S-2190
January 17, 2023

Ms. Caprice Shaw
Massachusetts Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103

Re: Release Notification and Immediate Response Action Plan
PFAS Release
Shutesbury Fire Department
42 Leverett Road, Shutesbury
RTN 1-21340

Dear Ms. Shaw:

On behalf of the Town of Shutesbury (Town), 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 Shutesbury Fire Department at 42 Leverett Road and at neighboring properties in Shutesbury ("the Site"). A Site Locus and GIS Map for the Site are provided in Appendix A as Figures 1 and 2.

Release History

Release Discovery June-July 2021

On June 22, 2021, MassDEP BWSC Sites Discovery/Risk Reduction group was notified by the University of Massachusetts (UMass) that elevated detections of PFAS were detected in private potable water wells located around Leverett Road and Old Orchard Road. Samples from residential properties were obtained through a voluntary sampling program directed by UMass. On June 23, 2021, MassDEP issued a Release Log Form indicating a release that was less than the reporting thresholds. RTN-1-21340 was assigned to Leverett Road and MassDEP initiated a PFAS site investigation.

On July 6, 2021, MassDEP submitted requests for access and consent to enter residential properties in Shutesbury as well as the Shutesbury Fire Department, the Shutesbury Highway Department, and the Shutesbury Town Hall.

Source Discovery Program August-September 2021

In August 2021, MassDEP's residential well sampling program in partnership with UMass, identified detections of PFAS6 in private drinking water supplies from the 20, 35, 50, 59, and 62 Leverett Road properties at concentrations exceeding the Massachusetts Maximum Contaminant Level (MMCL) and RCGW-1 Reportable Concentration of 20 nanograms per liter (ng/L). Note that re-sampling at 35 Leverett Road in September 2021 reported a PFAS6 concentration of 18.2 ng/L, slightly below 20 ng/L.

Due to exceedances of the RC/Drinking Water Standard, MassDEP initiated a site/source discovery program to identify potential properties at risk and to identify potential sources of PFAS contamination.

In September 2021, MassDEP sampled two drinking water supply wells at the Shutesbury Fire Department located at 42 Leverett Road as well as other residential and town properties along

Leverett Road. Following the September 2021 sampling event, PFAS6 compounds were detected in the Fire Department wells that service off-site properties at concentrations of 104 ng/L and 140 ng/L, which exceeds the 20 ng/L MMCL/RCGW01 value, as well as the Imminent Hazard (IH) level of 90 ng/L. Following discovery, the Town provided bottled water to properties that exceeded the IH concentration (42, 50, and 59 Leverett Road). Water samples were subsequently obtained from the 62 and 63 Leverett Road properties and PFAS6 compounds were detected above the MMCL/RCGW-1 value and IH level. Subsequently, the Town installed single-vessel Point of Entry Treatment (POET) systems at properties where PFAS6 exceeded the IH concentration.

Subsurface Investigation July-August 2022

On July 15 and August 24, 2022, MassDEP conducted a subsurface investigation at the Shutesbury Fire Department property, consisting of the advancement of ten soil borings with the collection of soil samples for PFAS analysis. Each of the borings was completed as a groundwater monitoring well.

Of the ten soil boring locations, soil samples from five borings, located around the fire tower training area, had PFAS concentrations that exceeded one or more MassDEP RCS-1 criteria. Additionally, MassDEP collected groundwater samples from three of its monitoring wells, along with four existing monitoring wells associated with a previous RTN. Of the seven monitoring wells sampled, PFAS6 compounds exceeded 20 ng/L in five of the wells. Following the subsurface investigation, MassDEP amended the Release Log Form, changing the status of the release to a reportable release.

IRA Activities Completed through December 8, 2022

Residential Well Sampling

On December 8, 2022, Tighe & Bond collected water samples from the 42, 50, 59, 62, and 63 Leverett Road properties. Water samples were obtained to assess the effectiveness of the installed POET systems and included an influent sample collected before the granular activated carbon (GAC) vessel and an effluent sample collected after the GAC vessel.

Residential Well Sampling Results

On December 16, 22, and 23, 2022, laboratory results were received for the samples collected at the five Leverett Road properties. Laboratory results indicate detections of PFAS6 compounds in influent water sources at all five locations. PFAS6 were detected in influent water samples from 42 Leverett Road (170 ng/L), 50 Leverett Road (150 ng/L), 59 Leverett Road (110 ng/L), and 63 Leverett Road (110 ng/L) at concentrations exceeding the 20 ng/L MMCL and the 90 ng/L IH level. The PFAS6 concentration in the influent water sample from 62 Leverett Road (15 ng/L) did not exceed the 20 ng/L MMCL. It should be noted that there are two potable wells on the Fire Department property; one serves the Fire Department at 42 Leverett Road and the residence at 50 Leverett Road, and the other serves the residence at 63 Leverett Road and the Highway Department at 59 Leverett Road. Each location has a separate POET system.

PFAS6 compounds were not detected in four of the five effluent water samples (42, 59, 62, and 63 Leverett Road). The effluent water sample collected from 50 Leverett Road had one PFAS6 compound detected, Perfluoroheptanoic acid (PFHpA), which was reported at a concentration of 4.9 ng/L, below the 20 ng/L MMCL. Additionally, Perfluorohexanoic acid (PFHxA) was detected in effluent samples collected from 50 Leverett Road and 63 Leverett Road at concentrations of 6.4 ng/L and 2.0 ng/L, respectively. PFHxA is not a PFAS6 compound and is not currently regulated by MassDEP. Michigan has established a drinking

water standard of 400,000 ng/L for PFHxA. The carbon is scheduled to be replaced at 50 Leverett Road on January 19, 2023. The carbon at 63 Leverett Road was replaced on November 27, 2022. Considering the recent carbon change and the fact that the PFHxA concentration reported is 0.1 ng/L above the laboratory Reporting Limit, this result is considered suspect and this effluent location will be re-sampled to confirm the detection.

Based on laboratory results, the POET systems are effective in removing PFAS from the potable water. None of the post-treatment effluent samples had PFAS6 concentrations exceeding the MMCL of 20 ng/L.

The laboratory data are summarized in Table 1, in Appendix C. The individual laboratory reports are also included in Appendix B and copies of the public notification letters sent to each property owner are provided in Appendix C.

Proposed IRA Activities

Initial Radius Sampling – January 2023

Using data from the recent and previous sampling rounds, Tighe & Bond prepared a radius map (see Figure 3 in Appendix A) depicting a 500-foot radius around locations with PFAS detections. Numerous properties within the 500-foot radius have not been sampled, so it is unknown if they are impacted. Samples will be obtained from these locations as soon as possible. Additionally, locations shown on the map with non-detect PFAS results in August 2021 will be re-sampled to evaluate plume migration and/or seasonal variations in groundwater conditions. Tighe & Bond will assist the Town as needed to contact the residents within this 500-foot radius for access for Tighe & Bond staff to collect well water samples for PFAS analysis by EPA Method 537.1.

Properties that are within the 500-foot radius that have not been sampled are as follows:

- 4, 10, 16, 17, 20, 24, 25, 29, 32, 35, 37, 66, 81, 94, 97, 105, 113, 117, 121, 128 Leverett Road;
- 3-5, 21-23, and 25 Wilson Road;
- 1 and 15 Pelham Hill Road;
- 1, 10, 11, 21, and 34 Cooleyville Road;
- 8 & 10, 12, 20-24, 23, 25, 27, 33, 45, 56, and 72 Wendell Road; and
- 6, 11, and 15 Town Common Road

Properties that were non-detect during the August 2021 sampling event and will need to be resampled are as follows:

- 60, 75, 87, and 91 Leverett Road; and
- 11 and 16 Wilson Road

Under the Massachusetts Contingency Plan (MCP), the detection of PFAS compounds in a private well constitutes a "Critical Exposure Pathway" or CEP, and the IRA must mitigate CEP's to the extent feasible. This will be accomplished through the immediate provision of bottled water to homes with <u>any</u> PFAS detections and PFAS6 concentrations less than 20 ng/L. The Town is considering installing two-vessel POET systems at homes with PFAS6 exceeding 20 ng/L. The Town may opt to install single-vessel POET systems in lieu of providing bottled water at locations where PFAS6 concentrations are less than 20 ng/L.

A system for reviewing the results, conveying the results to a Town contact, notifying the homeowners verbally of their results, ordering bottled water or a POET for affected locations and preparation of public notification documents to each property owner will be established. MassDEP will also be notified of any new detections of PFAS6 exceeding 20 ng/L or if a location that was below 20 ng/L exceeds 20 ng/L.

Site and POET Monitoring -April 2023

There are approximately 50 locations within the 500-foot radius of current PFAS detections, five of which have POETs. Given the limited temporal data available, in April 2023, Tighe & Bond will sample locations with PFAS6 below 20 ng/L and at locations adjacent to locations with detections, even if those locations are currently non-detect (number of sampling locations will be dependent on the results of the initial radius sampling). Quarterly sampling events will be conducted to assess the limits and migration of the PFAS plume.

Newly installed POET systems will be sampled at the influent, midfluent (between the carbon vessels) and effluent within 30 days of the system's installation. Samples will then be collected quarterly for the first year to establish the effectiveness of the systems. Using flow meters on the two-vessel POET systems and influent concentrations, Tighe & Bond will determine the amount of PFAS that can be removed before PFAS breakthrough of the primary carbon vessel occurs. Based on these data, Tighe & Bond may propose a less-frequent POET monitoring schedule in an IRA Plan Modification.

Remediation Waste

Spent carbon from the existing systems will be treated as remediation waste and properly stored on Town property until a sufficient volume has been generated to justify the cost of shipping the waste for proper off-site disposal or regeneration.

Permits

No permits are required for the IRA activities completed to date or the proposed IRA activities planned under RTN 1-21340.

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. Copies of the Public notification letters are provided in Appendix C.

Conceptual Site Model

Based on the investigation performed by MassDEP, the source of the PFAS detections appears to be Class B aqueous film forming foam (AFFF) used for fire training practice at the Shutesbury Fire Department property at 42 Leverett Road. This AFFF application may be the source of, or may be contributing to, the detected groundwater contamination. The results of subsurface investigation conducted by MassDEP in July and August 2022 have documented soil and groundwater contamination on the Fire Department property. It appears that the surficial contamination has migrated vertically, into the bedrock aquifer.

Conclusions

As discussed above, MassDEP conducted sampling of potable wells at and around the Shutesbury Fire Department. In response to PFAS6 concentrations exceeding the IH

threshold, the Town installed POETs at five locations. The system at 50 Leverett Road experienced breakthrough and the carbon will be replaced on January 19, 2023.

Upon approval of our proposal by the Town, we will initiate sampling at the locations within the 500-foot radius around the locations with PFAS detections. Bottled water will be provided to any locations with detections and two-vessel POETs will be installed at locations where PFAS6 exceed 20 ng/L. The Town is holding a special meeting on January 19, 2023, in part, to secure funding for single-vessel POETs for locations where PFAS6 are less than 20 ng/L and the Town is shown to be responsible, to avoid the inconvenience and expense of bottled water. Quarterly sampling of POET systems, locations with detections and properties adjacent to locations with detections, will be performed in April 2023. It is possible that additional 500-foot radii may be necessary if PFAS have migrated beyond the current radius.

The primary focus of the IRA is to identify impacted potable wells and address any CEP's identified. Additional soil and groundwater assessment will be performed once all of the CEP's have been mitigated.

An update on these activities will be reported to MassDEP in the first IRA Status Report, due on March 17, 2023. 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
Vice President

cc: Becky Torres, Town of Shutesbury

Appendices

Appendix A – Figures

Appendix B – Table 1, PFAS Drinking Water Summary, Laboratory Reports

Appendix C – Public Notification Letters

J:\S\S2190 Shutesbury\FD PFAS 2022\IRA Plan\Final IRA Plan - Shutesbury PFAS.docx

APPENDIX A

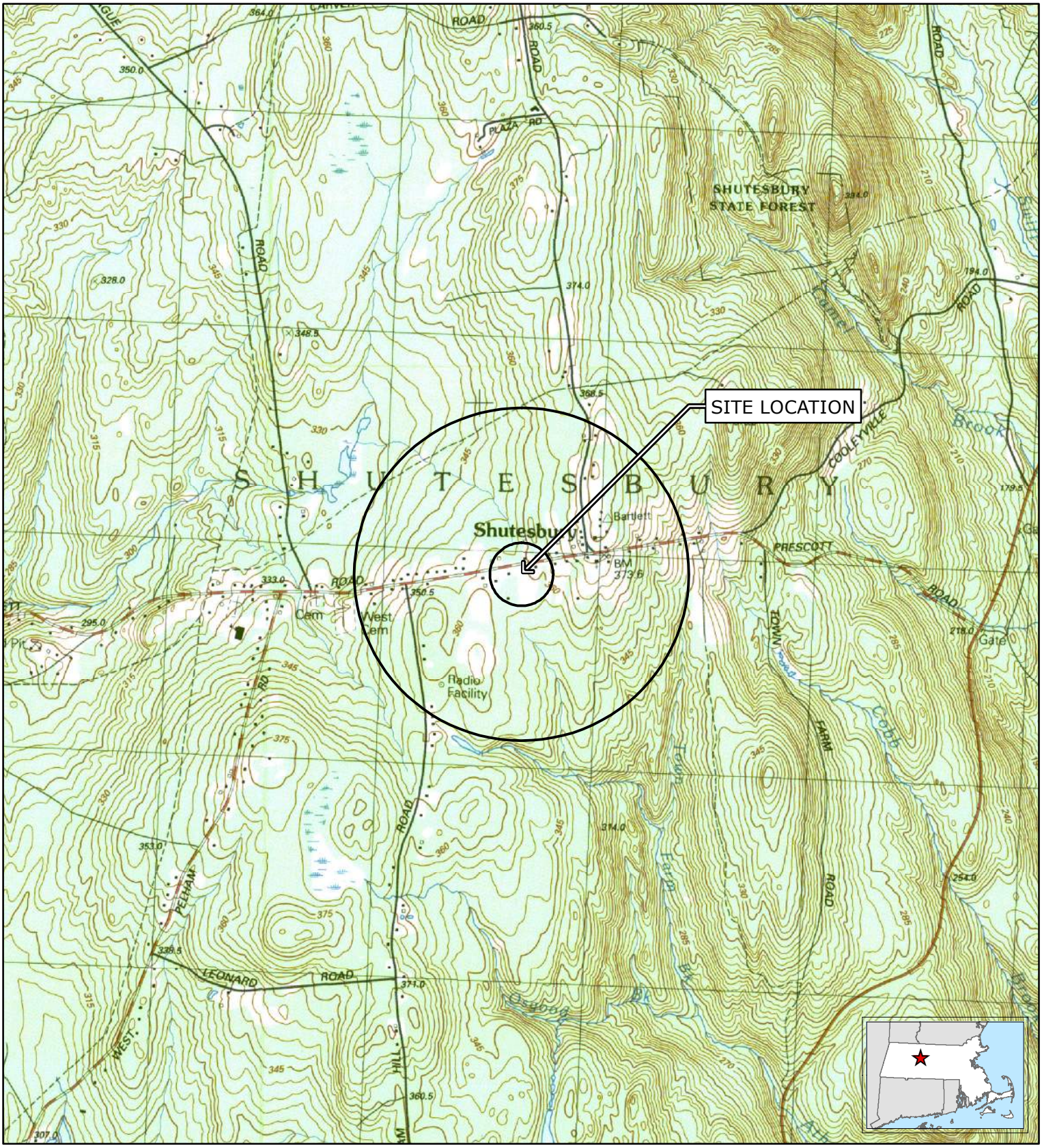


FIGURE 1
SITE LOCATION
Shutesbury Fire Station
42 Leverett Road
Shutesbury, Massachusetts
RTN 1-21340

January 2023

Tighe&Bond

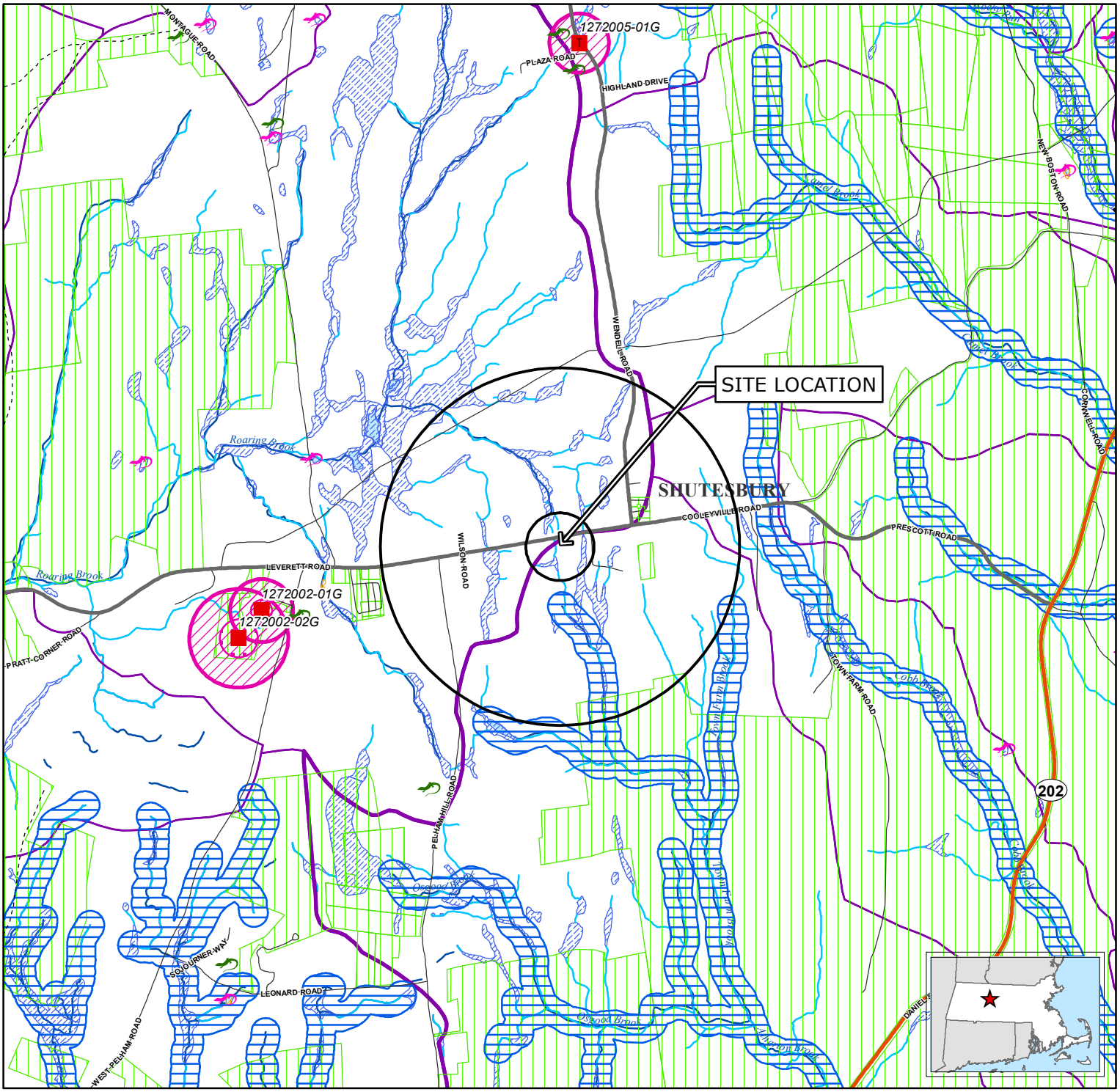
Based on USGS Topographic Map for Shutesbury, MA Revised 1990.
Contour Interval Equals 3m.
Circles indicate 500-foot and half-mile radii

1:24,000
0 1,000 2,000
Feet

N

V:\Projects\S\S2190\MXDs\ShutesburyFireStation_42LeverettRoad_ShutesburyMA_Topo.mxd [Exported By: AFreudenberg, 1/16/2023, 3:11:35 PM]

X-XXXX



Legend

- NHESP Certified Vernal Pools
- NHESP Potential Vernal Pools
- Non-Landfill Solid Waste Sites
- Proposed Well
- Emergency Surface Water
- Community Public Water Supply - Surface Water
- Community Public Water Supply - Groundwater
- Non-Community Non-Transient Public Water Supply
- Non-Community Transient Public Water Supply
- Limited Access Highway
- Multi-Lane Highway, NOT Limited Access
- Other Numbered Route
- Major Road - Arterials and Collectors
- Minor Street or Road
- Aqueducts
- Hydrologic Connections
- Stream/Intermittent Stream
- Powerline
- Pipeline
- Track or Trail
- Trains
- Public Surface Water Supply Protection Area (Zone A)
- DEP Approved Wellhead Protection Area (Zone I)
- DEP Approved Wellhead Protection Area (Zone II)
- DEP Interim Wellhead Protection Area (IWPA)
- Protected and Recreational Open Space
- Solid Waste Landfill
- Area of Critical Environmental Concern (ACEC)
- NHESP Priority Habitats for Rare Species
- NHESP Estimated Habitats for Rare Wildlife
- EPA Designated Sole Source Aquifer
- Major Drainage Basin
- Sub Drainage Basin
- MassDEP Open Water
- MassDEP Inland Wetlands
- MassDEP Coastal Wetlands
- MassDEP Not Interpreted Wetlands
- Public Surface Water Supply (PSWS)
- Water Bodies
- Non-Potential Drinking Water Source Area - High Yield
- Non-Potential Drinking Water Source Area - Medium Yield
- Potentially Productive Medium Yield Aquifer
- Potentially Productive High Yield Aquifer
- County Boundary
- Municipal Boundary
- USGS Quadrangle Sheet Boundary

1:24,000

0 1,000 2,000

Feet

N

FIGURE 2
PRIORITY RESOURCES

Shutesbury Fire Station
42 Leverett Road
Shutesbury, Massachusetts
RTN 1-21340

Data source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology
Circles indicate 500-foot and half-mile radii.
Data valid as of January 2023.

January 2023

Tighe&Bond

V:\Projects\S\S2190\MXDs\ShutesburyFireStation_42LeverettRoad_ShutesburyMA_PriorityResource.mxd [Exported By: AFreudenberg, 1/16/2023, 3:12:28 PM]

S-2190

ND
105 WR
72 WENDELL RD
WENDELL ROAD
56 WENDELL RD
45 WENDELL RD
33 WENDELL RD
27 WENDELL RD
34 COOLEYVILLE RD
20-24 WENDELL RD
25 WENDELL RD
23 WENDELL RD
15 TRC
11 TRC
16 WENDELL RD
12 WENDELL RD
6 TRC
8 & 10 WENDELL RD
10 COOLEYVILLE RD
COOLEYVILLE ROAD
107
63 LR
3.91
29 LR
7.99
17 LR
8.90
37 LR
110
59 LR
18.2
35 LR
7.26
16 LR
4.84
1 CR
6.19
11 CR
21 COOLEYVILLE RD
53 COOLEYVILLE RD
135 LEVERETT RD
121 LEVERETT RD
113 LEVERETT RD
97 LEVERETT RD
81 LEVERETT RD
ND
87
LR
ND
75
LR
LEVERETT ROAD
165
42 LR
32 LEVERETT RD
23.8
20 LR
10 LEVERETT RD
117 LEVERETT RD
2.37
105 LR
154
50 LR
94 LEVERETT RD
1 PELHAM HILL RD
21-23 WILSON RD
128 LEVERETT RD
15.4
62 LR
ND
60 LR
4 LEVERETT RD
25 WILSON RD
ND
16
WI
ND
11
WI
3 & 5 WILSON RD
15 PELHAM HILL RD
23 PELHAM HILL RD
66 LEVERETT RD
24 LEVERETT RD
54 PELHAM HILL RD
PELHAM HILL ROAD

LEGEND

Total Regulated PFAS Concentration In Parts-Per-Trillion (ppt)

- Non Detect (ND)
- Less Than 20
- Greater Than 20 But Less Than 90
- Greater Than 90
- 500-foot Buffer
- Approximate Parcel Boundary

1. Based on MassGIS Color Orthophotography (2021).
2. Shutesbury Parcels (FY18) downloaded from MassGIS and are approximate.
3. Street names are abbreviated to the following:
LR - Leverett Road
TRC - Town Common Road

1:6,000

0 250 500

Feet

N

Tighe&Bond

FIGURE 3
PFAS6 CONCENTRATION SUMMARY

Shutesbury Fire Station
42 Leverett Road
Shutesbury, Massachusetts
RTN 1-21340

January 2023

V:\Projects\S\S2190\MXDs\PFAS6Summary_ShutesburyMA_11x17_Zoom.mxd [Exported By: AFreudenberg, 1/16/2023, 3:27:14 PM]

S-2190

Tighe&Bond

APPENDIX B

TABLE 1
PFAS Drinking Water Summary
Shutesbury, Massachusetts
RTN 1-21340

Parameter	Massachusetts Contingency Plan GW-1 Standard & MMCL	1 Cooleyville Road	11 Cooleyville Road	16 Leverett Road	17 Leverett Road	20 Leverett Road	29 Leverett Road	35 Leverett Road		37 Leverett Road
Sampling Date		8/5/2021	11/16/2021	8/5/2021	9/2/2021	8/4/2021	8/4/2021	8/4/2021	9/2/2021	8/4/2021
Sample ID		1-CVR-BSMT-KIT	11-COOL-KIT	16-LR-KIT	17-LR-KIT	20-LR-KIT	29-LR-KIT	35-LR-KIT	35-LR-KIT	37-LR-KIT
POET Inf/Eff										
EPA 537.1 (ng/L)										
Perfluorobutanesulfonic acid (PFBS)		ND (2.00)	0.880 J	1.65 J	2.13	1.42 J	1.97	3.70	2.88 Z	1.01 J
Perfluorohexanoic acid (PFHxA)		1.42 J	1.09 J	ND (2.00)	1.15 J	3.35	1.70 J	6.38	5.88	2.61
Perfluorohexanesulfonic acid (PFHxS)		ND (2.00)	ND (2.00)	1.26 J	1.78 J	0.837 J	0.736 J	0.984 J	ND (2.00)	ND (2.00)
Perfluoroheptanoic acid (PFHpA)		ND (2.00)	1.17 J	0.746 J	1.86 J	6.90	1.55 J	3.38	3.03	1.15 J
Perfluorooctanoic acid (PFOA)		2.42	3.22	2.67	4.39	14.8	3.91	12.0	10.3	5.55
Perfluorooctanesulfonic acid (PFOS)		2.42	2.97	4.59	3.60	2.13	1.90 J	5.71	4.91	3.35
Perfluorononanoic acid (PFNA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	0.879 J	ND (1.94)	0.866 J	ND (2.00)	ND (2.00)
Perfluorodecanoic acid (PFDA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
N-EtFOSAA		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
Perfluoroundecanoic acid (PFUnA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
N-MeFOSAA		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
Perfluorododecanoic acid (PFDoA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
Perfluorotridecanoic acid (PFTrDA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
Perfluorotetradecanoic acid (PFTA)		ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (2.00)	ND (1.94)	ND (1.97)	ND (2.00)	ND (2.00)
Total (All Compounds)		4.84	6.19	7.26	10.1	27.2	5.88	31.2	24.1	11.5
Regulated Total	20	4.84	6.19	7.26	7.99	**23.8**	3.91	**21.1**	18.2	8.90

NOTES:

Gray colored cells indicate those 6 compounds included in the regulated PFAS Total

ND = Not detected above the lab reporting limits shown in parentheses.

Bolded values exceed the Method 1 Standard

MMCL is Massachusetts Maximun Contaminant Level

TABLE 1
PFAS Drinking Water Summary
Shutesbury, Massachusetts
RTN 1-21340

Parameter	Massachusetts Contingency Plan GW-1 Standard & MMCL	42 Leverett Road			50 Leverett Road					59 Leverett Road			
Sampling Date		9/2/2021	12/8/2022	12/8/2022	8/4/2021	9/2/2021	11/16/2021	12/8/2022	12/8/2022	8/5/2021	9/2/2021	12/8/2022	12/8/2022
Sample ID		42-LR-KIT	22L1517-01	22L1517-02	50-LR-KIT	50-LR-KIT	50-LR-KIT-TREATED	22L1516-01	22L1516-02	59-LR-BATH	59-LR-BATH	22L1517-03	22L1517-04
POET Inf/Eff			Influent	Effluent			Effluent	Influent	Effluent			Influent	Effluent
EPA 537.1 (ng/L)													
Perfluorobutanesulfonic acid (PFBS)		8.49	8.9	ND (1.9)	7.01	7.76	ND (2.00)	8.4	ND (1.9)	4.83	5.26	4.9	ND (1.9)
Perfluorohexanoic acid (PFHxA)		45.2	51	ND (1.9)	40.7	48.6	ND (2.00)	48	6.4	35.0	33.7	34	ND (1.9)
Perfluorohexanesulfonic acid (PFHxS)		9.19	13	ND (1.9)	8.88	9.83	ND (2.00)	12	ND (1.9)	8.20	7.67	7.7	ND (1.9)
Perfluoroheptanoic acid (PFHpA)		58.9	69	ND (1.9)	53.8	58.2	ND (2.00)	65	4.9	44.3	41.0	51	ND (1.9)
Perfluorooctanoic acid (PFOA)		48.7	57	ND (1.9)	45.4	46.3	ND (2.00)	52	ND (1.9)	29.2	35.8	33	ND (1.9)
Perfluorooctanesulfonic acid (PFOS)		4.56	5.0	ND (1.9)	3.68	4.40	ND (2.00)	5.3	ND (1.9)	2.86	3.78	4.6	ND (1.9)
Perfluorononanoic acid (PFNA)		18.5	21	ND (1.9)	17.3	16.6	ND (2.00)	20	ND (1.9)	10.8	15.5	14	ND (1.9)
Perfluorodecanoic acid (PFDA)		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
N-EtFOSAA		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
Perfluoroundecanoic acid (PFUnA)		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
N-MeFOSAA		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
Perfluorododecanoic acid (PFDoA)		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
Perfluorotridecanoic acid (PFTrDA)		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
Perfluorotetradecanoic acid (PFTA)		ND (2.00)	ND (1.8)	ND (1.9)	ND (1.91)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)	ND (2.00)	ND (2.00)	ND (2.0)	ND (1.9)
Total (All Compounds)		194	230	ND (1.9)	177	192	ND (2.00)	210	11	135	143	150	ND (1.9)
Regulated Total	20	**140**	**170**	ND (1.9)	**129**	**135**	ND (2.00)	**150**	4.9	**95.4**	**104**	**110**	ND (1.9)

NOTES:

Gray colored cells indicate those 6 compounds included in the regulated PFAS Total

ND = Not detected above the lab reporting limits shown in parentheses.

Bolded values exceed the Method 1 Standard

MMCL is Massachusetts Maximun Contaminant Level

TABLE 1
PFAS Drinking Water Summary
Shutesbury, Massachusetts
RTN 1-21340

Parameter	Massachusetts Contingency Plan GW-1 Standard & MMCL	60 Leverett Road	62 Leverett Road					63 Leverett Road		75 Leverett Road	87 Leverett Road	91 Leverett Road
Sampling Date		8/4/2021	8/4/2021	9/2/2021	11/16/2021	12/8/2022	12/8/2022	12/8/2022	12/8/2022	9/2/2021	8/11/2021	8/5/2021
Sample ID		60-LR-KIT	62-LR-KIT	62-LR-KIT	62-LR-KIT-TREATED	22L1515-01	22L1515-02	22L1514-01	22L1514-02	75-LR-KIT	87-LR-KIT	91-LR-KIT
POET Inf/Eff						Influent	Effluent	Influent	Effluent			
EPA 537.1 (ng/L)												
Perfluorobutanesulfonic acid (PFBS)		ND (1.89)	1.57 J	1.60 J	ND (2.00)	ND (1.8)	ND (1.8)	5.2	ND (1.9)	0.862 J	ND (1.92)	ND (1.87)
Perfluorohexanoic acid (PFHxA)		ND (1.89)	2.93	1.72 J	ND (2.00)	ND (1.8)	ND (1.8)	32	2.0	ND (2.00)	0.692 J	ND (1.87)
Perfluorohexanesulfonic acid (PFHxS)		ND (1.89)	11.1	7.69	ND (2.00)	6.7	ND (1.8)	7.6	ND (1.9)	1.29 J	ND (1.92)	0.784 J
Perfluoroheptanoic acid (PFHpA)		ND (1.89)	2.14	1.38 J	ND (2.00)	ND (1.8)	ND (1.8)	50	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluorooctanoic acid (PFOA)		ND (1.89)	7.39	4.96	ND (2.00)	1.9	ND (1.8)	31	ND (1.9)	1.96 J	1.23 J	0.858 J
Perfluorooctanesulfonic acid (PFOS)		0.642 J	19.6	12.8	ND (2.00)	6.8	ND (1.8)	3.5	ND (1.9)	1.41 J	0.692 J	ND (1.87)
Perfluorononanoic acid (PFNA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	15	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluorodecanoic acid (PFDA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
N-EtFOSAA		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluoroundecanoic acid (PFUnA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
N-MeFOSAA		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluorododecanoic acid (PFDoA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluorotridecanoic acid (PFTrDA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Perfluorotetradecanoic acid (PFTA)		ND (1.89)	ND (1.78)	ND (2.00)	ND (2.00)	ND (1.8)	ND (1.8)	ND (2.0)	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)
Total (All Compounds)		ND (1.89)	43.2	25.5	ND (2.00)	15	ND (1.8)	140	2.0	ND (2.00)	ND (1.92)	ND (1.87)
Regulated Total	20	ND (1.89)	**40.2**	**25.5**	ND (2.00)	15	ND (1.8)	**110**	ND (1.9)	ND (2.00)	ND (1.92)	ND (1.87)

NOTES:

Gray colored cells indicate those 6 compounds included in the regulated PFAS Total

ND = Not detected above the lab reporting limits shown in parentheses.

Bolded values exceed the Method 1 Standard

MMCL is Massachusetts Maximun Contaminant Level

TABLE 1
PFAS Drinking Water Summary
Shutesbury, Massachusetts
RTN 1-21340

Parameter	Massachusetts Contingency Plan GW-1 Standard & MMCL	105 Leverett Road	230 Leverett Road	105 Wendell Road	11 Wilson Road	16 Wilson Road
Sampling Date		8/4/2021	8/5/2021	8/4/2021	8/5/2021	8/5/2021
Sample ID		105-LR-KIT	230-LR-KIT	105-WR-KIT	11-WILSON-KIT	16-WILSON-KIT
POET Inf/Eff						
EPA 537.1 (ng/L)						
Perfluorobutanesulfonic acid (PFBS)		1.24 J	ND (1.97)	0.878 J	ND (1.89)	ND (1.95)
Perfluorohexanoic acid (PFHxA)		1.20 J	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorohexanesulfonic acid (PFHxS)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluoroheptanoic acid (PFHpA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorooctanoic acid (PFOA)		2.37	ND (1.97)	1.07 J	ND (1.89)	ND (1.95)
Perfluorooctanesulfonic acid (PFOS)		0.661 J	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorononanoic acid (PFNA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorodecanoic acid (PFDA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
N-EtFOSAA		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluoroundecanoic acid (PFUnA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
N-MeFOSAA		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorododecanoic acid (PFDoA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorotridecanoic acid (PFTrDA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Perfluorotetradecanoic acid (PFTA)		ND (1.94)	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Total (All Compounds)		2.37	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)
Regulated Total	20	2.37	ND (1.97)	ND (1.91)	ND (1.89)	ND (1.95)

NOTES:

Gray colored cells indicate those 6 compounds included in the regulated PFAS Total

ND = Not detected above the lab reporting limits shown in parentheses.

Bolded values exceed the Method 1 Standard

MMCL is Massachusetts Maximun Contaminant Level

con-test®
A Pace Analytical® Laboratory

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

December 23, 2022

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: Shutesbury, MA
Client Job Number:
Project Number: 5-2190
Laboratory Work Order Number: 22L1517

Enclosed are results of analyses for samples as received by the laboratory on December 9, 2022. 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®
A Pace Analytical® Laboratory

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 12/23/2022

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: 5-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L1517

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

PROJECT LOCATION: Shutesbury, MA

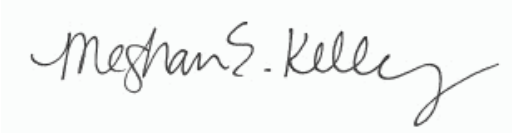
FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
42 Lerverett Rd-Inf	22L1517-01	Ground Water		EPA 537.1	
42 Lerverett Rd-Eff	22L1517-02	Ground Water		EPA 537.1	
59 Lerverett Rd-Inf	22L1517-03	Ground Water		EPA 537.1	
59 Lerverett Rd-Eff	22L1517-04	Ground Water		EPA 537.1	

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.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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.



Meghan E. Kelley
Reporting Specialist

con-test®
A Pace Analytical® Laboratory

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

Project Location: Shutesbury, MA | Sample Description: | Work Order: 22L1517

Date Received: 12/9/2022

Field Sample #: 42 Lerverett Rd-Inf | Sampled: 12/8/2022 11:05

Sample ID: 22L1517-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	8.9	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorohexanoic acid (PFHxA)	51	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorohexanesulfonic acid (PFHxS)	13	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluoroheptanoic acid (PFHpA)	69	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorooctanoic acid (PFOA)	57	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorooctanesulfonic acid (PFOS)	5.0	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorononanoic acid (PFNA)	21	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:53	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	99.9	70-130		12/22/22 9:53
M3HFPO-DA	99.1	70-130		12/22/22 9:53
13C-PFDA	105	70-130		12/22/22 9:53
D5-NEtFOSAA	112	70-130		12/22/22 9:53

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

Project Location: Shutesbury, MA | Sample Description: | Work Order: 22L1517

Date Received: 12/9/2022

Field Sample #: 42 Lerverett Rd-Eff | Sampled: 12/8/2022 11:15

Sample ID: 22L1517-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:10	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	92.6	70-130		12/14/22 15:10
M3HFPO-DA	86.2	70-130		12/14/22 15:10
13C-PFDA	80.4	70-130		12/14/22 15:10
D5-NEtFOSAA	84.5	70-130		12/14/22 15:10

con-test®
A Pace Analytical® Laboratory

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

Project Location: Shutesbury, MA | Sample Description: | Work Order: 22L1517

Date Received: 12/9/2022

Field Sample #: 59 Lerverett Rd-Inf | Sampled: 12/8/2022 11:25

Sample ID: 22L1517-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	4.9	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorohexanoic acid (PFHxA)	34	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorohexanesulfonic acid (PFHxS)	7.7	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluoroheptanoic acid (PFHpA)	51	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorooctanoic acid (PFOA)	33	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorooctanesulfonic acid (PFOS)	4.6	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorononanoic acid (PFNA)	14	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:17	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	81.7	70-130		12/14/22 15:17
M3HFPO-DA	73.2	70-130		12/14/22 15:17
13C-PFDA	90.2	70-130		12/14/22 15:17
D5-NEtFOSAA	83.2	70-130		12/14/22 15:17

