



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

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Lieutenant Governor

Kathleen A. Theoharides
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Commissioner

June 14, 2021

Mrs. Dianne Purcell
24 Sproul Road
Hanover, Massachusetts 02339

RE: **HANOVER - BWSC**
Release Tracking Number 4-0000090
Former National Fireworks Facility, King St.
ANALYTICAL RESULTS
24 SPROUL ROAD

Dear Mrs. Purcell,

The Massachusetts Department of Environmental Protection (MassDEP or the Department) Bureau of Waste Site Cleanup is tasked with ensuring the cleanup of oil and hazardous material releases pursuant to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E). This law is implemented through regulations known as the Massachusetts Contingency Plan (310 CMR 40.0000 et seq. – the MCP). Both M.G.L. c. 21E and the MCP require the performance of response actions to provide for the protection of harm to health, safety, public welfare and the environment which may result from releases and/or threats of releases of oil and/or hazardous material (OHM) at disposal sites.

As you are aware, MassDEP is currently overseeing the assessment of the Former National Fireworks Site located on King Street in Hanover, Massachusetts where various contaminants including trichloroethylene (TCE), lead, mercury, and other metals and organic compounds were released to the soil and groundwater. The Site was assigned Release Tracking Number (RTN) 4-0000090 under the MassDEP's Waste Site Cleanup program. Remedial investigation and cleanup activities are currently on-going at the Site.

On April 6, 2021, MassDEP issued a letter to you requesting access to your property located at 24 Sproul Road in Hanover, Massachusetts to conduct groundwater sampling at the private drinking water well located on your property. Since your parcel of land is in fairly close proximity to the Former National Fireworks Site and you have requested information pertinent to your private drinking water well, MassDEP performed the sampling to evaluate whether the release of various contaminants from the Former National Fireworks Site has resulted in an impact to your well used for drinking water at your property.

This information is available in alternate format. Call the MassDEP Diversity Office at 617-556-1139. TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

On April 28, 2021, MassDEP collected a groundwater sample from the private drinking water well at your property at 24 Sproul Road. The sample was transported to a MassDEP certified laboratory and analyzed for volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Method 524.2, MCP 14 total metals using EPA Methods 6020B and 7470A, and EPA Method 537.1 for Per- and polyfluoroalkyl substances (PFAS).

ANALYTICAL RESULTS

The laboratory results indicate that VOCs, which includes TCE, were not detected in the groundwater samples collected from the private drinking water well located on your property. It should be noted that laboratory analysis did detect concentrations of the metals Arsenic, Barium, and Zinc in the groundwater samples collected from the well located on your property. The groundwater sample collected from the private drinking water well located on your property contained the following metals: Arsenic at 0.0009 milligrams per liter (mg/l) (or 0.9 micrograms per liter [ug/l]), Barium at 0.0061 mg/l (or 6.1 ug/l), and Zinc at 0.0423 mg/l (or 42.3 ug/l).

MassDEP has established cleanup standards for areas in which groundwater is or may be used for drinking water purposes. These are known as Groundwater Category GW-1 Standards. The concentrations of the metals Arsenic, Barium, and Zinc detected in the groundwater samples collected from your private drinking water well were below the applicable GW-1 Standards of 10 ug/l, 2,000 ug/l, and 5,000 ug/l, respectively.

PFAS are a group of man-made chemicals used in a variety of consumer products and industries throughout the world. PFAS have been used in some firefighting foams, a number of industrial processes, and to make materials that are resistant to water, grease and stains for use in carpets, clothing, fabrics for furniture, paper packaging for food, cookware, leather goods, ski waxes, and more. Because these chemicals have been used in many consumer products over the past 50 years, most people have been exposed to them.

On October 2, 2020, MassDEP published its PFAS public drinking water standard of 20 nanograms per liter (ng/L - or parts per trillion [ppt]) – individually or for the sum of the concentrations of six specific PFAS compounds. MassDEP abbreviates this set of six PFAS substances as “PFAS6.” This drinking water standard was established by MassDEP to be protective against adverse health effects for all people consuming the water.

Concentrations of PFAS were not detected in the water sample collected from your private drinking water well above the laboratory detection limit. The detection limits are well below the drinking water standard of 20 nanograms per liter (ng/L).

As required by the MCP, MassDEP is providing you, the owner of the property where the sampling was conducted, with the results of the analysis performed on the samples. The analytical results are attached to this letter.

HANOVER, Former National Fireworks Facility
RTN 4-0000090

If you have any questions regarding the enclosed analytical results, please contact Kendall Walker at the letterhead address, by telephone at (508) 946-2846, or by email at kendall.walker@mass.gov. Please reference RTN 4-0000090 in any written correspondence regarding the Site.

Sincerely,



Deborah A. Marshall-Hewlitt
Chief, Audit Section
Bureau of Waste Site Cleanup

DMH/KW/lg

Enclosed: Analytical Results for 24 Sproul Road, Hanover, Massachusetts

Ec: Hanover Chief Municipal Officer
Hanover Board of Health

DEP-SERO-BWSC
Attn: Gerard M. R. Martin, Deputy Regional Director
Attn: Deborah A. Marshall-Hewlitt, Audit Section Chief

DEP-BOSTON
Attn: Jennifer Davis, Senior Counsel



ANALYTICAL REPORT

Lab Number:	L2121903
Client:	Massachusetts DEP 20 Riverside Drive Lakeville, MA 02347-1676
ATTN:	Debbie Marshall-Hewlitt
Phone:	(508) 946-2832
Project Name:	FIREWORKS SITE
Project Number:	102043
Report Date:	05/14/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

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

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



Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2121903-01	24 SPROUL	DW	24 SPROUL ROAD	04/28/21 13:15	04/28/21
L2121903-02	FIELD BLANK	DW	24 SPROUL ROAD	04/28/21 13:15	04/28/21
L2121903-03	TRIP BLANK	DW	24 SPROUL ROAD	04/28/21 00:00	04/28/21

Project Name: FIREWORKS SITE

Lab Number: L2121903

Project Number: 102043

Report Date: 05/14/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	NO
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES
A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES
For any questions answered "No", please refer to the case narrative section on the following page(s).		

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Case Narrative

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

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

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

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

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

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

Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Case Narrative (continued)

Report Submission

The analysis of Volatile Organics was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

MCP Related Narratives

In reference to question A:

The proper field QC samples (Field Duplicates) were not delivered with drinking water samples.

A Matrix Spike was not submitted for the analysis of Metals in drinking water.

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

Authorized Signature:



Cristin Walker

Title: Technical Director/Representative

Date: 05/14/21

QC OUTLIER SUMMARY REPORT**Project Name:** FIREWORKS SITE**Lab Number:** L2121903**Project Number:** 102043**Report Date:** 05/14/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
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There are no QC Outliers associated with this report.

ORGANICS

SEMIVOLATILES

Project Name: FIREWORKS SITE**Lab Number:** L2121903**Project Number:** 102043**Report Date:** 05/14/21**SAMPLE RESULTS**

Lab ID: L2121903-01
 Client ID: 24 SPROUL
 Sample Location: 24 SPROUL ROAD

Date Collected: 04/28/21 13:15
 Date Received: 04/28/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 05/05/21 10:38
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 05/05/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.607	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.607	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	1.82	0.607	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.607	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.607	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	0.607	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.607	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.607	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.607	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.607	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	0.607	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.607	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.607	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.607	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.607	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	0.607	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.82	0.607	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.607	1
PFAS, Total (6)	ND		ng/l	1.82	0.607	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	107		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	98		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	92		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		70-130

Project Name: FIREWORKS SITE**Lab Number:** L2121903**Project Number:** 102043**Report Date:** 05/14/21**SAMPLE RESULTS**

Lab ID: L2121903-02
 Client ID: FIELD BLANK
 Sample Location: 24 SPROUL ROAD

Date Collected: 04/28/21 13:15
 Date Received: 04/28/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 05/05/21 10:46
 Analyst: LV

Extraction Method: EPA 537.1
 Extraction Date: 05/05/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.647	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.94	0.647	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	1.94	0.647	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.94	0.647	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.647	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.94	0.647	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.94	0.647	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.94	0.647	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.94	0.647	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.647	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.94	0.647	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.647	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.647	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.647	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.647	1
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.94	0.647	1
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.94	0.647	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.647	1
PFAS, Total (6)	ND		ng/l	1.94	0.647	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	107		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	103		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	105		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110		70-130

Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Method Blank Analysis Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 05/05/21 10:03
Analyst: LV

Extraction Method: EPA 537.1
Extraction Date: 05/05/21 04:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-02 Batch: WG1494509-1					
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.668
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.668
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.668
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.668
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.668
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.668
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.668
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.668
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.668
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.668
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.668
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.668
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.668
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.668
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.668
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.668
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.668
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.668
PFAS, Total (6)	ND		ng/l	2.00	0.668

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	99		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	97		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	101		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1494509-2								
Perfluorobutanesulfonic Acid (PFBS)	113		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	109		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	105		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	118		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	121		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	107		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	115		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	105		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	109		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	107		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	109		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	118		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	112		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	122		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	110		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	127		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	125		-		70-130	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1494509-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	111				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	103				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	107				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107				70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Sample Associated sample(s): 01-02 QC Batch ID: WG1494509-3 QC Sample: L2121891-01 Client ID: MS												
Perfluorobutanesulfonic Acid (PFBS)	ND	138	155	112	-	-	-	-	70-130	-	-	30
Perfluorohexanoic Acid (PFHxA)	ND	156	168	108	-	-	-	-	70-130	-	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	156	149	96	-	-	-	-	70-130	-	-	30
Perfluoroheptanoic Acid (PFHpA)	ND	156	167	107	-	-	-	-	70-130	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	143	162	114	-	-	-	-	70-130	-	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	147	147	100	-	-	-	-	70-130	-	-	30
Perfluorooctanoic Acid (PFOA)	ND	156	178	114	-	-	-	-	70-130	-	-	30
Perfluorononanoic Acid (PFNA)	ND	156	170	109	-	-	-	-	70-130	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	ND	145	150	104	-	-	-	-	70-130	-	-	30
Perfluorodecanoic Acid (PFDA)	ND	156	155	99	-	-	-	-	70-130	-	-	30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	145	153	105	-	-	-	-	70-130	-	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	156	161	103	-	-	-	-	70-130	-	-	30
Perfluoroundecanoic Acid (PFUnA)	ND	156	170	109	-	-	-	-	70-130	-	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	156	156	100	-	-	-	-	70-130	-	-	30
Perfluorododecanoic Acid (PFDoA)	ND	156	178	114	-	-	-	-	70-130	-	-	30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	147	144	98	-	-	-	-	70-130	-	-	30
Perfluorotridecanoic Acid (PFTrDA)	ND	156	180	115	-	-	-	-	70-130	-	-	30
Perfluorotetradecanoic Acid (PFTA)	ND	156	172	110	-	-	-	-	70-130	-	-	30

Matrix Spike Analysis**Batch Quality Control****Project Name:** FIREWORKS SITE**Project Number:** 102043**Lab Number:** L2121903**Report Date:** 05/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Sample Associated sample(s): 01-02 QC Batch ID: WG1494509-3 QC Sample: L2121891-01 Client ID: MS												

Surrogate	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	104				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	106				70-130

Lab Duplicate Analysis Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1494509-4 QC Sample: L2122048-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	13.6	12.6	ng/l	8		30
Perfluorohexanoic Acid (PFHxA)	15.9	15.0	ng/l	6		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	4.18	4.10	ng/l	2		30
Perfluorohexanesulfonic Acid (PFHxS)	1.85	1.88	ng/l	2		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	20.4	20.3	ng/l	0		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.07	2.97	ng/l	3		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	23.5	23.3	ng/l	1		30
PFAS, Total (5)	29.5	29.3	ng/l	1		30

