



NASHOBA ANALYTICAL

A DIVISION OF GRANITE STATE ANALYTICAL SERVICES, LLC

31A Willow Road Ayer, Massachusetts 01432
Phone: 978-391-4428 | website: www.nashobaanalytical.com

Laboratory Report

Lynnfield Center Water District
83 Phillips Road
Lynnfield, MA 01940

Date Printed: 04/20/2023
Work Order #: 2304-02018
Client Job #:
Date Received: 04/11/2023
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

Nashoba Analytical:
Identified by MA in the Analyst Column
31A Willow Road, Ayer, MA 01432
www.nashobaanalytical.com

ANALYSIS RELATED NOTES:

- RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
- DF: "Dilution factor" means the ratio of the volume of the sample to the volume of the final (dilute) solution.
- MDL: "Minimum Detection Limit" means the minimum result which can be reliably discriminated from a blank with a predetermined confidence level.
- A & L Laboratory / Granite State Analytical Services LLC / Nashoba Analytical. 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. **This report contains data that were produced by a subcontracted laboratory accredited for the fields of testing performed, if available. Accreditation for each analyte is identified by the * symbol following the analyte name.**
Alpha Analytical-Mansfield, 320 Forbes Boulevard, Mansfield, MA 02048 Accreditation # M-MA030
- 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: J = Estimated concentration.**

SAMPLE STATE SPECIFIC NOTES:

Additional Narrative or Comments: **Data qualifiers present in subcontract report.**

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.

Peter C. Nevius
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
Nashoba Analytical: Accreditations: Massachusetts M-MA1118



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-001
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

Legend	
Passes	
Fails EPA Primary	
Fails EPA Secondary	
Fails State Guideline	
Attention	

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: 10275 STA. #4 (GLEN DRIVE WELLS 5G-8G)

DATE & TIME COLLECTED: 04/11/2023 08:50AM
DATE & TIME RECEIVED: 04/11/2023 11:40AM
WATER SYS TYPE:
RECEIPT TEMP: ON ICE 12.4° CELSIUS
CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic Acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
4,8-dioxa-3H-perfluorononanoic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Date Extracted	-					No Limit	EPA 537.1	MA00030	04/16/2023 10:06AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorobutanesulfonic Acid (PFBS)*	2.55	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluoroheptanoic Acid (PFHpA)*	1.91	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorohexanesulfonic Acid (PFHxS)*	1.39	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorohexanoic Acid (PFHxA)*	3.49	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM

Peter C. Nevius
 Laboratory Director



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-001
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

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

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: 10275 STA. #4 (GLEN DRIVE WELLS 5G-8G)

DATE & TIME COLLECTED: 04/11/2023 08:50AM

DATE & TIME RECEIVED: 04/11/2023 11:40AM

WATER SYS TYPE:

RECEIPT TEMP: ON ICE 12.4° CELSIUS

CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
Perfluorooctanesulfonic Acid (PFOS)*	3.15	ng/L			Sub Report		EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorooctanoic Acid (PFOA)*	5.89	ng/L			Sub Report		EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluorotridecanoic Acid (PFTTrDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Perfluoroundecanoic Acid (PFUnA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:43AM
Total 6 (PFOS PFOA PFNA PFHxS PFHpA PFDA)	9.04	ng/L	✓		Sub Report	20 ng/L Proposed	N/A calculation	MA00030	04/17/2023 10:43AM

Peter C. Nevius
Laboratory Director



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-002
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

Legend	
Passes	
Fails EPA Primary	
Fails EPA Secondary	
Fails State Guideline	
Attention	

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: ST3 STA. #3 (GWTP) - FINISHED WATER

DATE & TIME COLLECTED: 04/11/2023 09:15AM
DATE & TIME RECEIVED: 04/11/2023 11:40AM
WATER SYS TYPE:
RECEIPT TEMP: ON ICE 12.4° CELSIUS
CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic Acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
4,8-dioxa-3H-perfluorononanoic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Date Extracted	-					No Limit	EPA 537.1	MA00030	04/16/2023 10:06AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	0.857	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	0.783	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorobutanesulfonic Acid (PFBS)*	2.16	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluoroheptanoic Acid (PFHpA)*	0.820	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorohexanesulfonic Acid (PFHxS)*	0.969	ng/L		J	Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorohexanoic Acid (PFHxA)*	2.09	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM

Peter C. Nevius
 Laboratory Director



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-002
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

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

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: ST3 STA. #3 (GWTP) - FINISHED WATER

DATE & TIME COLLECTED: 04/11/2023 09:15AM
DATE & TIME RECEIVED: 04/11/2023 11:40AM
WATER SYS TYPE:
RECEIPT TEMP: ON ICE 12.4° CELSIUS
CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
Perfluorooctanesulfonic Acid (PFOS)*	2.09	ng/L			Sub Report		EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorooctanoic Acid (PFOA)*	3.09	ng/L			Sub Report		EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluorotridecanoic Acid (PFTTrDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Perfluoroundecanoic Acid (PFUnA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/17/2023 10:17AM
Total 6 (PFOS PFOA PFNA PFHxS PFHpA PFDA)	5.18	ng/L	✓		Sub Report	20 ng/L Proposed	N/A calculation	MA00030	04/17/2023 10:17AM

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 Laboratory Director



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-003
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

Legend	
Passes	
Fails EPA Primary	
Fails EPA Secondary	
Fails State Guideline	
Attention	

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: 10272 STATION #2 (MAIN ST GP WELL)

DATE & TIME COLLECTED: 04/11/2023 09:05AM
DATE & TIME RECEIVED: 04/11/2023 11:40AM
WATER SYS TYPE:
RECEIPT TEMP: ON ICE 12.4° CELSIUS
CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic Acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
4,8-dioxa-3H-perfluorononanoic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Date Extracted	-					No Limit	EPA 537.1	MA00030	04/17/2023 10:30AM
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorobutanesulfonic Acid (PFBS)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorodecanoic Acid (PFDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorododecanoic Acid (PFDoA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluoroheptanoic Acid (PFHpA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorohexanesulfonic Acid (PFHxS)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorohexanoic Acid (PFHxA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorononanoic Acid (PFNA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM

Peter C. Nevius
 Laboratory Director



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DRINKING WATER COMPLIANCE REPORT

DATE PRINTED: 04/20/2023
SAMPLE ID #: 2304-02018-003
SAMPLED BY: Dillon, Sean

LAB ID#: M-MA030

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

SAMPLE CATEGORY: Routine Sample
SYSTEM NAME: Lynnfield Center Water District
EPA ID#: 3164000
SYSTEM TOWN: Lynnfield
SAMPLE AGENT #:
SAMPLE LOCATION: 10272 STATION #2 (MAIN ST GP WELL)

DATE & TIME COLLECTED: 04/11/2023 09:05AM
DATE & TIME RECEIVED: 04/11/2023 11:40AM
WATER SYS TYPE:
RECEIPT TEMP: ON ICE 12.4° CELSIUS
CLIENT JOB #:

BAR CODE:

Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date & Time Analyzed
Perfluorooctanesulfonic Acid (PFOS)*	<2.00	ng/L			Sub Report		EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorooctanoic Acid (PFOA)*	<2.00	ng/L			Sub Report		EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorotetradecanoic Acid (PFTA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluorotridecanoic Acid (PFTTrDA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Perfluoroundecanoic Acid (PFUnA)*	<2.00	ng/L			Sub Report	No Limit	EPA 537.1	MA00030	04/18/2023 12:28AM
Total 6 (PFOS PFOA PFNA PFHxS PFHpA PFDA)	<2.00	ng/L	✓		Sub Report	20 ng/L Proposed	N/A calculation	MA00030	04/18/2023 12:28AM

