



July 27, 2018

Vista Work Order No. 1801515

Ms. Maya Murshak
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 29, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'MDEQ State Municipal Sampling'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at [mmaier@vista-analytical.com](mailto:mmailer@vista-analytical.com).

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1801515

Case Narrative

Sample Condition on Receipt:

Two drinking water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 537, Rev. 1.1

The samples were extracted and analyzed for a selected list of 14 PFAS using EPA Method 537, Rev. 1.1. The results have been reported following the conventions specified by the Michigan Department of Environmental Quality.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Laboratory Fortified Blank (LFB) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank. The LFB recoveries were within the method acceptance criteria.

The surrogate recoveries for all QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801515-01	GWNT1806221335KER	22-Jun-18 13:35	29-Jun-18 10:01	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1801515-02	GWNT1806221345KER	22-Jun-18 13:45	29-Jun-18 10:01	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: LRB	EPA Method 537
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Client Data Name: Merit Laboratories, Inc. Project: MDEQ State Municipal Sampling	Laboratory Data Matrix: Aqueous Lab Sample: B8G0011-BLK1 Column: BEH C18
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Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHxA	307-24-4	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHpA	375-85-9	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFHxS	355-46-4	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFOA	335-67-1	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFNA	375-95-1	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFOS	1763-23-1	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFDA	335-76-2	ND	2		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
MeFOSAA	2355-31-9	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
EtFOSAA	2991-50-6	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFUnA	2058-94-8	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFDaA	307-55-1	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFTTrDA	72629-94-8	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
PFTeDA	376-06-7	ND	4		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	104	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
13C2-PFDA	SURR	99	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1
d5-EtFOSAA	SURR	94	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 13:47	1

RL - Reporting limit

Results reported to RL.
Reporting convention specified by MI DEQ.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LFB						EPA Method 537					
Client Data Name: Merit Laboratories, Inc. Project: MDEQ State Municipal Sampling						Laboratory Data Lab Sample: B8G0011-BS1 Column: BEH C18					
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	71	71	100	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHxA	307-24-4	88	80	110	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHpA	375-85-9	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFHxS	355-46-4	73	73	100	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFOA	335-67-1	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFNA	375-95-1	92	80	115	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFOS	1763-23-1	72	74	97	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFDA	335-76-2	97	80	121	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
MeFOSAA	2355-31-9	74	80	93	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
EtFOSAA	2991-50-6	88	80	111	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFUnA	2058-94-8	85	80	106	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFDaA	307-55-1	83	80	104	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFTTrDA	72629-94-8	77	80	96	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
PFTeDA	376-06-7	77	80	96	70 - 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
Labeled Standards	Type		% Rec		Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR		109		70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
13C2-PFDA	SURR		104		70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1
d5-EtFOSAA	SURR		98		70- 130		B8G0011	03-Jul-18	0.25 L	17-Jul-18 14:00	1

Data Reported per Michigan DEQ instructions.

Sample ID: GWNT1806221335KER					EPA Method 537				
Client Data				Laboratory Data					
Name:	Merit Laboratories, Inc.	Matrix:	Drinking Water	Lab Sample:	1801515-01	Column:	BEH C18		
Project:	MDEQ State Municipal Sampling	Date Collected:	22-Jun-18 13:35	Date Received:	29-Jun-18 10:01				
Location:	CRKVLYMHP40079WL001								
Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFHxA	307-24-4	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFHpA	375-85-9	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFHxS	355-46-4	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFOA	335-67-1	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFNA	375-95-1	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFOS	1763-23-1	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFDA	335-76-2	ND	2		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
MeFOSAA	2355-31-9	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
EtFOSAA	2991-50-6	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFUnA	2058-94-8	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFDaA	307-55-1	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFTTrDA	72629-94-8	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
PFTeDA	376-06-7	ND	4		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	103	70 - 130		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
13C2-PFDA	SURR	86	70 - 130		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1
d5-EtFOSAA	SURR	75	70 - 130		B8G0011	03-Jul-18	0.23 L	17-Jul-18 18:03	1

RL - Reporting limit

Results reported to RL.
Reporting convention specified by MI DEQ..

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: GWNT1806221345KER	EPA Method 537
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Client Data Name: Merit Laboratories, Inc. Project: MDEQ State Municipal Sampling Location: CRKVLYMHP40079WL002	Laboratory Data Lab Sample: 1801515-02 Date Received: 29-Jun-18 10:01 Matrix: Drinking Water Date Collected: 22-Jun-18 13:45 Column: BEH C18
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Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFHxA	307-24-4	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFHpA	375-85-9	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFHxS	355-46-4	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFOA	335-67-1	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFNA	375-95-1	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFOS	1763-23-1	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFDA	335-76-2	ND	2		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
MeFOSAA	2355-31-9	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
EtFOSAA	2991-50-6	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFUnA	2058-94-8	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFDaA	307-55-1	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFTTrDA	72629-94-8	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
PFTeDA	376-06-7	ND	4		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	108	70 - 130		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
13C2-PFDA	SURR	96	70 - 130		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1
d5-EtFOSAA	SURR	85	70 - 130		B8G0011	03-Jul-18	0.24 L	17-Jul-18 18:16	1

RL - Reporting limit

Results reported to RL.
Reporting convention specified by MI DEQ..

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

Sample Log-in Checklist

 Vista Work Order #: 1801515 TAT std

Samples Arrival:	Date/Time 06/29/18 1001	Initials: tlp	Location: WR-2 Shelf/Rack: N1A
Logged In:	Date/Time 06/29/18 1815	Initials: Ke	Location: WR-2 Shelf/Rack: G4
Delivered By:	<input checked="" type="radio"/> FedEx	<input type="radio"/> UPS	<input type="radio"/> On Trac
	<input type="radio"/> GSO	<input type="radio"/> DHL	<input type="radio"/> Hand Delivered
	<input type="radio"/> Other		
Preservation:	<input checked="" type="radio"/> Ice	<input type="radio"/> Blue Ice	<input type="radio"/> Dry Ice
	<input type="radio"/> None		
Temp °C: 3.0 (uncorrected)	Time: 1009		Thermometer ID: IR-4
Temp °C: 2.9 (corrected)	Probe used: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

	YES	NO	NA
Adequate Sample Volume Received?	Ke		
Holding Time Acceptable?	Ke		
Shipping Container(s) Intact?	tlp		
Shipping Custody Seals Intact?		tlp	tlp
Shipping Documentation Present?	tlp		
Airbill 2 of 2 Trk # 43770528 3295	tlp		
Sample Container Intact?	Ke		
Sample Custody Seals Intact?			Ke
Chain of Custody / Sample Documentation Present?	tlp		
COC Anomaly/Sample Acceptance Form completed?			Ke
If Chlorinated or Drinking Water Samples, Acceptable Preservation?	Ke		
Preservation Documented:	Na ₂ S ₂ O ₃	Trizma	None
	Yes	No	NA
Shipping Container	Vista	Client	Retain
	Return		Dispose

Comments: