Tighe&Bond
Engineers | Environmental Specialists

P-0534
January 3, 2020

Ms. Rebecca Buswell
Massachusetts Department of Environmental Protection
8 New Bond Street
Worcester, MA 01606

Re: Release Notification and Immediate Response Action Plan
Significant Release Migration Condition
6 Town Hall Drive
Princeton, Massachusetts
RTN 2-21072

Dear Ms. Buswell:

On behalf of the Town of Princeton, Tighe & Bond has prepared this Release Notification and Immediate Response Action (IRA) Plan in response to the detection of per-fluoroalkyl substances (collectively known as PFAS) in the drinking water well that serves the Princeton Town Hall campus at 6 Town Hall Drive in Princeton, Massachusetts ("the site").

Drinking water sample results collected on September 5, 2019 and September 27, 2019 at the request of the Massachusetts Department of Environmental Protection (MassDEP), identified total regulated PFAS concentrations of 127 and 102 parts per trillion (ppt or nanograms/liter), respectively. MassDEP's current drinking water guideline for PFAS in public water supply wells is 70 ng/L for five PFAS compounds. However, MassDEP is currently establishing a Maximum Contaminant Level (MCL) of 20 ppt for the sum of six PFAS compounds. On November 4, 2019, the Town of Princeton verbally notified MassDEP of a two-hour reporting condition in accordance with the Massachusetts Contingency Plan (MCP) at 310 CMR 40.0311. The activities described herein include the immediate response actions completed to date as well as future planned responses actions based on current conditions associated with the detection of PFAS in the Town Hall campus public water supply well (PWS).

Release History

November 4, 2019

As stated, MassDEP was notified of the sample results from the potable well samples collected on September 5, and 27, 2019 on November 4, 2019. Subsequent to notification, MassDEP assigned release tracking number (RTN) 2-21072 to the release and the following immediate response actions were approved:

- Provide bottled water or water treatment for every location serviced by this public water supply well; Install signs on all water dispensing locations at the Town Hall campus including all buildings served by PWS 2241017-01G, warning people not to drink the tap water due to PFAS contamination;
- Sample and analyze monitoring wells, private drinking water supply wells, and public water supply wells within 500 feet for PFAS; and
- Resample the Town Hall campus public water supply (PWS) 2241017-01G on a quarterly basis for PFAS.

November 19, 2019

- On November 19, 2019, the Town of Princeton sent letters to all residents within a 500-foot radius of the Town Hall PWS, informing residents of the detection and request access to their homes to collect a water sample from their potable well for PFAS analysis. Letters were sent to the following addresses:5, 7, 15, 19 and 23 Hubbardston Road;
- 6, 10, 14, 18, 19, 20, 21 and 22 Mountain Road; and
- 5 and 7 Prospect Street

A copy of the letter sent to these locations is included in Appendix B, for reference. A Site Plan (Figure 1) depicting the properties within the 500-foot radius is included in Appendix A. The town also established an information page on the town website at https://www.town.princeton.ma.us/board-health/pages/pfas-information.

November 20, 2019

On November 20, 2019, a BWSC101 was added to the MassDEP file, modifying the release notification threshold to a 72-hour Substantial Release Migration condition in accordance with the Massachusetts Contingency Plan (MCP) at 310 CMR 40.0313(4)(d).

IRA Activities Completed through December 31, 2019

Residential Well Sampling

As indicated previously, the objective of the initial IRA activities is to collect samples from homes within a 500-foot radius around Town Hall campus PWS. Based on this initial screening, 15 potable wells were identified.

Between December 4 and December 16, 2019, samples were collected from eleven of the 15 locations. Samples were collected in general accordance with Environmental Protection Agency (EPA) Document #: EPA/600/R-18/352 for sample Method 537.1 from; 5, 7, 15, and 19 Hubbardston Road, 6, 10, 14, 18, 19 and 21 Mountain Road, and 7 Prospect Street. The samples were submitted to Con Test Analytical in East Longmeadow, Massachusetts for PFAS analysis by EPA Method 537.1.

Samples have not been collected from 23 Hubbardston Road, 20, 22 Mountain Road and 5 Prospect Street. Several attempts were made by telephone for the owners of these properties and door flyers were left at each location.

- Tighe & Bond has visited 20 Mountain Road on two occasions and left flyers. The owner has not contacted us to date. There is no listed telephone number for the owner.
- 22 Mountain Road is currently listed for sale. The realty company was contacted; however, to date a response has not been received. It is not known if the property is vacant or occupied.
- 5 Prospect Street is listed for sale and vacant. The owner was contacted and is not able to grant access until early January 2020. A tentative sample date of January 10, 2020 is scheduled.
- 23 Hubbardston Road is the location of a local market known as Mountainside Market and a pizza shop. To date, attempts to reach the owner by mail and through on-site employees have not been acknowledged. There is no listed telephone number for the

owner of the property. It should be noted that Mountainside Market moved to a new location at 213 Mountain Road on or about December 28, 2019.

Tighe & Bond will continue working with the Town to gain access and sample these locations. We will also be sending certified letters to those property owners, requesting access as soon as possible.

Residential Well Sampling Results

On December 13, 2019, laboratory results were received for the samples collected at 5, 7, 15, 19 Hubbardston Road, and 6, 19, and 21 Mountain Road. Total PFAS concentrations for the five regulated compounds were 39.2, 9.7, 132.6, 9.7, 30.1, 421.0, and 102.4 ng/L, respectively.

Based on these results and discussions with MassDEP, residents were verbally notified of the results within 24-hours of receipt of the data and the Town of Princeton mobilized to immediately provide bottled water to all sample locations with detections.

The laboratory data are summarized in Table 1, in Appendix C. The individual laboratory reports are also included in Appendix C.

Pending Residential Well Sampling Results

As of the writing of this IRA Plan, sample results for 10 Mountain Road and 7 Prospect Street are still pending from the laboratory. These results will be included in the first IRA Status Report.

Proposed IRA Activities

Based on the initial sample results received to date and discussions with MassDEP, the sampling radius was extended by 500-feet from any location with a confirmed PFAS detection. The locations included in the new radius include the following properties:

- 7, 11, 12, 13, 16, 17, 18, 24 Boylston Avenue;
- 11, 13, 14, 15 Gregory Hill Road;
- 2, 29, 30, 33 Mountain Road;
- 1 Hubbardston Road; and
- 1, 10 Worcester Road

The properties included in the new sample radii are shown on the Site Plan (Figure 2) included in Appendix A for reference. Sampling of these properties will take place in early January 2020. It is noted that the radii may be expanded based on the pending analytical results discussed above.