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

Project Location: Shutesbury, MA | Sample Description: | Work Order: 22L1517

Date Received: 12/9/2022

Field Sample #: 59 Lerverett Rd-Eff | Sampled: 12/8/2022 11:30

Sample ID: 22L1517-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 15:31	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	98.7	70-130		12/14/22 15:31
M3HFPO-DA	89.5	70-130		12/14/22 15:31
13C-PFDA	82.0	70-130		12/14/22 15:31
D5-NEtFOSAA	84.1	70-130		12/14/22 15:31

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

Sample Extraction Data

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1517-02 [42 Lerverett Rd-Eff]	B325582	267	1.00	12/13/22
22L1517-03 [59 Lerverett Rd-Inf]	B325582	251	1.00	12/13/22
22L1517-04 [59 Lerverett Rd-Eff]	B325582	259	1.00	12/13/22

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1517-01RE1 [42 Lerverett Rd-Inf]	B326025	277	1.00	12/16/22

con-test® A Pace 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 B325582 - EPA 537.1										
Blank (B325582-BLK1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*33.4*		ng/L	36.9		90.4	70-130			
Surrogate: M3HFPO-DA	*30.1*		ng/L	36.9		81.4	70-130			
Surrogate: 13C-PFDA	*28.2*		ng/L	36.9		76.2	70-130			
Surrogate: D5-NEtFOSAA	*126*		ng/L	148		85.3	70-130			
LCS (B325582-BS1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.61	1.8	ng/L	1.63		98.9	50-150			
Perfluorohexanoic acid (PFHxA)	2.00	1.8	ng/L	1.83		109	50-150			
Perfluorohexanesulfonic acid (PFHxS)	1.57	1.8	ng/L	1.68		93.5	50-150			
Perfluoroheptanoic acid (PFHpA)	2.03	1.8	ng/L	1.83		111	50-150			
Perfluorooctanoic acid (PFOA)	1.76	1.8	ng/L	1.83		96.2	50-150			
Perfluorooctanesulfonic acid (PFOS)	1.64	1.8	ng/L	1.70		96.3	50-150			
Perfluorononanoic acid (PFNA)	2.15	1.8	ng/L	1.83		117	50-150			
Perfluorodecanoic acid (PFDA)	1.76	1.8	ng/L	1.83		95.8	50-150			
N-EtFOSAA (NEtFOSAA)	1.87	1.8	ng/L	1.83		102	50-150			
Perfluoroundecanoic acid (PFUnA)	1.67	1.8	ng/L	1.83		91.0	50-150			
N-MeFOSAA (NMeFOSAA)	1.56	1.8	ng/L	1.83		85.0	50-150			
Perfluorododecanoic acid (PFDoA)	1.92	1.8	ng/L	1.83		105	50-150			
Perfluorotridecanoic acid (PFTrDA)	1.91	1.8	ng/L	1.83		104	50-150			
Perfluorotetradecanoic acid (PFTA)	1.81	1.8	ng/L	1.83		98.7	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.86	1.8	ng/L	1.83		102	50-150			
11Cl-PF3OUdS (F53B Major)	1.43	1.8	ng/L	1.73		82.8	50-150			
9Cl-PF3ONS (F53B Minor)	1.74	1.8	ng/L	1.71		102	50-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.83	1.8	ng/L	1.73		105	50-150			
Surrogate: 13C-PFHxA	*35.2*		ng/L	36.7		96.1	70-130			
Surrogate: M3HFPO-DA	*32.8*		ng/L	36.7		89.4	70-130			
Surrogate: 13C-PFDA	*30.9*		ng/L	36.7		84.2	70-130			
Surrogate: D5-NEtFOSAA	*132*		ng/L	147		89.8	70-130			

con-test®
A Pace 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 B325582 - EPA 537.1										
LCS Dup (B325582-BSD1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.26	1.8	ng/L	1.64		76.9	50-150	24.5	50	
Perfluorohexanoic acid (PFHxA)	1.51	1.8	ng/L	1.84		81.9	50-150	28.0	50	
Perfluorohexanesulfonic acid (PFHxS)	1.26	1.8	ng/L	1.69		75.0	50-150	21.4	50	
Perfluoroheptanoic acid (PFHpA)	1.59	1.8	ng/L	1.84		86.0	50-150	24.7	50	
Perfluorooctanoic acid (PFOA)	1.36	1.8	ng/L	1.84		73.7	50-150	26.0	50	
Perfluorooctanesulfonic acid (PFOS)	1.43	1.8	ng/L	1.71		83.8	50-150	13.4	50	
Perfluorononanoic acid (PFNA)	1.62	1.8	ng/L	1.84		87.6	50-150	28.2	50	
Perfluorodecanoic acid (PFDA)	1.45	1.8	ng/L	1.84		78.7	50-150	19.0	50	
N-EtFOSAA (NEtFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	30.1	50	
Perfluoroundecanoic acid (PFUnA)	1.38	1.8	ng/L	1.84		74.9	50-150	18.8	50	
N-MeFOSAA (NMeFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	12.0	50	
Perfluorododecanoic acid (PFDoA)	1.51	1.8	ng/L	1.84		81.9	50-150	23.9	50	
Perfluorotridecanoic acid (PFTrDA)	1.45	1.8	ng/L	1.84		78.6	50-150	27.2	50	
Perfluorotetradecanoic acid (PFTA)	1.44	1.8	ng/L	1.84		77.9	50-150	22.9	50	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.37	1.8	ng/L	1.84		74.3	50-150	30.5	50	
11Cl-PF3OUdS (F53B Major)	1.27	1.8	ng/L	1.74		73.1	50-150	11.8	50	
9Cl-PF3ONS (F53B Minor)	1.32	1.8	ng/L	1.72		76.5	50-150	27.7	50	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.39	1.8	ng/L	1.74		79.8	50-150	27.0	50	
Surrogate: 13C-PFHxA	*34.6*		ng/L	36.9		93.8	70-130			
Surrogate: M3HFPO-DA	*30.6*		ng/L	36.9		83.0	70-130			
Surrogate: 13C-PFDA	*29.9*		ng/L	36.9		81.1	70-130			
Surrogate: D5-NEtFOSAA	*131*		ng/L	148		88.5	70-130			
Batch B326025 - EPA 537.1										
Blank (B326025-BLK1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*37.3*		ng/L	36.5		102	70-130			
Surrogate: M3HFPO-DA	*38.2*		ng/L	36.5		105	70-130			
Surrogate: 13C-PFDA	*37.2*		ng/L	36.5		102	70-130			
Surrogate: D5-NEtFOSAA	*158*		ng/L	146		109	70-130			

con-test® A Pace 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 B326025 - EPA 537.1										
LCS (B326025-BS1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	20.1	1.8	ng/L	16.2		124	70-130			
Perfluorohexanoic acid (PFHxA)	21.5	1.8	ng/L	18.2		118	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.9	1.8	ng/L	16.7		125	70-130			
Perfluoroheptanoic acid (PFHpA)	21.2	1.8	ng/L	18.2		116	70-130			
Perfluorooctanoic acid (PFOA)	22.6	1.8	ng/L	18.2		124	70-130			
Perfluorooctanesulfonic acid (PFOS)	20.5	1.8	ng/L	16.9		121	70-130			
Perfluorononanoic acid (PFNA)	23.0	1.8	ng/L	18.2		126	70-130			
Perfluorodecanoic acid (PFDA)	22.0	1.8	ng/L	18.2		121	70-130			
N-EtFOSAA (NEtFOSAA)	22.7	1.8	ng/L	18.2		124	70-130			
Perfluoroundecanoic acid (PFUnA)	21.5	1.8	ng/L	18.2		118	70-130			
N-MeFOSAA (NMeFOSAA)	21.1	1.8	ng/L	18.2		116	70-130			
Perfluorododecanoic acid (PFDoA)	21.6	1.8	ng/L	18.2		119	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.2	1.8	ng/L	18.2		122	70-130			
Perfluorotetradecanoic acid (PFTA)	23.3	1.8	ng/L	18.2		128	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	21.4	1.8	ng/L	18.2		118	70-130			
11Cl-PF3OUdS (F53B Major)	20.6	1.8	ng/L	17.2		120	70-130			
9Cl-PF3ONS (F53B Minor)	21.8	1.8	ng/L	17.0		128	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	20.3	1.8	ng/L	17.2		118	70-130			
Surrogate: 13C-PFHxA	*38.8*		ng/L	36.5		106	70-130			
Surrogate: M3HFPO-DA	*39.9*		ng/L	36.5		110	70-130			
Surrogate: 13C-PFDA	*39.1*		ng/L	36.5		107	70-130			
Surrogate: D5-NEtFOSAA	*162*		ng/L	146		111	70-130			
LCS Dup (B326025-BSD1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	19.4	1.7	ng/L	15.3		127	70-130	3.26	30	
Perfluorohexanoic acid (PFHxA)	20.1	1.7	ng/L	17.2		117	70-130	6.43	30	
Perfluorohexanesulfonic acid (PFHxS)	20.0	1.7	ng/L	15.7		128	70-130	4.13	30	
Perfluoroheptanoic acid (PFHpA)	20.2	1.7	ng/L	17.2		117	70-130	4.87	30	
Perfluorooctanoic acid (PFOA)	21.2	1.7	ng/L	17.2		123	70-130	6.36	30	
Perfluorooctanesulfonic acid (PFOS)	19.4	1.7	ng/L	16.0		122	70-130	5.62	30	
Perfluorononanoic acid (PFNA)	21.8	1.7	ng/L	17.2		127	70-130	5.48	30	
Perfluorodecanoic acid (PFDA)	20.8	1.7	ng/L	17.2		121	70-130	5.52	30	
N-EtFOSAA (NEtFOSAA)	21.5	1.7	ng/L	17.2		125	70-130	5.54	30	
Perfluoroundecanoic acid (PFUnA)	20.4	1.7	ng/L	17.2		119	70-130	5.38	30	
N-MeFOSAA (NMeFOSAA)	20.2	1.7	ng/L	17.2		117	70-130	4.65	30	
Perfluorododecanoic acid (PFDoA)	20.1	1.7	ng/L	17.2		117	70-130	7.41	30	
Perfluorotridecanoic acid (PFTrDA)	20.9	1.7	ng/L	17.2		122	70-130	5.95	30	
Perfluorotetradecanoic acid (PFTA)	21.7	1.7	ng/L	17.2		126	70-130	7.13	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	19.4	1.7	ng/L	17.2		113	70-130	9.74	30	
11Cl-PF3OUdS (F53B Major)	19.6	1.7	ng/L	16.2		121	70-130	5.00	30	
9Cl-PF3ONS (F53B Minor)	20.1	1.7	ng/L	16.0		125	70-130	8.03	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	19.0	1.7	ng/L	16.3		117	70-130	6.29	30	
Surrogate: 13C-PFHxA	*36.0*		ng/L	34.4		105	70-130			
Surrogate: M3HFPO-DA	*36.7*		ng/L	34.4		107	70-130			
Surrogate: 13C-PFDA	*36.3*		ng/L	34.4		106	70-130			
Surrogate: D5-NEtFOSAA	*153*		ng/L	138		112	70-130			

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.

con-test® A Pace Analytical® Laboratory

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)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

2241517

Pace Analytical

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page ____ of ____

Company Name: Tighe & Bond
Address: 53 Southampton Rd, Westfield
Phone: (413) 562-1600
Project Name: mple Collection - Shutesbury
Project Location: Shutesbury, MA
Project Number: S-2190
Project Manager: Jeff Arps
Pace Quote Name/Number:
Invoice Recipient: Town of Shutesbury
Sampled By: Samuel Evans

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

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

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To: JLArps@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Lab # (Lab Only)	Client Sample ID / Description	Sampling Date/Time	Sample Duration	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS V.1 537.1
1	42 Leverett Rd-Inf	12/8/22	1105	Grab	GW	U			2			X
2	42 Leverett Rd-Eff	↓	1115	↓	↓	↓			2			X
3	59 Leverett Rd-Inf		1125						2			X
4	59 Leverett Rd-Eff	↓	1130	↓	↓	↓			2			X

[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
*Pace Analytical 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:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

12/9/22 1030
12/9/22 1600
12/9/22 1710
4.0 12/9 1710

Client Comments: Bill to Town of Shutesbury PO: 57-101490

Lab Comments:

Detection Limit Requirements
MA: GW-1
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

Disclaimer: Pace Analytical 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. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.pacelabs.com

Pace PEOPLE ADVANCING SCIENCE

Doc# 277 Rev 6 July 2022

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 MW Date 12/9/22 Time 1710

How were the samples received? In Cooler T No Cooler ____ On Ice T No Ice ____
Direct From Sample ____ Ambient ____ Melted Ice ____

Were samples within Tempurature? Within 2-6°C T By Gun # E Actual Temp - 4.0
Was Custody Seal in tact? NA By Blank # ____ Actual Temp - ____
Was COC Relinquished ? T Were Samples Tampered with? NA
Are there broken/leaking/loose caps on any samples? F Does Chain Agree With Samples? T
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? F 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? ____
Samples are received within holding time? T Is there enough Volume? T
Is there Headspace where applicable? NA MS/MSD? T
Proper Media/Containers Used? T Splitting samples required on COC? T
Were trip blanks receive F
Do all Samples Have the proper pH? N/A Acid N/A

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	B	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			

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®
A Pace Analytical® Laboratory

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

December 22, 2022

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 50 Lrverett Road, Shutesbury, MA
Client Job Number:
Project Number: 5-2190
Laboratory Work Order Number: 22L1516

Enclosed are results of analyses for samples as received by the laboratory on December 9, 2022. 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®
A Pace Analytical® Laboratory

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 12/22/2022

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: 5-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L1516

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

PROJECT LOCATION: 50 Lrverett Road, Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
50 Lerverett Rd-Inf	22L1516-01	Ground Water		EPA 537.1	
50 Lerverett Rd-Eff	22L1516-02	Ground Water		EPA 537.1	

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.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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.