Lab Duplicate Analysis Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1494509-4 QC Sample: L2122048-01 Client ID: DUP Sample						
PFAS, Total (6)	29.5	29.3	ng/l	1		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	110		105		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		90		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	101		110		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	103		102		70-130

METALS

Project Name: FIREWORKS SITE**Lab Number:** L2121903**Project Number:** 102043**Report Date:** 05/14/21**SAMPLE RESULTS**

Lab ID: L2121903-01

Date Collected: 04/28/21 13:15

Client ID: 24 SPROUL

Date Received: 04/28/21

Sample Location: 24 SPROUL ROAD

Field Prep: Not Specified

Sample Depth:

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/l	0.0040	0.0020	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Arsenic, Total	0.0009		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Barium, Total	0.0061		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Beryllium, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Cadmium, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Chromium, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Lead, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Mercury, Total	ND		mg/l	0.0002	0.0002	1	05/12/21 09:06	05/12/21 18:07	EPA 7470A	97,7470A	OU
Nickel, Total	ND		mg/l	0.0020	0.0020	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Selenium, Total	ND		mg/l	0.005	0.005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Silver, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Thallium, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Vanadium, Total	ND		mg/l	0.0050	0.0050	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD
Zinc, Total	0.0423		mg/l	0.0100	0.0100	1	05/12/21 08:31	05/12/21 13:09	EPA 3005A	97,6020B	CD



Project Name: FIREWORKS SITE

Lab Number: L2121903

Project Number: 102043

Report Date: 05/14/21

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1497307-1										
Antimony, Total	ND		mg/l	0.0040	0.0020	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Arsenic, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Barium, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Beryllium, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Cadmium, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Chromium, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Lead, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Nickel, Total	ND		mg/l	0.0020	0.0020	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Selenium, Total	ND		mg/l	0.005	0.005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Silver, Total	ND		mg/l	0.0005	0.0005	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Thallium, Total	ND		mg/l	0.0010	0.0010	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Vanadium, Total	ND		mg/l	0.0050	0.0050	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD
Zinc, Total	ND		mg/l	0.0100	0.0100	1	05/12/21 08:31	05/12/21 12:48	97,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1497308-1										
Mercury, Total	ND		mg/l	0.0002	0.0002	1	05/12/21 09:06	05/12/21 17:57	97,7470A	OU

Prep Information

Digestion Method: EPA 7470A



Lab Control Sample Analysis Batch Quality Control

Project Name: FIREWORKS SITE

Project Number: 102043

Lab Number: L2121903

Report Date: 05/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1497307-2 WG1497307-3								
Antimony, Total	97		97		80-120	0		20
Arsenic, Total	98		102		80-120	4		20
Barium, Total	102		100		80-120	2		20
Beryllium, Total	98		98		80-120	0		20
Cadmium, Total	100		100		80-120	0		20
Chromium, Total	99		96		80-120	3		20
Lead, Total	100		100		80-120	0		20
Nickel, Total	96		95		80-120	1		20
Selenium, Total	90		98		80-120	9		20
Silver, Total	100		97		80-120	3		20
Thallium, Total	100		99		80-120	1		20
Vanadium, Total	97		97		80-120	0		20
Zinc, Total	105		104		80-120	1		20
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1497308-2 WG1497308-3								
Mercury, Total	96		96		80-120	0		20