19 Mountain Road Treatment System

On December 17, 2019 a granular activated carbon (GAC) filter system consisting of two 2-cubic foot GAC vessels was installed at 19 Mountain Road. This system was installed as a temporary measure to reduce PFAS concentrations. However, based on the level of total PFAS detected (421 ppt), it is anticipated that the two 2-cubic foot (cf) carbon units will not be adequate. Therefore, the system is being upsized to a system consisting of a 1-micron sediment filter, two 6-cf GAC vessels in series and a flow meter, which will be installed as soon as possible. Once the larger system is installed, IRA activities will include monitoring of the treatment system on a monthly basis, with samples collected from the influent, midfluent and the effluent to monitor for contaminant breakthrough of the primary (or secondary) GAC

vessel. The influent data, coupled with the flow meter readings, will allow us to estimate carbon saturation times and after sufficient data are collected, to safely reduce the sampling frequency, if appropriate. If PFAS are detected in the mid-point sample at a concentration approaching or exceeding 20 ppt, the primary carbon unit will be considered spent. The secondary GAC unit will be moved to the primary position and the primary canister will be removed for carbon replacement. A unit with fresh GAC will be installed as the new secondary unit and the spent carbon will be sent for regeneration.

Proposed Treatment Systems

Based on discussions with MassDEP, point-of-entry treatment (POET) systems will be required for all locations with total regulated PFAS concentration sums exceeding 20 ppt. Therefore, GAC filter systems will be installed at 6 and 21 Mountain Road, and 5 and 15 Hubbardston Road. These systems will be the same as discussed above, but will be the 2-cf carbon vessels, since the PFAS concentrations are considerably lower at these other locations.

The purchase and installation of these systems requires Advisory Committee approval, which is expected at the next Town Meeting on January 8, 2020. Once approved, the systems will be installed at these locations as soon as possible. System monitoring will be conducted as previously discussed above.

White Water is the licensed operator for the Town Hall well. The PFAS treatment system for this well is currently being designed. All of the sinks in the four municipal buildings on the Town Hall campus have been labeled as “not for potable use” and bottled water is available in all of the buildings served by the well. The status of this treatment system will be updated in subsequent status reports. White Water will sample the well quarterly for PFAS and will sample the system once it is installed.

Groundwater Monitoring Well Sampling

Six existing groundwater monitoring wells (MW-6, MA-10A, MW-10D, MW-12, MW-14 and MW-18R) were installed at the Town Hall campus at 6 Town Hall Drive during the 1990s’s and early 2000’s, associated with a release of petroleum under a separate RTN (2-11327). In accordance with the requirements of the NOR, these six monitoring wells will be sampled for PFAS. Sampling is tentatively scheduled for January 2, 2020, the results of which will be included in the next IRA Status Report.

Remediation Waste

No remediation waste has been generated to date under RTN 2-21072.

Permits

No permits are required for the IRA activities completed to date or the proposed IRA activities planned under RTN 2-21072.

Notification of Environmental Sampling Results

In accordance with the MCP at 310 CMR 40.1403(10) a Notice of Environmental Sampling is required any time environmental samples are taken at a property in the course of investigating a release for which a notification to the Department has been made on behalf of someone other than the owner of the property within 30 days of the date the sample results are issued by the laboratory. Table D-1 in Appendix D provides a summary of the dates that laboratory reports were received, and the dates when public notifications are due. The first round of notification letters is due on January 12, 2020. Copies of the public notification letters will be included in the next IRA Status report.

Verbal notifications were made within 24 hours to those residents with detections (along with the notifications to MassDEP, and the Princeton Board of Health).

Conceptual Site Model

The source of the PFAS detections is not currently known. There is a Fire Station within the Town Hall campus; however, Fire Department personnel are not aware of aqueous film-forming foam (AFFF) ever being used or released on the property. The former Princeton Inn, located at 30 Mountain Road, was the scene of a major structural fire in May 2017. The response reportedly involved fire equipment and personnel from approximately 20 surrounding communities. One or more of these response vehicles is reported to have applied AFFF to the fire site, which is directly uphill of 19 Mountain Road and the Town Hall campus. This AFFF application may be the source of, or may be contributing to, the detected groundwater contamination. The results of the groundwater monitoring well sampling for the Town Hall campus may provide helpful information in this regard.

Conclusions

As discussed above, there is a substantial sampling effort underway to identify the extent of PFAS contamination in private wells associated with the detection of PFAS in the Town Hall campus PWS. To date, nine homes have been sampled and 20 additional homes are proposed for sampling based on currently available data.

In addition, a carbon treatment system has been installed at 19 Mountain Road and is in the process of being upscaled. Four additional treatment systems are proposed for those locations with PFAS concentrations exceeding 20 ppt and will be installed as soon as funding is approved. The treatment system for the Town Hall campus well is currently being designed. We will notify MassDEP when a date has been determined for these installations.

Proposed IRA activities include quarterly sampling of approximately 34 potable wells (see Table D-2 in Appendix D), beginning in April 2020. This list of wells may be expanded, based on the results of the current sampling effort.

An update on these activities will be reported to MassDEP in the first IRA Status Report. If you have any questions or require additional information, please contact me at 413.572.3227.

Very truly yours,

TIGHE & BOND, INC.

Jeffrey L. Arps, LSP
Director, Remediation & Field Services

cc: Sherry Patch, Town of Princeton

Appendices

Appendix A – Figure 1, Initial 500-foot Radius Map
Figure 2, Second Round 500-Foot Radius Map

Appendix B – Copy of Letter sent to residents within 500-feet of Town Hall Well

Appendix C – Table 1, Summary of PFAS Analytical Data
Laboratory Reports

Appendix D – Public Notification Spreadsheet

J:\P\P0534 Princeton PSB\PFAS 2019\IRA Plan\DRAFT IRA Plan - Princeton PFAS 12-2019_REV1.docx

APPENDIX A

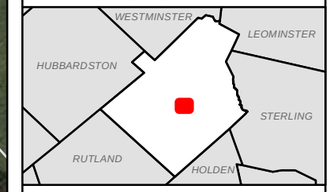
Town Hall Campus
500' Radius
Figure 1

FIGURE 2
ORTHOPHOTOGRAPH SITE PLAN

LEGEND

- 500' Buffer
- Parcels with PFAS Detections
- T — Non-Community Transient Public Water Supply

LOCUS MAP



N
W E
S

0 100 200
Feet

1:2,400

NOTES

1. Based on Google Imagery (2017)

2. 500' Buffer based on a 50' buffer of building structure of the following properties:

21 Mountain Road
19 Mountain Road
6 Mountain Road
15 Hubbardston Road
5 Hubbardston Road
6 Hubbardston Road
19 Hubbardston Road

Princeton, Massachusetts

December 2019

Tighe&Bond
Engineers | Environmental Specialists

G:\GIS\MA\SiteLocus\Princeton\aerial_PFASMonitoring_Map3.mxd Date Saved: 12/17/2019 User: JWebb

P-0534

Tighe&Bond

APPENDIX B

November X, 2019

Re: **Private Well Sampling**

Dear:

At the request of the Massachusetts Department of Environmental Protection (MassDEP), the Town recently sampled the drinking water well that serves the Princeton Town Hall complex to determine baseline water quality. As part of the sampling, we tested for a group of compounds called per- and polyfluoroalkyl substances, or PFAS. MassDEP's current drinking water guideline for PFAS in public water supply wells is 70 parts per trillion (nanograms/liter) for five PFAS compounds combined. The sum of the results for these five compounds was over the 70 parts per trillion guideline (127 ppt on September 5th and 102 ppt on September 27th).

Because of these detections in the public water supply well, MassDEP is requiring the Town to develop an Immediate Response Action Plan that will include sampling of private wells with 500 feet of the Town Hall for PFAS. We are writing today to request your permission to access your home's water system to collect a sample for PFAS analysis. Please see the enclosed form, which also requests additional information about your well and water system; please provide whatever information you can.

The laboratory requires approximately 3 weeks to process the samples. You will be notified of your results by telephone or email (your preference). If you have a positive PFAS detection, we may take a second, confirmatory sample. If any PFAS compounds are detected in your well, the Town will provide you with bottled water for drinking and preparing foods that absorb water. If the levels are above 20 ppt for the combined PFAS compounds, the Town will install an appropriate water treatment system in your home. I am attaching two MassDEP Fact Sheets that provide important information about PFAS; additional information is available on MassDEP's website (https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas).

The Town has engaged Tighe & Bond to provide Licensed Site Professional (LSP) and sampling services in response to this detection. If you have other questions, you may contact me at 464.2102, or you may contact Jeffrey Arps, LSP of Tighe & Bond at 413.572.3227 or by email at jlarps@tighebond.com. You may also contact Rebecca Buswell at MassDEP at 508.767.2772 or Rebecca.buswell@state.ma.us.

Please return the access form to my attention at Town Hall. Thank you for your cooperation as we work through this issue.

Very truly yours,

Sherry Patch
Princeton Town Administrator

J:\P\P0534\PFAS 2019\Resident Letter 11_19.DOC

Tighe&Bond

APPENDIX C

TABLE 1
PFAS Drinking Water Summary
Princeton, Massachusetts
RTN 2-21072

Parameter	Massachusetts Contingency Plan GW-1 Standard	SAMPLE LOCATION										
		Town Well (WELL-01G)		5 Hubbardston Rd	7 Hubbardston Rd	15 Hubbardston Rd	19 Hubbardston Rd	6 Mountain Rd	6 Mountain Rd FB	19 Mountain Rd	21 Mountain Rd	Trip Blank - 12052019
Well Depth (feet)				UNKNOWN	400'	285'	340'	UNKNOWN	FIELD BLANK	UNKNOWN	490'	
Sampling Date		9/5/2019	9/27/2019	12/5/2019	12/5/2019 0:00	12/5/2019	12/5/2019	12/5/2019		12/4/2019	12/5/2019	
EPA 537.1 (ng/L)												
Perfluorobutanesulfonic acid (PFBS)		26.9	17	8.4	2.3	27	2.9	8.4	ND (2.0)	32	8.2	ND (2.0)
Perfluorohexanoic acid (PFHxA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	5.1	2.4	ND (2.0)
Perfluorohexanesulfonic acid (PFHxS)		94.4	78.1	29	3.5	110	9.7	23	ND (2.0)	220	53	ND (2.0)
Perfluoroheptanoic acid (PFHpA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	2.5	ND (2.0)	ND (2.0)
Perfluorooctanoic acid (PFOA)		3.92	3.18	2.9	2.9	4.6	ND (2.0)	2.4	ND (2.0)	11	5.4	ND (2.0)
Perfluorooctanesulfonic acid (PFOS)		26.4	18.9	7.3	3.3	18	ND (2.0)	4.7	ND (2.0)	190	44	ND (2.0)
Perfluorononanoic acid (PFNA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Perfluorodecanoic acid (PFDA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
N-EtFOSAA		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Perfluoroundecanoic acid (PFUnA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
N-MeFOSAA		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Perfluorododecanoic acid (PFDoA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Perfluorotridecanoic acid (PFTrDA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Perfluorotetradecanoic acid (PFTA)		ND(1.82)	ND (1.87)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.0)
Total (All Compounds)		151.6	117.2	47.6	12	159.6	12.6	38.5	ND (2.0)	460.6	113.0	ND (2.0)
Regulated Total	20	**124.7**	**100.2**	**39.2**	9.7	**132.6**	9.7	**30.1**	ND (2.0)	**421.0**	**102.4**	ND (2.0)

NOTES:
Gray colored cells indicate those compounds included in regulated PFAS Total
ND = Not detected above the lab reporting limits shown in parentheses.
Bolded values exceed the Method 1 Standard

ANALYTICAL REPORT

Lab Number:	L1940333
Client:	White Water Inc. 253B Worcester Road Charlton, MA 01507
ATTN:	Andrew Donnelly
Phone:	(888) 377-7678
Project Name:	PRINCETON TOWN CAMPUS
Project Number:	Not Specified
Report Date:	09/25/19

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1940333
Report Date: 09/25/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1940333-01	WELL-01G	DW	PRINCETON	09/05/19 09:30	09/05/19
L1940333-02	FIELD BLANK	DW	PRINCETON	09/05/19 09:30	09/05/19

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1940333
Project Number:	Not Specified	**Report Date:**	09/25/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PRINCETON TOWN CAMPUS **Lab Number:** L1940333
Project Number: Not Specified **Report Date:** 09/25/19

Case Narrative (continued)

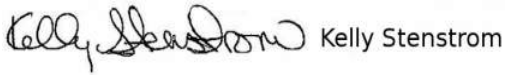
Sample Receipt

L1940333-02: A sample identified as "FIELD BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was analyzed.

