	SIC	SIC		

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
SIC	1.38	0.481	0.216								

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm-s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
15.24	40	244	244	244	0.1	1.5	

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based groundwater concentration.

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	4.1E-06	2.0E-03

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	197.76	0.265	ERROR	ERROR	0.284	1.48E-09	0.844	1.25E-09	192.31	0.481	0.057	0.424	976

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.05E+03	5.95E+04	1.64E-03	15.24	8,557	4.78E-03	2.06E-01	1.75E-04	4.10E-03	0.00E+00	0.00E+00	3.60E-05	3.70E-05	197.76

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15.24	2.06E+02	0.10	3.06E-01	4.10E-03	9.76E+01	1.14E+05	1.78E-06	3.66E-04	4.1E-06	2.0E-03

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
8.18E+03	2.40E+04	8.18E+03	1.47E+06	8.18E+03

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

SCROLL DOWN TO "END"

END

CONSOLIDATED ERRORS (ADDED BY HALEY & ALDRICH):
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

ATTACHMENT D

Analytical Reports

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

June 23, 2015

Project: Former General Time

Submittal Date: 06/04/2015
Group Number: 1569476
PO Number: BSLAB13
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
SW-1 Grab Surface Water	7930798
SW-2 Grab Surface Water	7930799

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

ELECTRONIC COPY TO Carpenter Technology Corp.-PA Attn: Sean McGowan

Respectfully Submitted,

Angela M. Miller
Specialist

(717) 556-7260

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

Sample Description: SW-1 Grab Surface Water
Former General Time

LL Sample # WW 7930798
LL Group # 1569476
Account # 00435

Project Name: Former General Time

Collected: 06/03/2015 11:40 by RM

Submitted: 06/04/2015 09:30
Reported: 06/23/2015 10:31

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

FGT01

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	< 1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	< 1	1	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	< 1	1	1
10335	Vinyl Chloride	75-01-4	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	T151682AA	06/17/2015 22:49	Christopher G Torres	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151682AA	06/17/2015 22:49	Christopher G Torres	1

Sample Description: SW-2 Grab Surface Water
Former General Time

LL Sample # WW 7930799
LL Group # 1569476
Account # 00435

Project Name: Former General Time

Collected: 06/03/2015 12:10 by RM

Submitted: 06/04/2015 09:30
Reported: 06/23/2015 10:31

Carpenter Technology Corp.-PA
PO Box 14662
Reading PA 19612-4662

FGT02

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethane	75-34-3	< 1	1	1
10335	cis-1,2-Dichloroethene	156-59-2	< 1	1	1
10335	trans-1,2-Dichloroethene	156-60-5	< 1	1	1
10335	Methylene Chloride	75-09-2	< 4	4	1
10335	1,1,2-Trichloroethane	79-00-5	< 1	1	1
10335	Trichloroethene	79-01-6	< 1	1	1
10335	Vinyl Chloride	75-01-4	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/16.
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	T151682AA	06/17/2015 23:12	Christopher G Torres	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T151682AA	06/17/2015 23:12	Christopher G Torres	1

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1569476
Reported: 06/23/2015 10:31

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: T151682AA	Sample number(s): 7930798-7930799							
1,1-Dichloroethane	< 1	1.	ug/l	102		80-120		
cis-1,2-Dichloroethene	< 1	1.	ug/l	106		80-120		
trans-1,2-Dichloroethene	< 1	1.	ug/l	106		80-120		
Methylene Chloride	< 4	4.	ug/l	103		80-120		
1,1,2-Trichloroethane	< 1	1.	ug/l	106		80-120		
Trichloroethene	< 1	1.	ug/l	109		80-120		
Vinyl Chloride	< 1	1.	ug/l	95		69-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: T151682AA	Sample number(s): 7930798-7930799 UNSPK: P919702								
1,1-Dichloroethane	104	102	84-129	1	30				
cis-1,2-Dichloroethene	109	101	80-141	2	30				
trans-1,2-Dichloroethene	111	110	86-131	1	30				
Methylene Chloride	108	106	78-133	2	30				
1,1,2-Trichloroethane	99	98	71-141	1	30				
Trichloroethene	115 (2)	107 (2)	88-133	1	30				
Vinyl Chloride	85	78	66-133	3	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: T151682AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7930798	108	100	97	101
7930799	108	97	99	100
Blank	105	96	99	99
LCS	101	98	101	108
MS	105	96	99	109

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Carpenter Technology Corp.-PA Group Number: 1569476
Reported: 06/23/2015 10:31

Surrogate Quality Control

MSD	103	97	97	106
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 73943

Group Number(s): 1569476

Client: Haley & Aldrich

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/04/2015 9:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	GA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Brandy Barclay (2299) at 10:10 on 06/04/2015

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	1.3	DT	Wet	Y	Loose	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and the < Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, ISO17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ATTACHMENT E

Labor Summary

HALEY ALDRICH

TABULATED MONTHLY SUMMARY OF HOURS INVOICED BY HALEY & ALDRICH
Period: November 2015-June 2015
General Time Corporation - Athens, GA
Voluntary Remediation Program (HSI# 10355)

Month-Year	Hours	Type Service	Description
May-15	5.00	Support	Project Management
June-15	15.50	Support	Sample Collection
	4.00	PG	Progress Report
	4.00	Support	Progress Report

Note: This summary does not reflect time invested by Carpenter Technology and other contractors in evaluating site conditions and remedial options.