Project Name: FIREWORKS SITE**Lab Number:** L2121903**Project Number:** 102043**Report Date:** 05/14/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2121903-01A	Vial Ascorbic Acid/HCl preserved	B	NA		5.6	Y	Absent		SUB-524.2(14)
L2121903-01B	Vial Ascorbic Acid/HCl preserved	B	NA		5.6	Y	Absent		SUB-524.2(14)
L2121903-01C	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-MA-537.1(14)
L2121903-01D	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-MA-537.1(14)
L2121903-01E	Plastic 250ml HNO3 preserved	B	<2	<2	5.6	Y	Absent		MCP-V-6020T-10(180),MCP-BE-6020T-10(180),MCP-CR-6020T-10(180),MCP-TL-6020T-10(180),MCP-7470T-10(28),MCP-ZN-6020T-10(180),MCP-NI-6020T-10(180),MCP-AS-6020T-10(180),MCP-AG-6020T-10(180),MCP-CD-6020T-10(180),MCP-SE-6020T-10(180),MCP-PB-6020T-10(180),MCP-SB-6020T-10(180),MCP-BA-6020T-10(180)
L2121903-02A	Plastic 250ml Trizma preserved	A	NA		4.6	Y	Absent		A2-MA-537.1(14)
L2121903-03A	Vial Ascorbic Acid/HCl preserved	B	NA		5.6	Y	Absent		SUB-524.2(14)
L2121903-03B	Vial Ascorbic Acid/HCl preserved	B	NA		5.6	Y	Absent		SUB-524.2(14)

Project Name: FIREWORKS SITE
Project Number: 102043

Serial_No:05142116:22
Lab Number: L2121903
Report Date: 05/14/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESEA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Footnotes

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

Terms

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

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

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

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

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

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: FIREWORKS SITE
Project Number: 102043

Lab Number: L2121903
Report Date: 05/14/21

REFERENCES

- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 133 Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537.1, EPA/600/R-18/352. Version 1.0, November 2018.

LIMITATION OF LIABILITIES

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

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



Alpha Analytical, Inc.Facility: **Company-wide**Department: **Quality Assurance**Title: **Certificate/Approval Program Summary**ID No.: **17873**

Revision 19

Published Date: 4/2/2021 1:14:23 PM

Page 1 of 1

Certification Information

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

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625/625.1:** alpha-Terpineol**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H-B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,****SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.****EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

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



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial_No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

Laboratory Report

Alpha Analytical-Westborough
8 Walkup Dr.
Westborough, MA 01581

Date Printed: 05/14/2021
Work Order #: 2105-01998
Client Job #:
Date Received: 05/13/2021
Sample collected in: Massachusetts

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of the analyzing laboratory's Quality Assurance Plan, Standard Operating Procedures and State Accreditation. This certificate shall not be reproduced, except in full, without the written approval of the analyzing laboratory. The results presented in this report relate to the samples listed on the following pages in the condition in which they were received. Accreditation for each analyte is identified by the * symbol following the analyte name. Location of our analyzing laboratory is identified by the code in the Analyst Column.

A & L Laboratory:
Identified by ME in Analyst Column
155 Center Street, Auburn, Maine 04210
www.allaboratory.com

Granite State Analytical Services LLC:
Identified by NH in Analyst Column
22 Manchester Road, Derry, NH 03038
www.granitestateanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- A & L Laboratory / Granite State Analytical Services LLC. accreditation lists can be found on our websites listed above.
- Subcontracted samples will be identified by the Accreditation number of the subcontract laboratory in the analyst field for each analyte and the appropriate laboratory will be listed here. **None**
- Data Qualifiers (DQ) Flags provide additional information in regards to the receipt, analysis or quality control of a sample. These are indicated under the DQ Flags Column on your report and listed here if necessary: **Data Qualifier (DQ) Flags: B = Contamination is present in the blank., H = Hold time non-compliant.**

SAMPLE STATE SPECIFIC NOTES:

Additional Narrative or Comments: **B - Acetone detected in trip blank (2105-1998-2) at 69 ug/L.**

We appreciate the opportunity to provide you with laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be happy to assist you.

Donald A. D'Anjou, Ph. D.
Laboratory Director

A & L Laboratory: Accreditations: Maine ME00021, New Hampshire 2501, Maine Radon Registration ID # SPC20
Granite State Analytical Services, LLC: Accreditations: New Hampshire 1015; Maine NH00003;
Massachusetts M-NH0003; Rhode Island 101513; Vermont VT-101507



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough

CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-001
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
24 SPROUL
MA

DATE AND TIME COLLECTED: 04/28/2021 01:15PM
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

Legend	
Passes	✓
Fails EPA Primary	✗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