Peter C. Nevius
 Laboratory Director



ANALYTICAL REPORT

Lab Number:	L2319355
Client:	Nashoba Analytical, LLC 31A Willow Rd Ayer, MA 01432
ATTN:	Maria Braun
Phone:	(978) 391-4428
Project Name:	LYNNFIELD CENTER WATER DISTRIC
Project Number:	3164000
Report Date:	04/19/23

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-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

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



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2319355-01	10275 STA. #4 GLEN DRIVE WELLS 5G-8G	DW	2304-02018	04/11/23 08:50	04/12/23
L2319355-02	STA. #4 GLEN DRIVE WELLS 5G-8G -FB	DW	2304-02018	04/11/23 08:50	04/12/23

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

Case Narrative (continued)

Report Submission

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

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:

 Darian Dailey

Title: Technical Director/Representative

Date: 04/19/23

ORGANICS

SEMIVOLATILES

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

SAMPLE RESULTS

Lab ID: L2319355-01
 Client ID: 10275 STA. #4 GLEN DRIVE WELLS 5G-8G
 Sample Location: 2304-02018

Date Collected: 04/11/23 08:50
 Date Received: 04/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 04/17/23 10:43
 Analyst: CAP

Extraction Method: EPA 537.1
 Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	2.55		ng/l	2.00	0.626	1
Perfluorohexanoic Acid (PFHxA)	3.49		ng/l	2.00	0.626	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.626	1
Perfluoroheptanoic Acid (PFHpA)	1.91	J	ng/l	2.00	0.626	1
Perfluorohexanesulfonic Acid (PFHxS)	1.39	J	ng/l	2.00	0.626	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.626	1
Perfluorooctanoic Acid (PFOA)	5.89		ng/l	2.00	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.626	1
Perfluorooctanesulfonic Acid (PFOS)	3.15		ng/l	2.00	0.626	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.626	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.626	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.626	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.626	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.626	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.626	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.626	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.626	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.626	1
PFAS, Total (6)	9.04		ng/l	2.00	0.626	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	96		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	88		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		70-130

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

SAMPLE RESULTS

Lab ID: L2319355-02
Client ID: STA. #4 GLEN DRIVE WELLS 5G-8G -FB
Sample Location: 2304-02018

Date Collected: 04/11/23 08:50
Date Received: 04/12/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 133,537.1
Analytical Date: 04/17/23 11:00
Analyst: CAP

Extraction Method: EPA 537.1
Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.589	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.589	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.589	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.589	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.589	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.589	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.589	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.589	1
Perfluorooctanesulfonic Acid (PFOS)	0.847	J	ng/l	2.00	0.589	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.589	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.589	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.589	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.589	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.589	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.589	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.589	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.589	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.589	1
PFAS, Total (6)	ND		ng/l	2.00	0.589	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	96		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	93		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		70-130

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

Method Blank Analysis Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 04/17/23 10:00
Analyst: CAP

Extraction Method: EPA 537.1
Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-02 Batch: WG1767281-1					
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)	94		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1767281-2								
Perfluorobutanesulfonic Acid (PFBS)	108		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	101		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	102		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	102		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	112		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	102		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	98		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	92		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	110		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	99		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	104		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	94		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	96		-		70-130	-		30

Lab Control Sample Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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: WG1767281-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	98				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	98				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96				70-130

Matrix Spike Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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 Associated sample(s): 01-02 QC Batch ID: WG1767281-3 QC Sample: L2319353-01 Client ID: MS Sample												
Perfluorobutanesulfonic Acid (PFBS)	2.16	135	126	92		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	2.09	152	146	95		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	152	146	96		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	0.820J	152	149	98		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.969J	139	134	97		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	143	152	106		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	3.09	152	152	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	152	148	98		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	2.09	141	129	90		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	152	141	93		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	141	140	99		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.783J	152	142	94		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	152	146	96		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.857J	152	136	90		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	152	138	91		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	143	135	94		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	152	142	94		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	152	139	92		-	-		70-130	-		30

Matrix Spike Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %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 QC Batch ID: WG1767281-3 QC Sample: L2319353-01 Client ID: MS Sample

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)	95				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	98				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92				70-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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: WG1767281-4 QC Sample: L2319355-01 Client ID: 10275 STA. #4 GLEN DRIVE WELLS 5G-8G						
Perfluorobutanesulfonic Acid (PFBS)	2.55	2.53	ng/l	1		30
Perfluorohexanoic Acid (PFHxA)	3.49	3.42	ng/l	2		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.91J	2.01	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.39J	1.41J	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	5.89	5.83	ng/l	1		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.15	3.12	ng/l	1		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 (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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: WG1767281-4 QC Sample: L2319355-01 Client ID: 10275 STA. #4 GLEN DRIVE WELLS 5G-8G						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	96		93		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94		93		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	88		92		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		92		70-130



Project Name: LYNNFIELD CENTER WATER DISTRIC**Lab Number:** L2319355**Project Number:** 3164000**Report Date:** 04/19/23**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(*)
L2319355-01A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319355-01B	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319355-02A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)

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/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	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/PFDoS	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
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
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/PFOSA	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-Chloroeicosafuoro-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	PFEEESA	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: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Serial_No:04192311:15
Lab Number: L2319355
Report Date: 04/19/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- 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

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRICT
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Lab Number: L2319355
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Data Qualifiers

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.
- 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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319355
Report Date: 04/19/23

REFERENCES

- 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.



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, **LCHAT 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.

L2319355

Nashoba Analytical
 31A Willow Rd, Ayer, MA 01432
 Tel: 978-391-4428 Fax: 978-391-4643

Chain of Custody - PFAS Compliant Samples (EPA 537.1)

PWS#: 3164000

PWS Name: Lynnfield Center Water District

Primary Lab Number: 2304-02018

Sampled by: (Print Name):

Sean Dillon

Sample #	Date sampled	Time Sampled	Grab	Sample Type (RS)	Location Code (Must Match Schedule)	Location Description	Container	Preservative	EPA 537.1	LAB USE ONLY
1	4.11.23	8:50	X	RS	10275	STA. #4 Glen Drive Wells 5G-8G	2-250 ml. P	10	X	- 001
2	4.11.23	8:50	X			STA. #4 Glen Drive Wells 5G-8G	1-250 ml. P	10	X	- 001
3										
4										
5										
6										
7										
8										
9										
10										

Preservative: 10 - Trizma

12.4°C ice

Special Notes/Requirements

IF BOX IS CHECKED, PLEASE REPORT MCL EXCEEDANCES IMMEDIATELY.

IF BOX IS CHECKED, PLEASE RUN FIELD BLANK(S) IF DETECTS.

Relinquished by:

Date/Time

Received by:

Date/Time

1.	<i>[Signature]</i>	4/11/23	11:40	<i>[Signature]</i>	4/11/23 11:40
2.	<i>[Signature]</i>	4/12/23	10:00	Eric Woods one	4/12/23 10:00
3.	<i>[Signature]</i>	4/12/23	16:30	<i>[Signature]</i>	4/12 16:30
4.	<i>[Signature]</i>	4/12/23 - 1	30 -	<i>[Signature]</i>	4/12 19:30
5.	<i>[Signature]</i>	4/12/23	2:00	<i>[Signature]</i>	4/12/23 2:00



ANALYTICAL REPORT

Lab Number:	L2319353
Client:	Nashoba Analytical, LLC 31A Willow Rd Ayer, MA 01432
ATTN:	Maria Braun
Phone:	(978) 391-4428
Project Name:	LYNNFIELD CENTER WATER DISTRIC
Project Number:	3164000
Report Date:	04/19/23

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

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



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2319353-01	ST3 STA. #3 GWTP-FINISHED WATER	DW	2304-02018	04/11/23 09:15	04/12/23
L2319353-02	STA. #3 GWTP-FINISHED WATER -FB	DW	2304-02018	04/11/23 09:15	04/12/23

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

Case Narrative (continued)

Report Submission

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

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:  Ashley Boucher

Title: Technical Director/Representative

Date: 04/19/23

ORGANICS

SEMIVOLATILES

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

SAMPLE RESULTS

Lab ID: L2319353-01
 Client ID: ST3 STA. #3 GWTP-FINISHED WATER
 Sample Location: 2304-02018

Date Collected: 04/11/23 09:15
 Date Received: 04/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 04/17/23 10:17
 Analyst: CAP

Extraction Method: EPA 537.1
 Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	2.16		ng/l	2.00	0.622	1
Perfluorohexanoic Acid (PFHxA)	2.09		ng/l	2.00	0.622	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.622	1
Perfluoroheptanoic Acid (PFHpA)	0.820	J	ng/l	2.00	0.622	1
Perfluorohexanesulfonic Acid (PFHxS)	0.969	J	ng/l	2.00	0.622	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.622	1
Perfluorooctanoic Acid (PFOA)	3.09		ng/l	2.00	0.622	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.622	1
Perfluorooctanesulfonic Acid (PFOS)	2.09		ng/l	2.00	0.622	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.622	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.622	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.783	J	ng/l	2.00	0.622	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.622	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.857	J	ng/l	2.00	0.622	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.622	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.622	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.622	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.622	1
PFAS, Total (6)	5.18		ng/l	2.00	0.622	1

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)	101		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	95		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		70-130

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

SAMPLE RESULTS

Lab ID: L2319353-02
Client ID: STA. #3 GWTP-FINISHED WATER -FB
Sample Location: 2304-02018

Date Collected: 04/11/23 09:15
Date Received: 04/12/23
Field Prep: Not Specified

Sample Depth:

Matrix: Dw
Analytical Method: 133,537.1
Analytical Date: 04/17/23 10:34
Analyst: CAP

Extraction Method: EPA 537.1
Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.586	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.586	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.586	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.586	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.586	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.586	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.586	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.586	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.586	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.586	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.586	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.737	J	ng/l	2.00	0.586	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.586	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.913	J	ng/l	2.00	0.586	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.586	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.586	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.586	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.586	1
PFAS, Total (6)	ND		ng/l	2.00	0.586	1

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)	96		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	92		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		70-130

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

Method Blank Analysis Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 04/17/23 10:00
Analyst: CAP

Extraction Method: EPA 537.1
Extraction Date: 04/16/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-02 Batch: WG1767281-1					
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)	94		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	94		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	91		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1767281-2								
Perfluorobutanesulfonic Acid (PFBS)	108		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	101		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	102		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	102		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	112		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	102		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	98		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	96		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	92		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	110		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	99		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		70-130	-		30
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	104		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	94		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	96		-		70-130	-		30



Lab Control Sample Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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: WG1767281-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	98				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	98				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96				70-130



Matrix Spike Analysis

Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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 Associated sample(s): 01-02 QC Batch ID: WG1767281-3 QC Sample: L2319353-01 Client ID: ST3 STA. #3 GWTP-FINISHED WATER												
Perfluorobutanesulfonic Acid (PFBS)	2.16	135	126	92		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	2.09	152	146	95		-	-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND	152	146	96		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	0.820J	152	149	98		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.969J	139	134	97		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	143	152	106		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	3.09	152	152	98		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	152	148	98		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	2.09	141	129	90		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	152	141	93		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	141	140	99		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.783J	152	142	94		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	152	146	96		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.857J	152	136	90		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	152	138	91		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	143	135	94		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	152	142	94		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	152	139	92		-	-		70-130	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC

Project Number: 3164000

Lab Number: L2319353

Report Date: 04/19/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %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 QC Batch ID: WG1767281-3 QC Sample: L2319353-01 Client ID: ST3 STA. #3 GWTP-FINISHED WATER

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	98				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	92				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	95				70-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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: WG1767281-4 QC Sample: L2319355-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	2.55	2.53	ng/l	1		30
Perfluorohexanoic Acid (PFHxA)	3.49	3.42	ng/l	2		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)	1.91J	2.01	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.39J	1.41J	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	5.89	5.83	ng/l	1		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.15	3.12	ng/l	1		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

Lab Duplicate Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC

Project Number: 3164000

Lab Number: L2319353

Report Date: 04/19/23

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: WG1767281-4 QC Sample: L2319355-01 Client ID: DUP Sample						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	96		93		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	94		93		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	88		92		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		92		70-130



Project Name: LYNNFIELD CENTER WATER DISTRIC**Lab Number:** L2319353**Project Number:** 3164000**Report Date:** 04/19/23**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(*)
L2319353-01A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319353-01B	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319353-02A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)

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/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	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/PFDoS	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
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
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/PFOSA	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-Chloroeicosafuoro-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	PFEEASA	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: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Serial_No:04192310:33
Lab Number: L2319353
Report Date: 04/19/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- 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

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

Data Qualifiers

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.
- 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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319353
Report Date: 04/19/23

REFERENCES

- 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.



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, **LCHAT 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.

Nashoba Analytical
 31A Willow Rd, Ayer, MA 01432
 Tel: 978-391-4428 Fax: 978-391-4643

L2319353

Chain of Custody - PFAS Compliant Samples (EPA 537.1)

PWS#: 3164000

PWS Name: Lynnfield Center Water District

Primary Lab Number: 2304-02018

Sampled by: (Print Name):

Sean Orillon

Sample #	Date sampled	Time Sampled	Grab	Sample Type (RS)	Location Code (Must Match Schedule)	Location Description	Container	Preservative	EPA 537.1	LAB USE ONLY
1	4-11-23	9:15	X	RS	ST3	STA. #3 GWTP - Finished Water	2-250 mL P	10	X	-002
2	4-11-23	9:15	X			STA. #3 GWTP - Finished Water	1-250 mL P	10	X	-002
3										
4										
5										
6										
7										
8										
9										
10										

Preservative: 10 - Trizma

Special Notes/Requirements

<input checked="" type="checkbox"/>	IF BOX IS CHECKED, PLEASE REPORT MCL EXCEEDANCES IMMEDIATELY.
<input checked="" type="checkbox"/>	IF BOX IS CHECKED, PLEASE RUN FIELD BLANK(S) IF DETECTS.

Relinquished by:

Date/Time

Received by:

Date/Time

1	<i>[Signature]</i>	4/11/23	11:40	<i>[Signature]</i>	4/11/23 11:40
2	<i>[Signature]</i>	4/12/23	10:00	<i>[Signature]</i>	4/12/23 10:00
3	<i>[Signature]</i>	4/12/23	16:30	<i>[Signature]</i>	4/12/23 16:30
4	<i>[Signature]</i>	4/12/23	19:30	<i>[Signature]</i>	4/12/23 19:30
5	<i>[Signature]</i>	4/12/23	21:00	<i>[Signature]</i>	4/12/23 21:00

1240 CFC



ANALYTICAL REPORT

Lab Number:	L2319337
Client:	Nashoba Analytical, LLC 31A Willow Rd Ayer, MA 01432
ATTN:	Maria Braun
Phone:	(978) 391-4428
Project Name:	LYNNFIELD CENTER WATER DISTRIC
Project Number:	3164000
Report Date:	04/18/23

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-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

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



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2319337-01	10272 STATION #2 (MAIN ST. GP WELL)	DW	2304-02018	04/11/23 09:05	04/12/23
L2319337-02	FIELD BLANK	DW	2304-02018	04/11/23 09:05	04/12/23