Tod E. Kopyscinski
Laboratory Director

con-test®
A Pace Analytical® Laboratory

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

Project Location: 50 Lrverett Road, Shutesbury, MA Sample Description: Work Order: 22L1516

Date Received: 12/9/2022

Field Sample #: 50 Lerverett Rd-Inf Sampled: 12/8/2022 09:40

Sample ID: 22L1516-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	8.4	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorohexanoic acid (PFHxA)	48	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorohexanesulfonic acid (PFHxS)	12	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluoroheptanoic acid (PFHpA)	65	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorooctanoic acid (PFOA)	52	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorooctanesulfonic acid (PFOS)	5.3	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorononanoic acid (PFNA)	20	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:46	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	89.2	70-130		12/22/22 9:46
M3HFPO-DA	89.2	70-130		12/22/22 9:46
13C-PFDA	98.5	70-130		12/22/22 9:46
D5-NEtFOSAA	118	70-130		12/22/22 9:46

con-test®
A Pace Analytical® Laboratory

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

Project Location: 50 Lrverett Road, Shutesbury, MA Sample Description: Work Order: 22L1516

Date Received: 12/9/2022

Field Sample #: 50 Lerverett Rd-Eff Sampled: 12/8/2022 09:45

Sample ID: 22L1516-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorohexanoic acid (PFHxA)	6.4	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluoroheptanoic acid (PFHpA)	4.9	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:55	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	88.2	70-130		12/14/22 14:55
M3HFPO-DA	77.0	70-130		12/14/22 14:55
13C-PFDA	81.3	70-130		12/14/22 14:55
D5-NEtFOSAA	84.2	70-130		12/14/22 14:55

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

Sample Extraction Data

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1516-02 [50 Lerverett Rd-Eff]	B325582	262	1.00	12/13/22

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1516-01RE1 [50 Lerverett Rd-Inf]	B326025	252	1.00	12/16/22

con-test®
A Pace 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 B325582 - EPA 537.1										
Blank (B325582-BLK1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*33.4*		ng/L	36.9		90.4	70-130			
Surrogate: M3HFPO-DA	*30.1*		ng/L	36.9		81.4	70-130			
Surrogate: 13C-PFDA	*28.2*		ng/L	36.9		76.2	70-130			
Surrogate: D5-NEtFOSAA	*126*		ng/L	148		85.3	70-130			
LCS (B325582-BS1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.61	1.8	ng/L	1.63		98.9	50-150			
Perfluorohexanoic acid (PFHxA)	2.00	1.8	ng/L	1.83		109	50-150			
Perfluorohexanesulfonic acid (PFHxS)	1.57	1.8	ng/L	1.68		93.5	50-150			
Perfluoroheptanoic acid (PFHpA)	2.03	1.8	ng/L	1.83		111	50-150			
Perfluorooctanoic acid (PFOA)	1.76	1.8	ng/L	1.83		96.2	50-150			
Perfluorooctanesulfonic acid (PFOS)	1.64	1.8	ng/L	1.70		96.3	50-150			
Perfluorononanoic acid (PFNA)	2.15	1.8	ng/L	1.83		117	50-150			
Perfluorodecanoic acid (PFDA)	1.76	1.8	ng/L	1.83		95.8	50-150			
N-EtFOSAA (NEtFOSAA)	1.87	1.8	ng/L	1.83		102	50-150			
Perfluoroundecanoic acid (PFUnA)	1.67	1.8	ng/L	1.83		91.0	50-150			
N-MeFOSAA (NMeFOSAA)	1.56	1.8	ng/L	1.83		85.0	50-150			
Perfluorododecanoic acid (PFDoA)	1.92	1.8	ng/L	1.83		105	50-150			
Perfluorotridecanoic acid (PFTrDA)	1.91	1.8	ng/L	1.83		104	50-150			
Perfluorotetradecanoic acid (PFTA)	1.81	1.8	ng/L	1.83		98.7	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.86	1.8	ng/L	1.83		102	50-150			
11Cl-PF3OUdS (F53B Major)	1.43	1.8	ng/L	1.73		82.8	50-150			
9Cl-PF3ONS (F53B Minor)	1.74	1.8	ng/L	1.71		102	50-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.83	1.8	ng/L	1.73		105	50-150			
Surrogate: 13C-PFHxA	*35.2*		ng/L	36.7		96.1	70-130			
Surrogate: M3HFPO-DA	*32.8*		ng/L	36.7		89.4	70-130			
Surrogate: 13C-PFDA	*30.9*		ng/L	36.7		84.2	70-130			
Surrogate: D5-NEtFOSAA	*132*		ng/L	147		89.8	70-130			

con-test®
A Pace 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 B325582 - EPA 537.1										
LCS Dup (B325582-BSD1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.26	1.8	ng/L	1.64		76.9	50-150	24.5	50	
Perfluorohexanoic acid (PFHxA)	1.51	1.8	ng/L	1.84		81.9	50-150	28.0	50	
Perfluorohexanesulfonic acid (PFHxS)	1.26	1.8	ng/L	1.69		75.0	50-150	21.4	50	
Perfluoroheptanoic acid (PFHpA)	1.59	1.8	ng/L	1.84		86.0	50-150	24.7	50	
Perfluorooctanoic acid (PFOA)	1.36	1.8	ng/L	1.84		73.7	50-150	26.0	50	
Perfluorooctanesulfonic acid (PFOS)	1.43	1.8	ng/L	1.71		83.8	50-150	13.4	50	
Perfluorononanoic acid (PFNA)	1.62	1.8	ng/L	1.84		87.6	50-150	28.2	50	
Perfluorodecanoic acid (PFDA)	1.45	1.8	ng/L	1.84		78.7	50-150	19.0	50	
N-EtFOSAA (NEtFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	30.1	50	
Perfluoroundecanoic acid (PFUnA)	1.38	1.8	ng/L	1.84		74.9	50-150	18.8	50	
N-MeFOSAA (NMeFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	12.0	50	
Perfluorododecanoic acid (PFDoA)	1.51	1.8	ng/L	1.84		81.9	50-150	23.9	50	
Perfluorotridecanoic acid (PFTrDA)	1.45	1.8	ng/L	1.84		78.6	50-150	27.2	50	
Perfluorotetradecanoic acid (PFTA)	1.44	1.8	ng/L	1.84		77.9	50-150	22.9	50	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.37	1.8	ng/L	1.84		74.3	50-150	30.5	50	
11Cl-PF3OUdS (F53B Major)	1.27	1.8	ng/L	1.74		73.1	50-150	11.8	50	
9Cl-PF3ONS (F53B Minor)	1.32	1.8	ng/L	1.72		76.5	50-150	27.7	50	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.39	1.8	ng/L	1.74		79.8	50-150	27.0	50	
Surrogate: 13C-PFHxA	*34.6*		ng/L	36.9		93.8	70-130			
Surrogate: M3HFPO-DA	*30.6*		ng/L	36.9		83.0	70-130			
Surrogate: 13C-PFDA	*29.9*		ng/L	36.9		81.1	70-130			
Surrogate: D5-NEtFOSAA	*131*		ng/L	148		88.5	70-130			
Batch B326025 - EPA 537.1										
Blank (B326025-BLK1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*37.3*		ng/L	36.5		102	70-130			
Surrogate: M3HFPO-DA	*38.2*		ng/L	36.5		105	70-130			
Surrogate: 13C-PFDA	*37.2*		ng/L	36.5		102	70-130			
Surrogate: D5-NEtFOSAA	*158*		ng/L	146		109	70-130			

con-test® A Pace 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 B326025 - EPA 537.1										
LCS (B326025-BS1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	20.1	1.8	ng/L	16.2		124	70-130			
Perfluorohexanoic acid (PFHxA)	21.5	1.8	ng/L	18.2		118	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.9	1.8	ng/L	16.7		125	70-130			
Perfluoroheptanoic acid (PFHpA)	21.2	1.8	ng/L	18.2		116	70-130			
Perfluorooctanoic acid (PFOA)	22.6	1.8	ng/L	18.2		124	70-130			
Perfluorooctanesulfonic acid (PFOS)	20.5	1.8	ng/L	16.9		121	70-130			
Perfluorononanoic acid (PFNA)	23.0	1.8	ng/L	18.2		126	70-130			
Perfluorodecanoic acid (PFDA)	22.0	1.8	ng/L	18.2		121	70-130			
N-EtFOSAA (NEtFOSAA)	22.7	1.8	ng/L	18.2		124	70-130			
Perfluoroundecanoic acid (PFUnA)	21.5	1.8	ng/L	18.2		118	70-130			
N-MeFOSAA (NMeFOSAA)	21.1	1.8	ng/L	18.2		116	70-130			
Perfluorododecanoic acid (PFDoA)	21.6	1.8	ng/L	18.2		119	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.2	1.8	ng/L	18.2		122	70-130			
Perfluorotetradecanoic acid (PFTA)	23.3	1.8	ng/L	18.2		128	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	21.4	1.8	ng/L	18.2		118	70-130			
11Cl-PF3OUdS (F53B Major)	20.6	1.8	ng/L	17.2		120	70-130			
9Cl-PF3ONS (F53B Minor)	21.8	1.8	ng/L	17.0		128	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	20.3	1.8	ng/L	17.2		118	70-130			
Surrogate: 13C-PFHxA	*38.8*		ng/L	36.5		106	70-130			
Surrogate: M3HFPO-DA	*39.9*		ng/L	36.5		110	70-130			
Surrogate: 13C-PFDA	*39.1*		ng/L	36.5		107	70-130			
Surrogate: D5-NEtFOSAA	*162*		ng/L	146		111	70-130			
LCS Dup (B326025-BSD1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	19.4	1.7	ng/L	15.3		127	70-130	3.26	30	
Perfluorohexanoic acid (PFHxA)	20.1	1.7	ng/L	17.2		117	70-130	6.43	30	
Perfluorohexanesulfonic acid (PFHxS)	20.0	1.7	ng/L	15.7		128	70-130	4.13	30	
Perfluoroheptanoic acid (PFHpA)	20.2	1.7	ng/L	17.2		117	70-130	4.87	30	
Perfluorooctanoic acid (PFOA)	21.2	1.7	ng/L	17.2		123	70-130	6.36	30	
Perfluorooctanesulfonic acid (PFOS)	19.4	1.7	ng/L	16.0		122	70-130	5.62	30	
Perfluorononanoic acid (PFNA)	21.8	1.7	ng/L	17.2		127	70-130	5.48	30	
Perfluorodecanoic acid (PFDA)	20.8	1.7	ng/L	17.2		121	70-130	5.52	30	
N-EtFOSAA (NEtFOSAA)	21.5	1.7	ng/L	17.2		125	70-130	5.54	30	
Perfluoroundecanoic acid (PFUnA)	20.4	1.7	ng/L	17.2		119	70-130	5.38	30	
N-MeFOSAA (NMeFOSAA)	20.2	1.7	ng/L	17.2		117	70-130	4.65	30	
Perfluorododecanoic acid (PFDoA)	20.1	1.7	ng/L	17.2		117	70-130	7.41	30	
Perfluorotridecanoic acid (PFTrDA)	20.9	1.7	ng/L	17.2		122	70-130	5.95	30	
Perfluorotetradecanoic acid (PFTA)	21.7	1.7	ng/L	17.2		126	70-130	7.13	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	19.4	1.7	ng/L	17.2		113	70-130	9.74	30	
11Cl-PF3OUdS (F53B Major)	19.6	1.7	ng/L	16.2		121	70-130	5.00	30	
9Cl-PF3ONS (F53B Minor)	20.1	1.7	ng/L	16.0		125	70-130	8.03	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	19.0	1.7	ng/L	16.3		117	70-130	6.29	30	
Surrogate: 13C-PFHxA	*36.0*		ng/L	34.4		105	70-130			
Surrogate: M3HFPO-DA	*36.7*		ng/L	34.4		107	70-130			
Surrogate: 13C-PFDA	*36.3*		ng/L	34.4		106	70-130			
Surrogate: D5-NEtFOSAA	*153*		ng/L	138		112	70-130			

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.

con-test® A Pace Analytical® Laboratory

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)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

2211516

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page ____ of ____

Company Name:	Tighe & Bond
Address:	53 Southampton Rd, Westfield
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection – Shutesbury
Project Location:	50 Leverett Road, Shutesbury, MA
Project Number:	S-2190
Project Manager:	Jeff Arps
Pace Quote Name/Number:	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day [X] 10-Day [ ]
PFAS 10-Day (std) [ ] Due Date:

Rush Approval Required
1-Day [ ] 3-Day [ ]
2-Day [ ] 4-Day [ ]

Date Deliver
Format: PDF [X] EXCEL [X]
Other:
CLP Like Data Pkg Required: [ ]
Email To: SLArps@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET [ ]
NON SOXHLET [ ]

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS via 537.1												[2] Preservation Code
	50 Leverett Rd-Inf	12/8/22	0940	Grab	GW	U			2			X												
2	50 Leverett Rd-Eff	↓	0945	↓	↓	↓			2			X												

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

*Pace Analytical 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: 12/9/22 1030
Received by: (signature)	Date/Time: 12-9-22 1600
Relinquished by: (signature)	Date/Time: 12-9-22 1712
Received by: (signature)	Date/Time: 12/9 1710
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments: Bill town of Shutesbury PO: 57-101490

Detection Limit Requirements
MA GW-1

Special Requirements
[X] 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

Lab Comments:

Disclaimer: Pace Analytical 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. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.pacelabs.com

Pace PEOPLE ADVANCING SCIENCE

Doc# 277 Rev 6 July 2022

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: MN Date: 12/9/22 Time: 1710

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

Direct From Sample: Ambient: Melted Ice:

Were samples within Tempurature? Within 2-6°C: T By Gun #: 5 Actual Temp - 4.0

By Blank #: Actual Temp -

Was Custody Seal In tact? NA Were Samples Tampered with? NA

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?