Perfluorinated Alkyl Acids

The WG1286049-2/-3 LCS/LCSD recoveries, associated with L1940333-01 and -02, are above the acceptance criteria for perfluorononanoic acid (pfna) (132%/133%), perfluorotridecanoic acid (pftrda) (LCSD 132%), and perfluorotetradecanoic acid (pfta) (172%/169%); however, the associated sample is non-detect to the RL for these target analytes. The results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly Stenstrom

Title: Technical Director/Representative Date: 09/25/19

ORGANICS

SEMIVOLATILES

Project Name: PRINCETON TOWN CAMPUS
Lab Number: L1940333
Project Number: Not Specified
Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940333-01
Client ID: WELL-01G
Sample Location: PRINCETON

Date Collected: 09/05/19 09:30
Date Received: 09/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 122,537
Analytical Date: 09/21/19 01:25
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 09/19/19 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	26.9		ng/l	1.82	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	--	1
Perfluorohexanesulfonic Acid (PFHxS)	94.4		ng/l	1.82	--	1
Perfluorooctanoic Acid (PFOA)	3.92		ng/l	1.82	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	--	1
Perfluorooctanesulfonic Acid (PFOS)	26.4		ng/l	1.82	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	--	1
PFOA/PFOS, Total	30.3		ng/l	1.82	--	1
PFAS, Total (5)	125		ng/l	1.82	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	90		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	79		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		70-130

Project Name: PRINCETON TOWN CAMPUS
Lab Number: L1940333
Project Number: Not Specified
Report Date: 09/25/19

SAMPLE RESULTS

Lab ID: L1940333-02
Client ID: FIELD BLANK
Sample Location: PRINCETON

Date Collected: 09/05/19 09:30
Date Received: 09/05/19
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 122,537
Analytical Date: 09/21/19 03:58
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 09/19/19 09:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.02	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.02	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.02	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.02	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.02	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.02	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.02	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.02	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.02	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.02	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.02	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.02	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.02	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.02	--	1
PFOA/PFOS, Total	ND		ng/l	2.02	--	1
PFAS, Total (5)	ND		ng/l	2.02	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	85		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		70-130

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified
Lab Number: L1940333
Report Date: 09/25/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537
Analytical Date: 09/21/19 00:00
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 09/19/19 09:27

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab for sample(s): 01-02 Batch: WG1286049-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--
PFOA/PFOS, Total	ND		ng/l	2.00	--
PFAS, Total (5)	ND		ng/l	2.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	90		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1940333
Report Date: 09/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1286049-2 WG1286049-3								
Perfluorobutanesulfonic Acid (PFBS)	112		110		70-130	16		30
Perfluorohexanoic Acid (PFHxA)	125		124		70-130	11		30
Perfluoroheptanoic Acid (PFHpA)	124		123		70-130	15		30
Perfluorohexanesulfonic Acid (PFHxS)	122		114		70-130	12		30
Perfluorooctanoic Acid (PFOA)	128		126		70-130	13		30
Perfluorononanoic Acid (PFNA)	**132**	Q	**133**	Q	70-130	17		30
Perfluorooctanesulfonic Acid (PFOS)	118		113		70-130	9		30
Perfluorodecanoic Acid (PFDA)	121		120		70-130	15		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	115		118		70-130	21		30
Perfluoroundecanoic Acid (PFUnA)	125		127		70-130	20		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	109		114		70-130	1		30
Perfluorododecanoic Acid (PFDoA)	121		128		70-130	23		30
Perfluorotridecanoic Acid (PFTrDA)	130		**132**	Q	70-130	18		30
Perfluorotetradecanoic Acid (PFTA)	**172**	Q	**169**	Q	70-130	19		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	91		94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	87		90		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		85		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1940333
Report Date: 09/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1286049-5 QC Sample: L1940333-01 Client ID: WELL-01G						
Perfluorobutanesulfonic Acid (PFBS)	26.9	28.2	ng/l	5		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	94.4	97.8	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	3.92	4.10	ng/l	4		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	26.4	27.6	ng/l	4		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	30.3	31.7	ng/l	0		30
PFAS, Total (5)	125	130	ng/l	0		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	90		94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	79		83		70-130

Lab Duplicate Analysis
Batch Quality Control

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1940333
Report Date: 09/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1286049-5 QC Sample: L1940333-01 Client ID: WELL-01G

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		72		70-130

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1940333
Report Date: 09/25/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1940333-01A	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		3.2	Y	Absent		A2-537(14)
L1940333-01B	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		3.2	Y	Absent		A2-537(14)
L1940333-02A	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		3.2	Y	Absent		A2-537(14),A2-L-EXT-537(14)

*Values in parentheses indicate holding time in days

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1940333
Project Number:	Not Specified	**Report Date:**	09/25/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1940333
Project Number:	Not Specified	**Report Date:**	09/25/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1940333
Project Number:	Not Specified	**Report Date:**	09/25/19

REFERENCES

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE ____ OF ____

Date Rec'd in Lab: 9/5/19

ALPHA Job #: L1940333

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: White Water
Address: 253b Worcester Rd
Charlton Ma
Phone: 508-864-2107
Fax:
Email: CPatterson@RHWhite.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Princeton Town Campus
Project Location: Princeton
Project #:
Project Manager: Chris Patterson
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS: PFAA

SAMPLE HANDLING

Filtration ____
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TOTAL # BOTTLES
940333-01	Well - 01G	9/5/19	930			

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
	9/5/19	APL	9/5/19 10:58
	9/5/19 3:40		9/5/19 15:40
	9/5/19 1648	-AAL	9/5/19 1648

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L1944829
Client:	White Water Inc. 253B Worcester Road Charlton, MA 01507
ATTN:	Andrew Donnelly
Phone:	(888) 377-7678
Project Name:	PRINCETON TOWN CAMPUS
Project Number:	Not Specified
Report Date:	10/21/19

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1944829
Report Date: 10/21/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1944829-01	01G-FINISHED	DW	PRINCETON	09/27/19 10:10	09/27/19
L1944829-02	FIELD BLANK	DW	PRINCETON	09/27/19 10:00	09/27/19

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1944829
Project Number:	Not Specified	**Report Date:**	10/21/19

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1944829
Project Number:	Not Specified	**Report Date:**	10/21/19

Case Narrative (continued)

Sample Receipt

L1944829-02: A sample identified as "FIELD BLANK" was received but not listed on the Chain of Custody. At the client's request, this sample was analyzed.

The samples were received at the laboratory above the required temperature range. The samples were delivered directly from the sampling site but were not on ice.

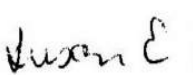
Perfluorinated Alkyl Acids

WG1294979-2 and WG1294979-3: The LCS recoveries, associated with L1944829-01 and -02, are within the 50-150% acceptance criteria for low level 537.

WG1294979-4 The Matrix Spike level is at the Reporting Limit (RL). Any detections below the RL in the native sample are not included in the %Recovery calculation.

The WG1294979-4 MS recoveries, performed on L1944829-01, are outside the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (0%), perfluorohexanoic acid (pfhxa) (145%), perfluoroheptanoic acid (pfhpa) (136%), perfluorohexanesulfonic acid (pfhxs) (0%), perfluorooctanesulfonic acid (pfos) (0%) and n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (66%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Susan O' Neil

Title: Technical Director/Representative Date: 10/21/19

ORGANICS

SEMIVOLATILES

Project Name: PRINCETON TOWN CAMPUS
Lab Number: L1944829
Project Number: Not Specified
Report Date: 10/21/19

SAMPLE RESULTS

Lab ID: L1944829-01
Client ID: 01G-FINISHED
Sample Location: PRINCETON

Date Collected: 09/27/19 10:10
Date Received: 09/27/19
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 122,537
Analytical Date: 10/14/19 19:56
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 10/11/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	17.0		ng/l	1.87	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.87	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.87	--	1
Perfluorohexanesulfonic Acid (PFHxS)	78.1		ng/l	1.87	--	1
Perfluorooctanoic Acid (PFOA)	3.18		ng/l	1.87	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	--	1
Perfluorooctanesulfonic Acid (PFOS)	18.9		ng/l	1.87	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	--	1
PFOA/PFOS, Total	22.1		ng/l	1.87	--	1
PFAS, Total (5)	100		ng/l	1.87	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	99		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	86		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		70-130

Project Name: PRINCETON TOWN CAMPUS **Lab Number:** L1944829

Project Number: Not Specified **Report Date:** 10/21/19

SAMPLE RESULTS

Lab ID: L1944829-02
Client ID: FIELD BLANK
Sample Location: PRINCETON

Date Collected: 09/27/19 10:00
Date Received: 09/27/19
Field Prep: Not Specified

Sample Depth:
Matrix: Dw
Analytical Method: 122,537
Analytical Date: 10/17/19 13:13
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 10/11/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	--	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	--	1
PFOA/PFOS, Total	ND		ng/l	1.86	--	1
PFAS, Total (5)	ND		ng/l	1.86	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	85		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	86		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		70-130

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified
Lab Number: L1944829
Report Date: 10/21/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 122,537
Analytical Date: 10/14/19 19:05
Analyst: RS

Extraction Method: EPA 537
Extraction Date: 10/11/19 07:21

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab for sample(s): 01-02 Batch: WG1294979-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--
PFOA/PFOS, Total	ND		ng/l	2.00	--
PFAS, Total (5)	ND		ng/l	2.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	97		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	83		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1944829
Report Date: 10/21/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1294979-2 WG1294979-3								
Perfluorobutanesulfonic Acid (PFBS)	84		77		70-130	9		30
Perfluorohexanoic Acid (PFHxA)	101		100		70-130	1		30
Perfluoroheptanoic Acid (PFHpA)	96		93		70-130	3		30
Perfluorohexanesulfonic Acid (PFHxS)	80		77		70-130	4		30
Perfluorooctanoic Acid (PFOA)	102		96		70-130	6		30
Perfluorononanoic Acid (PFNA)	93		94		70-130	1		30
Perfluorooctanesulfonic Acid (PFOS)	**65**		86		70-130	28		30
Perfluorodecanoic Acid (PFDA)	89		78		70-130	13		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	**55**		**66**		70-130	18		30
Perfluoroundecanoic Acid (PFUnA)	82		81		70-130	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	73		**61**		70-130	18		30
Perfluorododecanoic Acid (PFDoA)	99		85		70-130	15		30
Perfluorotridecanoic Acid (PFTrDA)	83		87		70-130	5		30
Perfluorotetradecanoic Acid (PFTA)	84		77		70-130	9		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	100		101		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	81		83		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		82		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified
Lab Number: L1944829
Report Date: 10/21/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1294979-4 QC Sample: L1944829-01 Client ID: 01G-FINISHED												
Perfluorobutanesulfonic Acid (PFBS)	17.0	1.82	16.7	**0**	Q	-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	1.82	2.65	**145**	Q	-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	1.82	2.48	**136**	Q	-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	78.1	1.82	74.4	**0**	Q	-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	3.18	1.82	4.90	94		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	1.82	1.93	106		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	18.9	1.82	17.9	**0**	Q	-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	1.82	ND	89		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	1.82	ND	76		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	1.82	ND	82		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	1.82	ND	**66**	Q	-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	1.82	ND	92		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	1.82	ND	91		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	1.82	ND	82		-	-		70-130	-		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	78				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	94				70-130

Project Name: PRINCETON TOWN CAMPUS
Project Number: Not Specified

Lab Number: L1944829
Report Date: 10/21/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1944829-01A	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		17.4	Y	Absent		A2-537(14)
L1944829-01B	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		17.4	Y	Absent		A2-537(14)
L1944829-02A	2 Plastic Trizma/1 Plastic/1 H20+Trizma	A	NA		17.4	Y	Absent		A2-537(14),A2-L-EXT-537(14)
L1944829-02B	2 Plastic Trizma/1 Plastic/1 H20+Trizma	NA	NA			Y	Absent		A2-537(14)

*Values in parentheses indicate holding time in days

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1944829
Project Number:	Not Specified	**Report Date:**	10/21/19

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	PRINCETON TOWN CAMPUS	**Lab Number:**	L1944829
Project Number:	Not Specified	**Report Date:**	10/21/19

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

REFERENCES

122 Determination of Selected Perfluorintated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE ____ OF ____

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 9/27/19

ALPHA Job #: L1944829

Client Information

Client: White Water
Address: 253b Worcester Rd Charlton MA
Phone: 508-864-2107
Fax:
Email: CPatterson@RHWhite.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Princeton Town Campus
Project Location: Princeton
Project #:
Project Manager: Chris Patterson
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS: PFAS

SAMPLE HANDLING

Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments	TOTAL # BOTTLES
944829-01	016 - Finished	9/27	1016		CP	X	

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Chris Patterson	9/27 1140	C. J. Dean AAL	9/27/19 1140
	9/27/19 1700	MM	9/27/19 1700
	9/27/19 1805	AAL	9/27/19 1805

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0340

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0340

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
5 Hubbardston Rd	19L0340-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0340

Date Received: 12/10/2019

Field Sample #: 5 Hubbardston Rd | Sampled: 12/5/2019 09:30

Sample ID: 19L0340-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	8.4	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorohexanesulfonic acid (PFHxS)	29	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorooctanoic acid (PFOA)	2.9	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorooctanesulfonic acid (PFOS)	7.3	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:30	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	115	70-130		12/12/19 1:30
M3HFPO-DA	100	70-130		12/12/19 1:30
13C-PFDA	104	70-130		12/12/19 1:30
d5-NEtFOSAA	120	70-130		12/12/19 1:30

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0340-01 [5 Hubbardston Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

1910340

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
	5 Hubbardston Rd	12/5/19	0930	G	DW	—			2			✓

[2] Preservation Code

Courier Use Only

Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time: 12/5/19 1700
Received by: (signature) FAIDE	Date/Time: 12/5/19 1700
Relinquished by: (signature) FAIDE	Date/Time: 1100 12.10.2019
Received by: (signature)	Date/Time: 11:00 12/10/19
Relinquished by: (signature)	Date/Time: 2030 12/10/19
Received by: (signature) 3.6	Date/Time: 12/10/19 20:30
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments:

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY

☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By ap Date 12/10/19 Time 20:40

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T Who was notified? _____

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0332

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0332

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
6 Mountain Rd	19L0332-01	Drinking Water		EPA 537.1	
6 Mountain Rd FB	19L0332-02	Field Blank		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0332

Date Received: 12/10/2019

Field Sample #: 6 Mountain Rd | Sampled: 12/5/2019 10:05

Sample ID: 19L0332-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	8.4	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorohexanesulfonic acid (PFHxS)	23	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorooctanoic acid (PFOA)	2.4	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorooctanesulfonic acid (PFOS)	4.7	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:00	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	102	70-130		12/11/19 23:00
M3HFPO-DA	91.3	70-130		12/11/19 23:00
13C-PFDA	99.4	70-130		12/11/19 23:00
d5-NEtFOSAA	119	70-130		12/11/19 23:00

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0332

Date Received: 12/10/2019

Field Sample #: 6 Mountain Rd FB | Sampled: 12/5/2019 10:05

Sample ID: 19L0332-02

Sample Matrix: Field Blank

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorooctanoic acid (PFOA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorooctanesulfonic acid (PFOS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 23:21	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	103	70-130		12/11/19 23:21
M3HFPO-DA	94.3	70-130		12/11/19 23:21
13C-PFDA	97.9	70-130		12/11/19 23:21
d5-NEtFOSAA	108	70-130		12/11/19 23:21

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0332-01 [6 Mountain Rd]	B248078	250	1.00	12/11/19
19L0332-02 [6 Mountain Rd FB]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

1910332

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	6 Mountain Rd	2/5/19	1005	G	DW	—			2			✓
2	6 Mountain Rd FB	2/5/19	1005	G	—				1			✓

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

Relinquished by: (signature)	Date/Time: 12/5/19 1708
Received by: (signature) fridge	Date/Time: 12/5/19 1700
Relinquished by: (signature) FRIDGE	Date/Time: 11:00 12/6/2019
Received by: (signature)	Date/Time: 11:00 12/10/19
Relinquished by: (signature)	Date/Time: 2030 12/10/19
Received by: (signature)	Date/Time: 12/10/19 20:30
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments:

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ AIHA-LAP,LLC

PCB ONLY

☐ Soxhlet
☐ Non Soxhlet

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[2] Preservation Code

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By sp Date 12/10/19 Time 2030

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containe	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	3	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0341

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0341

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
7 Hubbardston Rd	19L0341-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0341

Date Received: 12/10/2019

Field Sample #: 7 Hubbardston Rd | Sampled: 12/5/2019 09:50

Sample ID: 19L0341-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	2.3	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorohexanesulfonic acid (PFHxS)	3.5	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorooctanoic acid (PFOA)	2.9	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorooctanesulfonic acid (PFOS)	3.3	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:52	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	107	70-130		12/12/19 1:52
M3HFPO-DA	92.6	70-130		12/12/19 1:52
13C-PFDA	98.6	70-130		12/12/19 1:52
d5-NEtFOSAA	111	70-130		12/12/19 1:52

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0341-01 [7 Hubbardston Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

Phone: 413-525-2332 196034
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page 1 of 1

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	7 Hubbardston Rd.	12/5/19	0950	G	DW	—			2			✓

Relinquished by: (signature)	Date/Time: 12/5/19 1700	Client Comments:
Received by: (signature)	Date/Time: 12/5/19 1700	
Relinquished by: (signature)	Date/Time: 1100 12.06.2019	
Received by: (signature)	Date/Time: 12/10/19	
Relinquished by: (signature)	Date/Time: 2030 12/10/19	
Received by: (signature)	Date/Time: 12/10/19 20:30	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY

☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

[2] Preservation Code

Courier Use Only

Total Number Of:

VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By ap Date 12/10/19 Time 2070

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0334

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0334

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
15 Hubbardston Rd	19L0334-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0334

Date Received: 12/10/2019

Field Sample #: 15 Hubbardston Rd | Sampled: 12/5/2019 16:10

Sample ID: 19L0334-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	27	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorohexanesulfonic acid (PFHxS)	110	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorooctanoic acid (PFOA)	4.6	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorooctanesulfonic acid (PFOS)	18	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:04	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	110	70-130		12/12/19 0:04
M3HFPO-DA	96.2	70-130		12/12/19 0:04
13C-PFDA	102	70-130		12/12/19 0:04
d5-NEtFOSAA	115	70-130		12/12/19 0:04

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0334-01 [15 Hubbardston Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

Phone: 413-525-2332 19L0334
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page 1 of 1

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time

7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

Data Delivery

Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	15 Hubbardston Rd	12/5/19	1610	G	DW				2			✓

[2] Preservation Code

Courier Use Only

Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Contest is not responsible for missing samples from prepacked coolers

Relinquished by: (signature)	Date/Time: 12/5/19 1700
Received by: (signature)	Date/Time: 12/5/19 1700
Relinquished by: (signature)	Date/Time: 12/10 2219
Received by: (signature)	Date/Time: 12/11/19 11:20
Relinquished by: (signature)	Date/Time: 12/12/19 2026
Received by: (signature)	Date/Time: 12/10/19 20:30
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments:

Detection Limit Requirements

MA
CT
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY

☐ Soxhlet
☐ Non Soxhlet

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By sp Date 12/10/19 Time 20:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0339

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0339

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
19 Hubbardston Rd	19L0339-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0339

Date Received: 12/10/2019

Field Sample #: 19 Hubbardston Rd | Sampled: 12/5/2019 08:10

Sample ID: 19L0339-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	2.9	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorohexanesulfonic acid (PFHxS)	9.7	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorooctanoic acid (PFOA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorooctanesulfonic acid (PFOS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 1:09	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	116	70-130		12/12/19 1:09
M3HFPO-DA	106	70-130		12/12/19 1:09
13C-PFDA	108	70-130		12/12/19 1:09
d5-NEtFOSAA	120	70-130		12/12/19 1:09