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

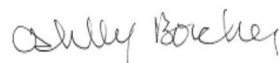
Case Narrative (continued)

Report Submission

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

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:



Ashley Boucher

Title: Technical Director/Representative

Date: 04/18/23

ORGANICS

SEMIVOLATILES

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

SAMPLE RESULTS

Lab ID: L2319337-01
 Client ID: 10272 STATION #2 (MAIN ST. GP WELL)
 Sample Location: 2304-02018

Date Collected: 04/11/23 09:05
 Date Received: 04/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 04/18/23 00:28
 Analyst: CAP

Extraction Method: EPA 537.1
 Extraction Date: 04/17/23 10:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.625	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.625	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.625	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.625	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.625	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.625	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.625	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.625	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.625	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.625	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.625	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.625	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.625	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.625	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.625	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.625	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.625	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.625	1
PFAS, Total (6)	ND		ng/l	2.00	0.625	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	103		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	93		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	106		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		70-130

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

SAMPLE RESULTS

Lab ID: L2319337-02
 Client ID: FIELD BLANK
 Sample Location: 2304-02018

Date Collected: 04/11/23 09:05
 Date Received: 04/12/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Dw
 Analytical Method: 133,537.1
 Analytical Date: 04/18/23 00:36
 Analyst: CAP

Extraction Method: EPA 537.1
 Extraction Date: 04/17/23 10:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab						
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.597	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.597	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		ng/l	2.00	0.597	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.597	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.597	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.597	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.597	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.597	1
Perfluorooctanesulfonic Acid (PFOS)	0.822	J	ng/l	2.00	0.597	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.597	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	0.597	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.597	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.597	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.597	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.597	1
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	0.597	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.597	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.597	1
PFAS, Total (6)	ND		ng/l	2.00	0.597	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	100		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	95		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	107		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		70-130

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

Method Blank Analysis Batch Quality Control

Analytical Method: 133,537.1
Analytical Date: 04/17/23 21:34
Analyst: CAP

Extraction Method: EPA 537.1
Extraction Date: 04/17/23 10:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab for sample(s): 01-02 Batch: WG1767606-1					
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)	98		70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	89		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	102		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by EPA 537.1 - Mansfield Lab Associated sample(s): 01-02 Batch: WG1767606-2								
Perfluorobutanesulfonic Acid (PFBS)	109		-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	107		-		70-130	-		30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	98		-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	107		-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	107		-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	117		-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	111		-		70-130	-		30
Perfluorononanoic Acid (PFNA)	107		-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	104		-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	101		-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	107		-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	104		-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	107		-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	107		-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	104		-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	118		-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	109		-		70-130	-		30



Lab Control Sample Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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: WG1767606-2								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	96				70-130
Tetrafluoro-2-heptafluoropropoxy-[13C3]-propanoic acid (13C3-HFPO-DA)	91				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	103				70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				70-130



Matrix Spike Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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 Associated sample(s): 01-02 QC Batch ID: WG1767606-3 QC Sample: L2318240-01 Client ID: MS Sample												
Perfluorobutanesulfonic Acid (PFBS)	0.887J	129	129	100		-	-		70-130	-		30
Perfluorohexanoic Acid (PFHxA)	ND	145	150	103		-	-		70-130	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	145	143	98		-	-		70-130	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	145	136	94		-	-		70-130	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	133	134	101		-	-		70-130	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	137	157	115		-	-		70-130	-		30
Perfluorooctanoic Acid (PFOA)	0.887J	145	158	109		-	-		70-130	-		30
Perfluorononanoic Acid (PFNA)	ND	145	153	105		-	-		70-130	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.850J	135	135	100		-	-		70-130	-		30
Perfluorodecanoic Acid (PFDA)	ND	145	144	99		-	-		70-130	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	135	137	101		-	-		70-130	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	145	148	102		-	-		70-130	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	145	149	103		-	-		70-130	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	145	134	92		-	-		70-130	-		30
Perfluorododecanoic Acid (PFDoA)	ND	145	151	104		-	-		70-130	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	137	135	98		-	-		70-130	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	145	162	112		-	-		70-130	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	145	158	109		-	-		70-130	-		30