MORE LOC INFO:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
1,1,1,2-Tetrachloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1,1-Trichloroethane*	<0.5	ug/L	✓	H	0.5	200 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1,2,2-Tetrachloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1,2-Trichloroethane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1-Dichloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	7 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,1-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2,3-Trichlorobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2,3-Trichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2,4-Trichlorobenzene*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2,4-Trimethylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dibromo-3-chloropropane	<0.5	ug/L		H	0.5	0.2 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dibromoethane	<0.5	ug/L		H	0.5	0.05 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dichlorobenzene*	<0.5	ug/L	✓	H	0.5	600 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dichloroethane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dichloropropane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,3,5-Trimethylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,3-Dichlorobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,3-Dichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,4-Dichlorobenzene*	<0.5	ug/L	✓	H	0.5	5.0 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
2,2-Dichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
2-Butanone (MEK)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
2-Chlorotoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
2-Hexanone	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM


Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough
CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-001
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
24 SPROUL
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021 01:15PM
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
4-Chlorotoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
4-Isopropyltoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
4-Methyl-2-pentanone (MIBK)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Acetone	<10	ug/L		HB	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Benzene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Bromobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Bromochloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Bromodichloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Bromoform*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Bromomethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Carbon disulfide	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Carbon tetrachloride*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Chlorobenzene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Chloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Chloroform*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Chloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
cis-1,2-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
cis-1,3-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Dibromochloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Dibromomethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Dichlorodifluoromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Diethyl ether	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Diisopropyl ether (DIPE)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Ethyl tert-butyl ether (ETBE)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM

Donald A. D'Anjou, Ph. D.
Laboratory Director



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SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
24 SPROUL
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021 01:15PM
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Ethylbenzene*	<0.5	ug/L	✓	H	0.5	700 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Hexachlorobutadiene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Isopropylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
m&p-Xylenes	<1	ug/L		H	1	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Methyl tert-butyl ether (MtBE)*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Methylene chloride*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Naphthalene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
n-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Nitrobenzene	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
n-Propylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
o-Xylene	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
sec-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Styrene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
tert-Amyl methyl ether (TAME)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
tert-Butyl alcohol (TBA)*	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
tert-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Tetrachloroethylene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Tetrahydrofuran (THF)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Toluene*	<0.5	ug/L	✓	H	0.5	1000 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Total THMs*	<0.5	ug/L	✓	H	0.5	80 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Total Xylenes*	<0.5	ug/L	✓	H	0.5	10000 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
trans-1,2-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
trans-1,3-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM


Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial_No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough
CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-001
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
24 SPROUL
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021 01:15PM
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Trichloroethylene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
Trichlorofluoromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:26PM
Vinyl chloride*	<0.5	ug/L	✓	H	0.5	2 ug/L	EPA 524.2	DD-NH	05/13/2021 06:26PM
1,2-Dichlorobenzene-d4	91	%	✓	H	0.5	70-130%	EPA 524.2 - SS	DD-NH	05/13/2021 06:26PM
4-Bromofluorobenzene	90	%	✓	H	0.5	70-130%	EPA 524.2 - SS	DD-NH	05/13/2021 06:26PM

Donald A. D'Anjou, Ph. D.
Laboratory Director



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Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough
CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-002
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
TRIP BLANK
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
1,1,1,2-Tetrachloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1,1-Trichloroethane*	<0.5	ug/L	✓	H	0.5	200 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1,2,2-Tetrachloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1,2-Trichloroethane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1-Dichloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	7 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,1-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2,3-Trichlorobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2,3-Trichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2,4-Trichlorobenzene*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2,4-Trimethylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dibromo-3-chloropropane	<0.5	ug/L		H	0.5	0.2 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dibromoethane	<0.5	ug/L		H	0.5	0.05 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dichlorobenzene*	<0.5	ug/L	✓	H	0.5	600 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dichloroethane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dichloropropane*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,3,5-Trimethylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,3-Dichlorobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,3-Dichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,4-Dichlorobenzene*	<0.5	ug/L	✓	H	0.5	5.0 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
2,2-Dichloropropane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
2-Butanone (MEK)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
2-Chlorotoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
2-Hexanone	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM

Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 | (603) 432-3044 website www.granitestateanalytical.com

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough
CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-002
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
TRIP BLANK
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
4-Chlorotoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
4-Isopropyltoluene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
4-Methyl-2-pentanone (MIBK)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Acetone	69	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/14/2021 12:54PM
Benzene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Bromobenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Bromochloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Bromodichloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Bromoform*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Bromomethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Carbon disulfide	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Carbon tetrachloride*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Chlorobenzene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Chloroethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Chloroform*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Chloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
cis-1,2-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
cis-1,3-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Dibromochloromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Dibromomethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Dichlorodifluoromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Diethyl ether	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Diisopropyl ether (DIPE)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Ethyl tert-butyl ether (ETBE)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM

Donald A. D'Anjou, Ph. D.
Laboratory Director



GRANITE STATE ANALYTICAL SERVICES, LLC.

Serial No:05142116:22

22 Manchester Road, Unit 2, Derry, NH 03038
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CERTIFICATE OF ANALYSIS FOR DRINKING WATER

DATE PRINTED: 05/14/2021
CLIENT NAME: Alpha Analytical-Westborough
CLIENT ADDRESS: 8 Walkup Dr.
Westborough, MA 01581

SAMPLE ID #: 2105-01998-002
SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
TRIP BLANK
MA

Legend	
Passes	✓
Fails EPA Primary	✗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Ethylbenzene*	<0.5	ug/L	✓	H	0.5	700 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Hexachlorobutadiene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Isopropylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
m&p-Xylenes	<1	ug/L		H	1	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Methyl tert-butyl ether (MtBE)*	<0.5	ug/L	✓	H	0.5	70 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Methylene chloride*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Naphthalene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
n-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Nitrobenzene	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
n-Propylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
o-Xylene	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
sec-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Styrene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
tert-Amyl methyl ether (TAME)*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
tert-Butyl alcohol (TBA)*	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
tert-Butylbenzene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Tetrachloroethylene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Tetrahydrofuran (THF)	<10	ug/L		H	10	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Toluene*	<0.5	ug/L	✓	H	0.5	1000 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Total THMs*	<0.5	ug/L	✓	H	0.5	80 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Total Xylenes*	<0.5	ug/L	✓	H	0.5	10000 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
trans-1,2-Dichloroethylene*	<0.5	ug/L	✓	H	0.5	100 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
trans-1,3-Dichloropropylene*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM

Donald A. D'Anjou, Ph. D.
Laboratory Director



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Serial_No:05142116:22

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SAMPLED BY: Alpha Analytical-Westborough

SAMPLE ADDRESS: L2121903
TRIP BLANK
MA

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	⚠
Fails State Guideline	✗
Attention	⚠

DATE AND TIME COLLECTED: 04/28/2021
DATE AND TIME RECEIVED: 05/13/2021 10:50AM
ANALYSIS PACKAGE: VOC524.2-MA
RECEIPT TEMPERATURE: ON ICE 4.9° CELSIUS

MORE LOC INFO:

CLIENT JOB #:

Test Description	Result	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date - Time Analyzed
Trichloroethylene*	<0.5	ug/L	✓	H	0.5	5 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
Trichlorofluoromethane*	<0.5	ug/L		H	0.5	No Limit	EPA 524.2	DD-NH	05/13/2021 06:57PM
Vinyl chloride*	<0.5	ug/L	✓	H	0.5	2 ug/L	EPA 524.2	DD-NH	05/13/2021 06:57PM
1,2-Dichlorobenzene-d4	91	%	✓	H	0.5	70-130%	EPA 524.2 - SS	DD-NH	05/13/2021 06:57PM
4-Bromofluorobenzene	94	%	✓	H	0.5	70-130%	EPA 524.2 - SS	DD-NH	05/13/2021 06:57PM

Donald A. D'Anjou, Ph. D.
Laboratory Director