Samples are received within holding time? T Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

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

Were trip blanks received? F On COC? F

Do All Samples Have the proper pH? NA Acid NA Base NA

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	4	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			

Unused Media

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®
A Pace Analytical® Laboratory

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

December 22, 2022

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 62 Lerverett Road, Shutesbury, MA
Client Job Number:
Project Number: 5-2190
Laboratory Work Order Number: 22L1515

Enclosed are results of analyses for samples as received by the laboratory on December 9, 2022. 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®
A Pace Analytical® Laboratory

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 12/22/2022

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: 5-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L1515

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

PROJECT LOCATION: 62 Lerverett Road, Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
62 Lerverett Rd-Inf	22L1515-01	Ground Water		EPA 537.1	
62 Lerverett Rd-Eff	22L1515-02	Ground Water		EPA 537.1	

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.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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.

Tod E. Kopyscinski
Laboratory Director

con-test®
A Pace Analytical® Laboratory

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

Project Location: 62 Lerverett Road, Shutesbury, M Sample Description: Work Order: 22L1515

Date Received: 12/9/2022

Field Sample #: 62 Lerverett Rd-Inf Sampled: 12/8/2022 10:30

Sample ID: 22L1515-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorohexanesulfonic acid (PFHxS)	6.7	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorooctanoic acid (PFOA)	1.9	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorooctanesulfonic acid (PFOS)	6.8	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		EPA 537.1	12/16/22	12/22/22 9:39	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	90.8	70-130		12/22/22 9:39
M3HFPO-DA	89.6	70-130		12/22/22 9:39
13C-PFDA	100	70-130		12/22/22 9:39
D5-NEtFOSAA	107	70-130		12/22/22 9:39

con-test®
A Pace Analytical® Laboratory

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

Project Location: 62 Lerverett Road, Shutesbury, M Sample Description: Work Order: 22L1515

Date Received: 12/9/2022

Field Sample #: 62 Lerverett Rd-Eff Sampled: 12/8/2022 10:35

Sample ID: 22L1515-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:41	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	89.1	70-130		12/14/22 14:41
M3HFPO-DA	75.6	70-130		12/14/22 14:41
13C-PFDA	81.1	70-130		12/14/22 14:41
D5-NEtFOSAA	85.9	70-130		12/14/22 14:41

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

Sample Extraction Data

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1515-02 [62 Lerverett Rd-Eff]	B325582	284	1.00	12/13/22

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1515-01RE1 [62 Lerverett Rd-Inf]	B326025	272	1.00	12/16/22

con-test®
A Pace 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 B325582 - EPA 537.1										
Blank (B325582-BLK1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*33.4*		ng/L	36.9		90.4	70-130			
Surrogate: M3HFPO-DA	*30.1*		ng/L	36.9		81.4	70-130			
Surrogate: 13C-PFDA	*28.2*		ng/L	36.9		76.2	70-130			
Surrogate: D5-NEtFOSAA	*126*		ng/L	148		85.3	70-130			
LCS (B325582-BS1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.61	1.8	ng/L	1.63		98.9	50-150			
Perfluorohexanoic acid (PFHxA)	2.00	1.8	ng/L	1.83		109	50-150			
Perfluorohexanesulfonic acid (PFHxS)	1.57	1.8	ng/L	1.68		93.5	50-150			
Perfluoroheptanoic acid (PFHpA)	2.03	1.8	ng/L	1.83		111	50-150			
Perfluorooctanoic acid (PFOA)	1.76	1.8	ng/L	1.83		96.2	50-150			
Perfluorooctanesulfonic acid (PFOS)	1.64	1.8	ng/L	1.70		96.3	50-150			
Perfluorononanoic acid (PFNA)	2.15	1.8	ng/L	1.83		117	50-150			
Perfluorodecanoic acid (PFDA)	1.76	1.8	ng/L	1.83		95.8	50-150			
N-EtFOSAA (NEtFOSAA)	1.87	1.8	ng/L	1.83		102	50-150			
Perfluoroundecanoic acid (PFUnA)	1.67	1.8	ng/L	1.83		91.0	50-150			
N-MeFOSAA (NMeFOSAA)	1.56	1.8	ng/L	1.83		85.0	50-150			
Perfluorododecanoic acid (PFDoA)	1.92	1.8	ng/L	1.83		105	50-150			
Perfluorotridecanoic acid (PFTrDA)	1.91	1.8	ng/L	1.83		104	50-150			
Perfluorotetradecanoic acid (PFTA)	1.81	1.8	ng/L	1.83		98.7	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.86	1.8	ng/L	1.83		102	50-150			
11Cl-PF3OUdS (F53B Major)	1.43	1.8	ng/L	1.73		82.8	50-150			
9Cl-PF3ONS (F53B Minor)	1.74	1.8	ng/L	1.71		102	50-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.83	1.8	ng/L	1.73		105	50-150			
Surrogate: 13C-PFHxA	*35.2*		ng/L	36.7		96.1	70-130			
Surrogate: M3HFPO-DA	*32.8*		ng/L	36.7		89.4	70-130			
Surrogate: 13C-PFDA	*30.9*		ng/L	36.7		84.2	70-130			
Surrogate: D5-NEtFOSAA	*132*		ng/L	147		89.8	70-130			

con-test®
A Pace 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 B325582 - EPA 537.1										
LCS Dup (B325582-BSD1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.26	1.8	ng/L	1.64		76.9	50-150	24.5	50	
Perfluorohexanoic acid (PFHxA)	1.51	1.8	ng/L	1.84		81.9	50-150	28.0	50	
Perfluorohexanesulfonic acid (PFHxS)	1.26	1.8	ng/L	1.69		75.0	50-150	21.4	50	
Perfluoroheptanoic acid (PFHpA)	1.59	1.8	ng/L	1.84		86.0	50-150	24.7	50	
Perfluorooctanoic acid (PFOA)	1.36	1.8	ng/L	1.84		73.7	50-150	26.0	50	
Perfluorooctanesulfonic acid (PFOS)	1.43	1.8	ng/L	1.71		83.8	50-150	13.4	50	
Perfluorononanoic acid (PFNA)	1.62	1.8	ng/L	1.84		87.6	50-150	28.2	50	
Perfluorodecanoic acid (PFDA)	1.45	1.8	ng/L	1.84		78.7	50-150	19.0	50	
N-EtFOSAA (NEtFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	30.1	50	
Perfluoroundecanoic acid (PFUnA)	1.38	1.8	ng/L	1.84		74.9	50-150	18.8	50	
N-MeFOSAA (NMeFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	12.0	50	
Perfluorododecanoic acid (PFDoA)	1.51	1.8	ng/L	1.84		81.9	50-150	23.9	50	
Perfluorotridecanoic acid (PFTrDA)	1.45	1.8	ng/L	1.84		78.6	50-150	27.2	50	
Perfluorotetradecanoic acid (PFTA)	1.44	1.8	ng/L	1.84		77.9	50-150	22.9	50	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.37	1.8	ng/L	1.84		74.3	50-150	30.5	50	
11Cl-PF3OUdS (F53B Major)	1.27	1.8	ng/L	1.74		73.1	50-150	11.8	50	
9Cl-PF3ONS (F53B Minor)	1.32	1.8	ng/L	1.72		76.5	50-150	27.7	50	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.39	1.8	ng/L	1.74		79.8	50-150	27.0	50	
Surrogate: 13C-PFHxA	*34.6*		ng/L	36.9		93.8	70-130			
Surrogate: M3HFPO-DA	*30.6*		ng/L	36.9		83.0	70-130			
Surrogate: 13C-PFDA	*29.9*		ng/L	36.9		81.1	70-130			
Surrogate: D5-NEtFOSAA	*131*		ng/L	148		88.5	70-130			
Batch B326025 - EPA 537.1										
Blank (B326025-BLK1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*37.3*		ng/L	36.5		102	70-130			
Surrogate: M3HFPO-DA	*38.2*		ng/L	36.5		105	70-130			
Surrogate: 13C-PFDA	*37.2*		ng/L	36.5		102	70-130			
Surrogate: D5-NEtFOSAA	*158*		ng/L	146		109	70-130			

con-test® A Pace 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 B326025 - EPA 537.1										
LCS (B326025-BS1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	20.1	1.8	ng/L	16.2		124	70-130			
Perfluorohexanoic acid (PFHxA)	21.5	1.8	ng/L	18.2		118	70-130			
Perfluorohexanesulfonic acid (PFHxS)	20.9	1.8	ng/L	16.7		125	70-130			
Perfluoroheptanoic acid (PFHpA)	21.2	1.8	ng/L	18.2		116	70-130			
Perfluorooctanoic acid (PFOA)	22.6	1.8	ng/L	18.2		124	70-130			
Perfluorooctanesulfonic acid (PFOS)	20.5	1.8	ng/L	16.9		121	70-130			
Perfluorononanoic acid (PFNA)	23.0	1.8	ng/L	18.2		126	70-130			
Perfluorodecanoic acid (PFDA)	22.0	1.8	ng/L	18.2		121	70-130			
N-EtFOSAA (NEtFOSAA)	22.7	1.8	ng/L	18.2		124	70-130			
Perfluoroundecanoic acid (PFUnA)	21.5	1.8	ng/L	18.2		118	70-130			
N-MeFOSAA (NMeFOSAA)	21.1	1.8	ng/L	18.2		116	70-130			
Perfluorododecanoic acid (PFDoA)	21.6	1.8	ng/L	18.2		119	70-130			
Perfluorotridecanoic acid (PFTrDA)	22.2	1.8	ng/L	18.2		122	70-130			
Perfluorotetradecanoic acid (PFTA)	23.3	1.8	ng/L	18.2		128	70-130			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	21.4	1.8	ng/L	18.2		118	70-130			
11Cl-PF3OUdS (F53B Major)	20.6	1.8	ng/L	17.2		120	70-130			
9Cl-PF3ONS (F53B Minor)	21.8	1.8	ng/L	17.0		128	70-130			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	20.3	1.8	ng/L	17.2		118	70-130			
Surrogate: 13C-PFHxA	*38.8*		ng/L	36.5		106	70-130			
Surrogate: M3HFPO-DA	*39.9*		ng/L	36.5		110	70-130			
Surrogate: 13C-PFDA	*39.1*		ng/L	36.5		107	70-130			
Surrogate: D5-NEtFOSAA	*162*		ng/L	146		111	70-130			
LCS Dup (B326025-BSD1)				Prepared: 12/16/22 Analyzed: 12/22/22						
Perfluorobutanesulfonic acid (PFBS)	19.4	1.7	ng/L	15.3		127	70-130	3.26	30	
Perfluorohexanoic acid (PFHxA)	20.1	1.7	ng/L	17.2		117	70-130	6.43	30	
Perfluorohexanesulfonic acid (PFHxS)	20.0	1.7	ng/L	15.7		128	70-130	4.13	30	
Perfluoroheptanoic acid (PFHpA)	20.2	1.7	ng/L	17.2		117	70-130	4.87	30	
Perfluorooctanoic acid (PFOA)	21.2	1.7	ng/L	17.2		123	70-130	6.36	30	
Perfluorooctanesulfonic acid (PFOS)	19.4	1.7	ng/L	16.0		122	70-130	5.62	30	
Perfluorononanoic acid (PFNA)	21.8	1.7	ng/L	17.2		127	70-130	5.48	30	
Perfluorodecanoic acid (PFDA)	20.8	1.7	ng/L	17.2		121	70-130	5.52	30	
N-EtFOSAA (NEtFOSAA)	21.5	1.7	ng/L	17.2		125	70-130	5.54	30	
Perfluoroundecanoic acid (PFUnA)	20.4	1.7	ng/L	17.2		119	70-130	5.38	30	
N-MeFOSAA (NMeFOSAA)	20.2	1.7	ng/L	17.2		117	70-130	4.65	30	
Perfluorododecanoic acid (PFDoA)	20.1	1.7	ng/L	17.2		117	70-130	7.41	30	
Perfluorotridecanoic acid (PFTrDA)	20.9	1.7	ng/L	17.2		122	70-130	5.95	30	
Perfluorotetradecanoic acid (PFTA)	21.7	1.7	ng/L	17.2		126	70-130	7.13	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	19.4	1.7	ng/L	17.2		113	70-130	9.74	30	
11Cl-PF3OUdS (F53B Major)	19.6	1.7	ng/L	16.2		121	70-130	5.00	30	
9Cl-PF3ONS (F53B Minor)	20.1	1.7	ng/L	16.0		125	70-130	8.03	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	19.0	1.7	ng/L	16.3		117	70-130	6.29	30	
Surrogate: 13C-PFHxA	*36.0*		ng/L	34.4		105	70-130			
Surrogate: M3HFPO-DA	*36.7*		ng/L	34.4		107	70-130			
Surrogate: 13C-PFDA	*36.3*		ng/L	34.4		106	70-130			
Surrogate: D5-NEtFOSAA	*153*		ng/L	138		112	70-130			