Matrix Spike Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %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 QC Batch ID: WG1767606-3 QC Sample: L2318240-01 Client ID: MS Sample

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
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)	88				70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	100				70-130
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	95				70-130

Lab Duplicate Analysis Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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: WG1767606-4 QC Sample: L2318396-01 Client ID: DUP Sample						
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		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)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	0.685J	ng/l	NC		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

Lab Duplicate Analysis
Batch Quality Control

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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: WG1767606-4 QC Sample: L2318396-01 Client ID: DUP Sample						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro-n-[1,2-13C2]hexanoic Acid (13C-PFHxA)	100		99		70-130
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	93		90		70-130
Perfluoro-n-[1,2-13C2]decanoic Acid (13C-PFDA)	106		103		70-130
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		95		70-130



Project Name: LYNNFIELD CENTER WATER DISTRIC**Lab Number:** L2319337**Project Number:** 3164000**Report Date:** 04/18/23**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(*)
L2319337-01A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319337-01B	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)
L2319337-02A	Plastic 250ml Trizma preserved	A	NA		4.4	Y	Absent		A2-MA-537.1(14)

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/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	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/PFDoS	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
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
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/PFOSA	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-Chloroeicosafuoro-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	PFEEESA	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: LYNNFIELD CENTER WATER DISTRICT
Project Number: 3164000

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PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

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: LYNNFIELD CENTER WATER DISTRIC
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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.

Chlordane: 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.)

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'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

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

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

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- 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

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRICT
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Data Qualifiers

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.
- 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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



Project Name: LYNNFIELD CENTER WATER DISTRIC
Project Number: 3164000

Lab Number: L2319337
Report Date: 04/18/23

REFERENCES

- 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.



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, **LCHAT 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.

L2319337

Nashoba Analytical
 31A Willow Rd, Ayer, MA 01432
 Tel: 978-391-4428 Fax: 978-391-4643

Chain of Custody - PFAS Compliant Samples (EPA 537.1)

PWS#: 3164000

PWS Name: Lynnfield Center Water District

Primary Lab Number: 2304-02018

Sampled by: (Print Name): Sean Dillon

Sample #	Date sampled	Time Sampled	Grab	Sample Type (RS)	Location Code (Must Match Schedule)	Location Description	Container	Preservative	EPA 537.1	LAB USE ONLY
1	4-11-23	905	X	RS	10272	Station #2 (Main St. GP Well)	2-250 mL p	10	X	-003
2	4-11-23	905	X			Field Blank	1-250 mL p	10	X	-003
3										
4										
5										
6										
7										
8										
9										
10										

Preservative: 10 - Trizma

12.4°C

Special Notes/Requirements

Relinquished by:

Date/Time

Received by:

Date/Time

<input checked="" type="checkbox"/>	IF BOX IS CHECKED, PLEASE REPORT MCL EXCEEDANCES IMMEDIATELY.	1. <i>[Signature]</i>	4/11/23	9:40	<i>[Signature]</i>	4/11/23	11:40
<input checked="" type="checkbox"/>	IF BOX IS CHECKED, PLEASE RUN FIELD BLANK(S) IF DETECTS.	2. <i>[Signature]</i>	4/12/23	10:00	Eric Woods, APPL	4/12/23	10:00
		3. <i>[Signature]</i>	4/12/23	1630	<i>[Signature]</i>	4/12/23	1630
		4. <i>[Signature]</i>	4/12/23	1930	<i>[Signature]</i>	4/12/23	1930
		5. <i>[Signature]</i>	4/12/23	2100	<i>[Signature]</i>	4/12/23	2100