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0339-01 [19 Hubbardston Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332 1940339
Fax: 413-525-6405
Email: info@contestlabs.com
39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	19 Hubbardston Rd	12/5/19	0810	G	DW				2			✓

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

	Date/Time:
Relinquished by: (signature)	12/5/19 1700
Received by: (signature) FedEx	12/5/19 1700
Relinquished by: (signature) FedEx	12.16.2019 1100
Received by: (signature)	12/10/19 11:01
Relinquished by: (signature)	12/10/19 2032
Received by: (signature) 3.6	(12/10/19 20:32)
Relinquished by: (signature)	
Received by: (signature)	

Client Comments:

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By sp Date 12/10/19 Time 20:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0338

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0338

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
19 Mountain Rd	19L0338-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0338

Date Received: 12/10/2019

Field Sample #: 19 Mountain Rd | Sampled: 12/4/2019 15:10

Sample ID: 19L0338-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	32	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorohexanoic acid (PFHxA)	5.1	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorohexanesulfonic acid (PFHxS)	220	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluoroheptanoic acid (PFHpA)	2.5	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorooctanoic acid (PFOA)	11	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorooctanesulfonic acid (PFOS)	190	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:47	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	115	70-130		12/12/19 0:47
M3HFPO-DA	103	70-130		12/12/19 0:47
13C-PFDA	107	70-130		12/12/19 0:47
d5-NEtFOSAA	126	70-130		12/12/19 0:47

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0338-01 [19 Mountain Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332 19L0338
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page 1 of 1

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	19 Mountain Rd	12/4/19	1510	G	DW	–			2			✓

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time: 12/4/19 1600	Client Comments:
Received by: (signature) Fridge	Date/Time: 12/4/19 1600	
Relinquished by: (signature)	Date/Time: 1562 12-10-2019	
Received by: (signature)	Date/Time: 11:40 12/10/19	
Relinquished by: (signature)	Date/Time: 2032 12/10/19	
Received by: (signature)	Date/Time: 12/10/19 20:30	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA 20 PPT
CT

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Other:

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ AIHA-LAP,LLC

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By sp Date 12/10/19 Time 20:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0331

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0331

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
21 Mountain Rd	19L0331-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0331

Date Received: 12/10/2019

Field Sample #: 21 Mountain Rd | Sampled: 12/5/2019 12:00

Sample ID: 19L0331-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	8.2	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorohexanoic acid (PFHxA)	2.4	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorohexanesulfonic acid (PFHxS)	53	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorooctanoic acid (PFOA)	5.4	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorooctanesulfonic acid (PFOS)	44	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/11/19 21:55	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	110	70-130		12/11/19 21:55
M3HFPO-DA	98.2	70-130		12/11/19 21:55
13C-PFDA	102	70-130		12/11/19 21:55
d5-NEtFOSAA	111	70-130		12/11/19 21:55

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0331-01 [21 Mountain Rd]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332 19L0331
Fax: 413-525-6405
Email: info@contestlabs.com
39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time				Dissolved Metals Samples	
7-Day	☑	10-Day	☐	○	Field Filtered
PFAS 10-Day (std)	☐	Due Date:		○	Lab to Filter
Rush-Approval Required				**Orthophosphate Samples**	
1-Day	☐	3-Day	☐	○	Field Filtered
2-Day	☐	4-Day	☐	○	Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	21 Mountain Rd	12/5/19	1200	G	DW	-			2			✓

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time: 12/5/19 1700	Client Comments:
Received by: (signature) Fedex	Date/Time: 12/5/19 1700	
Relinquished by: (signature) Fedex	Date/Time: Next 12:00 12/6/19	
Received by: (signature)	Date/Time: 12/10/19	
Relinquished by: (signature)	Date/Time: 12/10/19	
Received by: (signature)	Date/Time: 12/10/19 20:30	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA
CT
Other

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By ap Date 12/10/19 Time 20:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	2	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

December 13, 2019

Michael Scherer
Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303

Project Location: Princeton, MA
Client Job Number:
Project Number: P-0534
Laboratory Work Order Number: 19L0335

Enclosed are results of analyses for samples received by the laboratory on December 10, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica L. Hoffman
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Tighe & Bond, Inc. - Worcester
120 Front St.
Worcester, MA 01608-2303
ATTN: Michael Scherer

REPORT DATE: 12/13/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: P-0534

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19L0335

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Princeton, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Trip Blank 12/5/19	19L0335-01	Drinking Water		EPA 537.1	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 537.1

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

N-EtFOSAA

S043701-CCV1, S043701-CCV2

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Princeton, MA | Sample Description: | Work Order: 19L0335

Date Received: 12/10/2019

Field Sample #: Trip Blank 12/5/19 | Sampled: 12/5/2019 00:00

Sample ID: 19L0335-01

Sample Matrix: Drinking Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	MCL/SMCL MA ORSG	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorohexanoic acid (PFHxA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluoroheptanoic acid (PFHpA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorooctanoic acid (PFOA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorooctanesulfonic acid (PFOS)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorononanoic acid (PFNA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorodecanoic acid (PFDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
N-EtFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluoroundecanoic acid (PFUnA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
N-MeFOSAA	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorododecanoic acid (PFDoA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorotridecanoic acid (PFTrDA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Perfluorotetradecanoic acid (PFTA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
11Cl-PF3OUdS (F53B Major)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
9Cl-PF3ONS (F53B Minor)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0		ng/L	1		EPA 537.1	12/11/19	12/12/19 0:26	BLM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	100	70-130		12/12/19 0:26
M3HFPO-DA	89.3	70-130		12/12/19 0:26
13C-PFDA	93.0	70-130		12/12/19 0:26
d5-NEtFOSAA	110	70-130		12/12/19 0:26

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: EPA 537-EPA 537.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19L0335-01 [Trip Blank 12/5/19]	B248078	250	1.00	12/11/19

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B248078 - EPA 537										
Blank (B248078-BLK1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Surrogate: 13C-PFHxA	*45.5*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.4*		ng/L	40.0		106	70-130			
Surrogate: 13C-PFDA	*40.6*		ng/L	40.0		102	70-130			
Surrogate: d5-NEtFOSAA	*185*		ng/L	160		116	70-130			
LCS (B248078-BS1)				Prepared & Analyzed: 12/11/19						
Perfluorobutanesulfonic acid (PFBS)	21.0	2.0	ng/L	20.0		105	70-130			
Perfluorohexanoic acid (PFHxA)	23.7	2.0	ng/L	20.0		119	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.7	2.0	ng/L	18.2		114	70-130			
Perfluoroheptanoic acid (PFHpA)	22.1	2.0	ng/L	20.0		111	70-130			
Perfluorooctanoic acid (PFOA)	23.1	2.0	ng/L	20.0		115	70-130			
Perfluorooctanesulfonic acid (PFOS)	22.0	2.0	ng/L	18.5		119	70-130			
Perfluorononanoic acid (PFNA)	22.6	2.0	ng/L	20.0		113	70-130			
Perfluorodecanoic acid (PFDA)	23.2	2.0	ng/L	20.0		116	70-130			
N-EtFOSAA	25.2	2.0	ng/L	20.0		126	70-130			
Perfluoroundecanoic acid (PFUnA)	24.4	2.0	ng/L	20.0		122	70-130			
N-MeFOSAA	22.9	2.0	ng/L	20.0		114	70-130			
Perfluorododecanoic acid (PFDoA)	22.1	2.0	ng/L	20.0		110	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.0	2.0	ng/L	20.0		110	70-130			
Perfluorotetradecanoic acid (PFTA)	20.9	2.0	ng/L	20.0		105	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	20.5	2.0	ng/L	20.0		102	70-130			
11Cl-PF3OUdS (F53B Major)	20.5	2.0	ng/L	18.8		109	70-130			
9Cl-PF3ONS (F53B Minor)	20.8	2.0	ng/L	18.6		112	70-130			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	21.8	2.0	ng/L	20.0		109	70-130			
Surrogate: 13C-PFHxA	*45.7*		ng/L	40.0		114	70-130			
Surrogate: M3HFPO-DA	*42.0*		ng/L	40.0		105	70-130			
Surrogate: 13C-PFDA	*45.4*		ng/L	40.0		114	70-130			
Surrogate: d5-NEtFOSAA	*193*		ng/L	160		120	70-130			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 537.1 in Drinking Water	
Perfluorobutanesulfonic acid (PFBS)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanoic acid (PFHxA)	NH-P,VT-DW,NJ,CT,ME
Perfluorohexanesulfonic acid (PFHxS)	NH-P,VT-DW,NJ,CT,ME
Perfluoroheptanoic acid (PFHpA)	NH-P,VT-DW,NJ,CT,ME
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,NY,NH,ME
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,NY,NH,ME
Perfluorononanoic acid (PFNA)	NH-P,VT-DW,NJ,CT,ME
Perfluorodecanoic acid (PFDA)	NH-P,VT-DW,NJ,CT,ME
N-EtFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluoroundecanoic acid (PFUnA)	NH-P,VT-DW,NJ,CT,ME
N-MeFOSAA	NH-P,VT-DW,NJ,CT,ME
Perfluorododecanoic acid (PFDoA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotridecanoic acid (PFTrDA)	NH-P,VT-DW,NJ,CT,ME
Perfluorotetradecanoic acid (PFTA)	NH-P,VT-DW,NJ,CT,ME
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,VT-DW,NJ,CT,ME
11Cl-PF3OUdS (F53B Major)	NH-P,VT-DW,NJ,CT,ME
9Cl-PF3ONS (F53B Minor)	NH-P,VT-DW,NJ,CT,ME
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,VT-DW,NJ,CT,ME

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2020
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2020
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332 19L0335
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Company Name:	Tighe & Bond
Address:	120 Front Street, Worcester, MA 01608
Phone:	508-754-2201
Project Name:	Princeton Residential Well Sampling
Project Location:	Princeton, MA
Project Number:	P-0534
Project Manager:	M. Scherer
Con-Test Quote Name/Number:	
Invoice Recipient:	Tighe & Bond
Sampled By:	M. Scherer

Requested Turnaround Time
7-Day ☑ 10-Day ☐
PFAS 10-Day (std) ☐ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFOS/PFOA 537.1
1	Trip Blank 12/5/19	—	—	—	—	—			1			✓

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N
*Contest is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time: 12/5/19 1100	Client Comments:
Received by: (signature) Fridge	Date/Time: 12/5/19 1700	
Relinquished by: (signature) Fridge	Date/Time: 11?? 12/6/19	
Received by: (signature)	Date/Time: 1:?? 12/10/19	
Relinquished by: (signature)	Date/Time: 0030 12/10/19	
Received by: (signature) 3.6	Date/Time: 12/10/19 20:30	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA
CT
Other:

Special Requirements
☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Lab Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client T+B

Received By ap Date 12/10/19 Time 20:30

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 3.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? T On COC? T

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic	1	4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

APPENDIX D

TABLE D-1
Public Notification Schedule
Princeton, Massachusetts
RTN 2-21072

Sample Location	Date Sampled	Date Data Received	Final Letter Due Date
5 Hubbardston	12/5/2019	12/13/2019	1/12/2020
7 Hubbardston	12/5/2019	12/13/2019	1/12/2020
15 Hubbardston	12/5/2019	12/13/2019	1/12/2020
19 Hubbardston	12/5/2019	12/13/2019	1/12/2020
10 Mountain Rd	12/9/2019		
19 Mountain	12/4/2019	12/13/2019	1/12/2020
21 Mountan	12/5/2019	12/13/2019	1/12/2020
6 Mountain	12/5/2019	12/13/2019	1/12/2020
14 Mountain	12/16/2019		
18 Mountan	12/16/2019		
7 Prospect St	12/9/2019		

TABLE D-2
Current Sampling Addresses
Princeton, Massachusetts
RTN 2-21072

Round 1 Homes	Round 2 Homes	
5 Hubbardston Road	7 Boylston Ave	
7 Hubbardston Road	12 Boylston Ave	
15 Hubbardston Road	13 Boylston Ave	
19 Hubbardston Road	16 Boylston Ave	
23 Hubbardston Road	17 Boylston Ave	
6 Mountain Road	18 Boylston Ave	
10 Mountain Road	24 Boylston Ave	
14 Mountain Road	11 Gregory Hill Road	
18 Mountain Road	13 Gregory Hill Road	
19 Mountain Road	14 Gregory Hill Road	
20 Mountain Road	15 Gregory Hill Road	
21 Mountain Road	2 Mountain Road	
22 Mountain Road	29 Mountain Road	
5 Prospect Street	30 Mountain Road	
7 Prospect Street	33 Mountain Road	
	1 Hubbardston Road	
	11 Prospect Street	
	1 Worcester Road	
	10 Worcester Road	
15	19	**Totals**