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.

con-test® A Pace Analytical® Laboratory

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)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

22L1515

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page ____ of ____

Company Name: Tighe & Bond
Address: 53 Southampton Rd, Westfield
Phone: (413) 562-1600
Project Name: PFAS Sample collection - Shutesbury
Project Location: 62 Leverett Road, Shutesbury, MA
Project Number: S-2190
Project Manager: Jeff Arps
Pace Quote Name/Number:
Invoice Recipient: Town of Shutesbury
Sampled By: Samuel Evans

Required Turnaround Time
7-Day [X] 10-Day [ ]
PFAS 10-Day (std) [ ] Due Date:

RUSH-Approval Required
1-Day [ ] 3-Day [ ]
2-Day [ ] 4-Day [ ]

Data Delivery
Format: PDF [X] EXCEL [X]
Other:
CLP Like Data Pkg Required: [ ]
Email To: JLArps@Tighebond.com
Fax To #:

Drinking Water Samples
○ Field Filtered
○ Lab to Filter

Other Biosolids Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET [ ]
NON SOXHLET [ ]

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1] Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	I	PFAS Via 537.1
1	62 Leverett Rd-Inf	12/8/22	1030	Grab	GW	U			2			X	
2	62 Leverett Rd-Eff	↓	1035	↓	↓	↓			2			X	

[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

*Pace Analytical 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:
[signature]	12/9/22 1030
Received by: (signature)	Date/Time:
[signature]	12-9-22 1600
Relinquished by: (signature)	Date/Time:
[signature]	12-9-22 1710
Received by: (signature)	Date/Time:
[signature] 4.0	12/9 1710
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments: Bill to Town of Shutesbury PO: 57-101490

Detection Limit Requirements
MA: GW-1
CT:
Other:

Special Requirements
[X] 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

Lab Comments:

Disclaimer: Pace Analytical 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. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.pacelabs.com

Pace PEOPLE ADVANCING SCIENCE

Doc# 277 Rev 6 July 2022

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 MW Date 12/9/22 Time 1510

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

Direct From Sample ____ Ambient ____ Melted Ice ____

Were samples within Tempurature? Within 2-6°C T By Gun # 5 Actual Temp - 4.0

By Blank # ____ Actual Temp - ____

Was Custody Seal In tact? NA Were Samples Tampered with? NO

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? ____

Samples are received within holding time? T Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T Splitting samples required? F

Were trip blanks receive F On COC? F

Do All Samples Have the proper pH? NA Acid NO Base NA

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	4	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			

Unpreserved Vials

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®
A Pace Analytical® Laboratory

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

December 16, 2022

Jeff Arps
Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Project Location: 63 Lerverett Road, Shutesbury, MA
Client Job Number:
Project Number: 5-2190
Laboratory Work Order Number: 22L1514

Enclosed are results of analyses for samples as received by the laboratory on December 9, 2022. 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®
A Pace Analytical® Laboratory

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

Tighe & Bond
53 Southampton Road
Westfield, MA 01085
ATTN: Jeff Arps

REPORT DATE: 12/16/2022

PURCHASE ORDER NUMBER: 57-101490

PROJECT NUMBER: 5-2190

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L1514

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

PROJECT LOCATION: 63 Lerverett Road, Shutesbury, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
63 Lerverett Rd-Inf	22L1514-01	Ground Water		EPA 537.1	
63 Lerverett Rd-Eff	22L1514-02	Ground Water		EPA 537.1	

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.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace 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®
A Pace Analytical® Laboratory

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

Project Location: 63 Lerverett Road, Shutesbury, M Sample Description: Work Order: 22L1514

Date Received: 12/9/2022

Field Sample #: 63 Lerverett Rd-Inf Sampled: 12/8/2022 10:00

Sample ID: 22L1514-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	5.2	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorohexanoic acid (PFHxA)	32	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorohexanesulfonic acid (PFHxS)	7.6	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluoroheptanoic acid (PFHpA)	50	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorooctanoic acid (PFOA)	31	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorooctanesulfonic acid (PFOS)	3.5	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorononanoic acid (PFNA)	15	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		EPA 537.1	12/13/22	12/15/22 9:19	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	70.7	70-130		12/15/22 9:19
M3HFPO-DA	76.6	70-130		12/15/22 9:19
13C-PFDA	80.9	70-130		12/15/22 9:19
D5-NEtFOSAA	83.5	70-130		12/15/22 9:19

con-test®
A Pace Analytical® Laboratory

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

Project Location: 63 Lerverett Road, Shutesbury, M Sample Description: Work Order: 22L1514

Date Received: 12/9/2022

Field Sample #: 63 Lerverett Rd-Eff Sampled: 12/8/2022 10:05

Sample ID: 22L1514-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorohexanoic acid (PFHxA)	2.0	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		EPA 537.1	12/13/22	12/14/22 14:27	JR2

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C-PFHxA	93.1	70-130		12/14/22 14:27
M3HFPO-DA	82.7	70-130		12/14/22 14:27
13C-PFDA	83.1	70-130		12/14/22 14:27
D5-NEtFOSAA	88.8	70-130		12/14/22 14:27

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

Sample Extraction Data

Prep Method: EPA 537.1 **Analytical Method: EPA 537.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L1514-01 [63 Lerverett Rd-Inf]	B325582	249	1.00	12/13/22
22L1514-02 [63 Lerverett Rd-Eff]	B325582	259	1.00	12/13/22

con-test®
A Pace 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 B325582 - EPA 537.1										
Blank (B325582-BLK1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L							
Surrogate: 13C-PFHxA	*33.4*		ng/L	36.9		90.4	70-130			
Surrogate: M3HFPO-DA	*30.1*		ng/L	36.9		81.4	70-130			
Surrogate: 13C-PFDA	*28.2*		ng/L	36.9		76.2	70-130			
Surrogate: D5-NEtFOSAA	*126*		ng/L	148		85.3	70-130			
LCS (B325582-BS1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.61	1.8	ng/L	1.63		98.9	50-150			
Perfluorohexanoic acid (PFHxA)	2.00	1.8	ng/L	1.83		109	50-150			
Perfluorohexanesulfonic acid (PFHxS)	1.57	1.8	ng/L	1.68		93.5	50-150			
Perfluoroheptanoic acid (PFHpA)	2.03	1.8	ng/L	1.83		111	50-150			
Perfluorooctanoic acid (PFOA)	1.76	1.8	ng/L	1.83		96.2	50-150			
Perfluorooctanesulfonic acid (PFOS)	1.64	1.8	ng/L	1.70		96.3	50-150			
Perfluorononanoic acid (PFNA)	2.15	1.8	ng/L	1.83		117	50-150			
Perfluorodecanoic acid (PFDA)	1.76	1.8	ng/L	1.83		95.8	50-150			
N-EtFOSAA (NEtFOSAA)	1.87	1.8	ng/L	1.83		102	50-150			
Perfluoroundecanoic acid (PFUnA)	1.67	1.8	ng/L	1.83		91.0	50-150			
N-MeFOSAA (NMeFOSAA)	1.56	1.8	ng/L	1.83		85.0	50-150			
Perfluorododecanoic acid (PFDoA)	1.92	1.8	ng/L	1.83		105	50-150			
Perfluorotridecanoic acid (PFTrDA)	1.91	1.8	ng/L	1.83		104	50-150			
Perfluorotetradecanoic acid (PFTA)	1.81	1.8	ng/L	1.83		98.7	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.86	1.8	ng/L	1.83		102	50-150			
11Cl-PF3OUdS (F53B Major)	1.43	1.8	ng/L	1.73		82.8	50-150			
9Cl-PF3ONS (F53B Minor)	1.74	1.8	ng/L	1.71		102	50-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.83	1.8	ng/L	1.73		105	50-150			
Surrogate: 13C-PFHxA	*35.2*		ng/L	36.7		96.1	70-130			
Surrogate: M3HFPO-DA	*32.8*		ng/L	36.7		89.4	70-130			
Surrogate: 13C-PFDA	*30.9*		ng/L	36.7		84.2	70-130			
Surrogate: D5-NEtFOSAA	*132*		ng/L	147		89.8	70-130			

con-test® A Pace 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 B325582 - EPA 537.1										
LCS Dup (B325582-BSD1)				Prepared: 12/13/22 Analyzed: 12/14/22						
Perfluorobutanesulfonic acid (PFBS)	1.26	1.8	ng/L	1.64		76.9	50-150	24.5	50	
Perfluorohexanoic acid (PFHxA)	1.51	1.8	ng/L	1.84		81.9	50-150	28.0	50	
Perfluorohexanesulfonic acid (PFHxS)	1.26	1.8	ng/L	1.69		75.0	50-150	21.4	50	
Perfluoroheptanoic acid (PFHpA)	1.59	1.8	ng/L	1.84		86.0	50-150	24.7	50	
Perfluorooctanoic acid (PFOA)	1.36	1.8	ng/L	1.84		73.7	50-150	26.0	50	
Perfluorooctanesulfonic acid (PFOS)	1.43	1.8	ng/L	1.71		83.8	50-150	13.4	50	
Perfluorononanoic acid (PFNA)	1.62	1.8	ng/L	1.84		87.6	50-150	28.2	50	
Perfluorodecanoic acid (PFDA)	1.45	1.8	ng/L	1.84		78.7	50-150	19.0	50	
N-EtFOSAA (NEtFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	30.1	50	
Perfluoroundecanoic acid (PFUnA)	1.38	1.8	ng/L	1.84		74.9	50-150	18.8	50	
N-MeFOSAA (NMeFOSAA)	1.38	1.8	ng/L	1.84		75.0	50-150	12.0	50	
Perfluorododecanoic acid (PFDoA)	1.51	1.8	ng/L	1.84		81.9	50-150	23.9	50	
Perfluorotridecanoic acid (PFTrDA)	1.45	1.8	ng/L	1.84		78.6	50-150	27.2	50	
Perfluorotetradecanoic acid (PFTA)	1.44	1.8	ng/L	1.84		77.9	50-150	22.9	50	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.37	1.8	ng/L	1.84		74.3	50-150	30.5	50	
11Cl-PF3OUdS (F53B Major)	1.27	1.8	ng/L	1.74		73.1	50-150	11.8	50	
9Cl-PF3ONS (F53B Minor)	1.32	1.8	ng/L	1.72		76.5	50-150	27.7	50	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.39	1.8	ng/L	1.74		79.8	50-150	27.0	50	
Surrogate: 13C-PFHxA	*34.6*		ng/L	36.9		93.8	70-130			
Surrogate: M3HFPO-DA	*30.6*		ng/L	36.9		83.0	70-130			
Surrogate: 13C-PFDA	*29.9*		ng/L	36.9		81.1	70-130			
Surrogate: D5-NEtFOSAA	*131*		ng/L	148		88.5	70-130			

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.

con-test® A Pace Analytical® Laboratory

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)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanoic acid (PFHxA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorohexanesulfonic acid (PFHxS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroheptanoic acid (PFHpA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanoic acid (PFOA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorooctanesulfonic acid (PFOS)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorononanoic acid (PFNA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorodecanoic acid (PFDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-EtFOSAA (NEtFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluoroundecanoic acid (PFUnA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
N-MeFOSAA (NMeFOSAA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorododecanoic acid (PFDoA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotridecanoic acid (PFTrDA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Perfluorotetradecanoic acid (PFTA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
11Cl-PF3OUdS (F53B Major)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
9Cl-PF3ONS (F53B Minor)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	VT-DW,NJ,CT,ME,PA,MI,MA,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
ME	State of Maine	MA00100	06/9/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	06/30/2023

2261514

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page ____ of ____

Company Name:	Tighe & Bond
Address:	53 Southampton Rd, Westfield
Phone:	(413) 562-1600
Project Name:	PFAS Sample Collection-Shutesbury
Project Location:	63 Leverett Road, Shutesbury, MA
Project Number:	[redacted] 5-2190
Project Manager:	Jeff Arps
Pace Quote Name/Number:	
Invoice Recipient:	Town of Shutesbury
Sampled By:	Samuel Evans

Requested Turnaround Time
7-Day [X] 10-Day [ ]
PFAS 10-Day (std) [ ] Due Date:

Rush Approval Required
1-Day [ ] 3-Day [ ]
2-Day [ ] 4-Day [ ]

Data Delivery
Format: PDF [X] EXCEL [X]
Other:
CLP Like Data Pkg Required: [ ]
Email To: JLArps@Tighebond.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET [ ]
NON SOXHLET [ ]

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS via 537.1
1	63 Leverett Rd-Inf	12/8/22	1000	Grab	GW	U			2			X
2	63 Leverett Rd-Eff	↓	1005	↓	↓	↓			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

*Pace Analytical 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:	12/9/22 1030
Received by: (signature)	Date/Time:	12-9-22 1600
Relinquished by: (signature)	Date/Time:	12-9-22 1710
Received by: (signature)	Date/Time:	12/9 1710
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Client Comments:
Bill Town of Shutesbury PO: 57-101490

Detection Limit Requirements
MA: GW-1
GP:
Other:

Special Requirements
[X] 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

Lab Comments:

Disclaimer: Pace Analytical 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. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.pacelabs.com

Pace PEOPLE ADVANCING SCIENCE

Doc# 277 Rev 6 July 2022

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 MW Date 12/9/22 Time 1710

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

Direct From Sample ____ Ambient ____ Melted Ice ____

Were samples within Tempurature? Within 2-6°C T By Gun # 5 Actual Temp - 4.0

By Blank # ____ Actual Temp - ____

Was Custody Seal In tact? NA Were Samples Tampered with? N

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? ____

Samples are received within holding time? T Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T splitting samples requires F

Were trip blanks receive F On COC? F

Do All Samples Have the proper pH? NA Acid NA Base NA

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	4	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			

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:

Tighe&Bond

APPENDIX C

S-2190
January 12, 2023

Ms. Becky Torres
Shutesbury Town Administrator
P.O. Box 276
Shutesbury MA 01072-0276

Re: **Private Well Sampling**
42 and 59 Leverett Road, Shutesbury
RTN 1-21340

Dear Ms. Torres:

Enclosed is a copy of the laboratory analytical results for the water samples collected from the treatment systems at the Shutesbury Fire Department (42 Leverette Road) and the Shutesbury Highway Department (59 Leverett Road) as part of environmental monitoring required by the Massachusetts Department of Environmental Protection (MassDEP).

Tighe & Bond personnel collected the well water samples on December 8, 2022, to monitor the granular activated carbon (GAC) point-of-entry treatment (POET) systems that were installed at these two locations. The samples were submitted to Pace Analytical Laboratory (Pace) of East Longmeadow, Massachusetts, a Massachusetts-certified environmental laboratory, for per- and polyfluoroalkyl substances (PFAS) analysis.

A copy of the laboratory analytical results for the above-referenced samples are attached to this letter. Analytical results have been compared to *Massachusetts Drinking Water Maximum Contaminant Levels (MMCLs, 310 CMR 22.00)* and *Massachusetts Contingency Plan Method 1 GW-1 Groundwater Standard (MCP, 310 CMR 40.0974)* of 20 nanograms per liter (ng/L), or parts per trillion (ppt), for the sum of six specific PFAS compounds (PFAS6). These water quality results indicate that PFAS are present at elevated concentrations in the untreated water but that the POET systems are effectively removing the PFAS compounds from potable water at both locations, as PFAS were not detected in the effluent. A data summary table is attached that shows the data in a table format; the PFAS6 compounds are shaded gray on the table.

Based on laboratory data, your treatment system remains effective and does not require carbon replacement. Tighe & Bond will continue to monitor these systems in accordance with MassDEP requirements. Please call the undersigned at (413) 572-3227, if you have any questions regarding this information.

Very truly yours,

TIGHE & BOND, INC

Jeffrey L. Arps, LSP
Vice President

Enclosures
BWSC-123 Forms
Summary Data Table
Laboratory Reports

Copy: Walter Tibbetts, Shutesbury Fire Chief
MassDEP, Bureau of Waste Site Cleanup
J:\S\S2190 Shutesbury Peer Review\FD PFAS 2022\Notification Letters\Town - 42 And 59 Leverett\Town 12_22 Results.Docx

S-2190
January 12, 2023

Mark L. Watkins
63 Leverett Road
Shutesbury, MA 01072

Re: **Private Well Sampling**
63 Leverett Road, Shutesbury
RTN 1-21340

Dear Mr. Watkins:

The Massachusetts Department of Environmental Protection (MassDEP) recently sampled several private wells at and around the Shutesbury Fire Station located at 42 Leverett Road in Shutesbury. These samples showed impacts from per- and polyfluoroalkyl substances, or PFAS, in the drinking water samples. The Town subsequently installed treatment to remove the PFAS at homes where the six regulated PFAS compounds (PFAS6) exceeded the Massachusetts Drinking Water Standard of 20 nanograms/liter (ng/L, or parts-per-trillion, ppt). Your home is one of the locations where a water treatment system was installed.

Enclosed is a copy of the laboratory analytical results for the water samples collected from the treatment system located at 63 Leverett Road as part of environmental monitoring required by the Massachusetts Department of Environmental Protection (MassDEP).

Tighe & Bond personnel collected the residential well water samples on December 8, 2022, to monitor the granular activated carbon (GAC) point-of-entry treatment (POET) system that was installed in your home by the Town of Shutesbury. The samples were submitted to Pace Analytical Laboratory (Pace) of East Longmeadow, Massachusetts, a Massachusetts-certified environmental laboratory, for per- and polyfluoroalkyl substances (PFAS) analysis.

A copy of the laboratory analytical results for the above-referenced samples are attached to this letter. Analytical results have been compared to *Massachusetts Drinking Water Maximum Contaminant Levels (MMCLs, 310 CMR 22.00)* and *Massachusetts Contingency Plan Method 1 GW-1 Groundwater Standard (MCP, 310 CMR 40.0974)* of 20 nanograms per liter (ng/L), or parts per trillion (ppt), for the combined total of six specific PFAS compounds (PFAS6). These water quality results indicate that PFAS are present in the untreated water but that the POET system installed in your home is effectively removing the PFAS6 from your drinking water. One compound, PFHxA, was detected in the effluent sample at a concentration of 2.0 ppt. Please note that PFHxA is not a PFAS6 compound. While Massachusetts has not established a drinking water standard for PFHxA, Michigan has established a drinking water standard of 400,000 ng/L for this compound. Considering that the GAC in your system was recently replaced, this detection is suspect, so we will re-sample the effluent from your system to confirm that proper treatment of your water is occurring. A data summary table is attached that shows the data in a table format; the PFAS6 compounds are shaded gray on the table.

Please call the Shutesbury Town Administrator, Becky Torres, at (413) 259-1214 or the undersigned at (413) 572-3227, if you have any questions regarding this information.

Very truly yours,

TIGHE & BOND, INC.

Jeffrey L. Arps, LSP
Vice President

Enclosures
BWSC-123
Summary Data Table
Laboratory Report

Copy: Becky Torres, Shutesbury Town Administrator
MassDEP, Bureau of Waste Site Cleanup
J:\S\S2190 Shutesbury Peer Review\FD PFAS 2022\Notification Letters\63 Leverett\63 LR 12_22 Results.Docx

S-2190
January 12, 2023

Ms. Nancy Dihlmann
62 Leverett Road
Shutesbury, MA 01072

Re: **Private Well Sampling**
62 Leverett Road, Shutesbury
RTN 1-21340

Dear Ms. Dihlmann:

The Massachusetts Department of Environmental Protection (MassDEP) recently sampled several private wells at and around the Shutesbury Fire Station located at 42 Leverett Road in Shutesbury. These samples showed impacts from per- and polyfluoroalkyl substances, or PFAS, in the drinking water samples. The Town subsequently installed treatment to remove the PFAS at homes where the six regulated PFAS compounds (PFAS6) exceeded the Massachusetts Drinking Water Standard of 20 nanograms/liter (ng/L, or parts-per-trillion, ppt). Your home is one of the locations where a water treatment system was installed.

Enclosed is a copy of the laboratory analytical results for the water samples collected from the treatment system located at 62 Leverett Road as part of environmental monitoring required by the Massachusetts Department of Environmental Protection (MassDEP).

Tighe & Bond personnel collected the residential well water samples on December 8, 2022, to monitor the granular activated carbon (GAC) point-of-entry treatment (POET) system that was installed in your home by the Town of Shutesbury. The samples were submitted to Pace Analytical Laboratory (Pace) of East Longmeadow, Massachusetts, a Massachusetts-certified environmental laboratory, for per- and polyfluoroalkyl substances (PFAS) analysis.

A copy of the laboratory analytical results for the above-referenced samples are attached to this letter. Analytical results have been compared to *Massachusetts Drinking Water Maximum Contaminant Levels (MMCLs, 310 CMR 22.00)* and *Massachusetts Contingency Plan Method 1 GW-1 Groundwater Standard (MCP, 310 CMR 40.0974)* of 20 nanograms per liter (ng/L), or parts per trillion (ppt), for the sum of six specific PFAS compounds (PFAS6). These water quality results indicate that PFAS are present in the untreated water but that the POET system installed in your home is effectively removing the PFAS from your drinking water, as PFAS were not detected in the effluent sample. A data summary table is attached that shows the data in a table format; the PFAS6 compounds are shaded gray on the table.

Based on laboratory data, your treatment system remains effective and does not require carbon replacement. Tighe & Bond will continue to monitor the system in accordance with MassDEP requirements.

Please call the Shutesbury Town Administrator, Becky Torres, at (413) 259-1214 or the undersigned at (413) 572-3227, if you have any questions regarding this information.

Very truly yours,

TIGHE & BOND, INC.

Jeffrey L. Arps, LSP
Vice President

Enclosures
BWSC-123
Summary Data Table
Laboratory Report

Copy: Becky Torres, Shutesbury Town Administrator
MassDEP, Bureau of Waste Site Cleanup

J:\S\S2190 Shutesbury Peer Review\FD PFAS 2022\Notification Letters\62 Leverett\62 LR 12_22 Results.Docx

S-2190
January 12, 2023

Rory Valentine and Rob Bowen
50 Leverett Road
Shutesbury, MA 01072

Re: **Private Well Sampling**
50 Leverett Road, Shutesbury
RTN 1-21340

Dear Ms. Valentine and Mr. Bowen:

The Massachusetts Department of Environmental Protection (MassDEP) recently sampled several private wells at and around the Shutesbury Fire Station located at 42 Leverett Road in Shutesbury. These samples showed impacts from per- and polyfluoroalkyl substances, or PFAS, in the drinking water samples. The Town subsequently installed treatment to remove the PFAS at homes where the six regulated PFAS compounds (PFAS6) exceeded the Massachusetts Drinking Water Standard of 20 nanograms/liter (ng/L, or parts-per-trillion, ppt). Your home is one of the locations where a water treatment system was installed.

Enclosed is a copy of the laboratory analytical results for the water samples collected from the treatment system located at 50 Leverett Road as part of environmental monitoring required by the Massachusetts Department of Environmental Protection (MassDEP). Tighe & Bond personnel collected the residential well water samples on December 8, 2022, to monitor the granular activated carbon (GAC) point-of-entry treatment (POET) system that was installed in your home by the Town of Shutesbury. The samples were submitted to Pace Analytical Laboratory (Pace) of East Longmeadow, Massachusetts, a Massachusetts-certified environmental laboratory, for per- and polyfluoroalkyl substances (PFAS) analysis.

A copy of the laboratory analytical results for the above-referenced samples are attached to this letter. Analytical results have been compared to *Massachusetts Drinking Water Maximum Contaminant Levels (MMCLs, 310 CMR 22.00)* and *Massachusetts Contingency Plan Method 1 GW-1 Groundwater Standard (MCP, 310 CMR 40.0974)* of 20 nanograms per liter (ng/L), or parts per trillion (ppt), for the sum of six specific PFAS compounds (PFAS6). These water quality results indicate that PFAS are present in the untreated water. The POET system installed in your home is removing the majority of the PFAS6 from your drinking water, but two compounds, PFHxA and PFHpA, were detected in the effluent sample at concentrations of 6.4 and 4.9 ppt. PFHpA is a PFAS6 compound but PFHxA is not. While Massachusetts has not established a drinking water standard for PFHxA, Michigan has established a drinking water standard of 400,000 ng/L for this compound. A data summary table is attached that shows the data in a table format; the PFAS6 compounds are shaded gray on the table.

Due to these detections, the Town will be replacing the carbon in your system on January 19, 2023.

Tighe & Bond will continue to monitor the system in accordance with MassDEP requirements. Please call the Shutesbury Town Administrator, Becky Torres, at (413) 259-1214 or the undersigned at (413) 572-3227, if you have any questions regarding this information.

Very truly yours,

TIGHE & BOND, INC.

Jeffrey L. Arps, LSP
Vice President

Enclosures: BWSC-123
Summary Data Table
Laboratory Report

Copy: Becky Torres, Shutesbury Town Administrator
MassDEP, Bureau of Waste Site Cleanup

J:\S\S2190 Shutesbury Peer Review\FD PFAS 2022\Notification Letters\50 Leverett\12_22 Results.Docx

www.tighebond.com

100% Recyclable