RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

C. HEIDI GRETHER
DIRECTOR

August 13, 2018

VIA E-MAIL

LEONARD ELEMENTARY SCHOOL
10 NORTH WASHINGTON STREET
OXFORD, MICHIGAN 48371

WSSN: 2057463

Dear School Administrator and Drinking Water Operator:

SUBJECT: LEONARD ELEMENTARY SCHOOL
Per- and Polyfluoroalkyl Substances (PFAS)

As you may be aware, the Michigan PFAS Action Response Team (MPART) has undertaken a proactive effort to investigate sources and locations of PFAS contamination in Michigan, to protect our drinking water, and to inform the public about PFAS. This involves the work of ten state departments, in coordination with local and federal officials.

One vital piece of this effort is the ongoing collaboration between the Michigan Department of Environmental Quality (MDEQ) and our water supply partners. It is through your generous participation that we are able to set and achieve our goal: to proactively test all community water supplies and schools that are classified as non-transient non-community water supplies for PFAS contamination. Once complete, this study will be an invaluable tool in determining the extent of PFAS in Michigan's drinking water, and empowering the MPART in the pursuit of their mission. We thank you for your continuing partnership, collaboration, and dedication to the residents of our great state.

This letter is intended to provide the results of PFAS analyses in samples collected from the LEONARD ELEMENTARY SCHOOL, WSSN # 2057463 (water supply) on the date(s) indicated below.

The table below summarizes the sampling results. A copy of the laboratory report is enclosed for your review. The analyses of these samples reported less than 10 parts per trillion (ppt) for perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Your water supply may have returned results greater than non-detect (ND) for the total amount of PFAS analytes tested for. An ND result means the analyte was not detected. Neither the MDEQ nor the United States Environmental Protection Agency (USEPA) have any guidance values for these other analytes at this time. If additional guidance and/or comparison values are developed for these or other PFAS chemicals in the future, we may reevaluate this water supply.

Date Collected	Sampling Location	PFOS + PFOA (ppt)	LHA (ppt) PFOS + PFOA	Total Tested PFAS (ppt)
7/10/2018	Well 1	ND	70	ND

ND – The parameter was not detected based on the laboratory's analytical report.
See Official lab results for test method used.

Currently, there is no regulatory drinking water standard for any of the PFAS chemicals. However, in May 2016 the USEPA established a non-regulatory Lifetime Health Advisory (LHA) for two of these chemicals, PFOS and PFOA. The LHA for PFOS and PFOA is 70 ppt combined, or individually if only one of them is present. The USEPA recommends that this LHA applies to both short-term (i.e., weeks to months) scenarios during pregnancy and lactation, as well as to lifetime-exposure scenarios. The LHA is the level, or amount, below which no harm is expected from these chemicals. The Michigan Department of Health and Human Services (MDHHS), as well as the MDEQ, have used this LHA of 70 ppt to inform decisions on actions that should be taken or are recommended to reduce exposure and prevent increased risk to public health from these PFAS contaminants. The USEPA has not set health advisory levels for the other PFAS compounds because not enough is known about them.

Additional information on the health effects of PFAS can be found on the Agency for Toxic Substances and Disease Registry (ATSDR) website listed at the end of this correspondence.

The concentrations of PFOS and PFOA in these samples are well below the USEPA LHA of 70 ppt and are not expected to result in adverse health effects as long as the concentrations are shown to remain below the LHA over time.

Because of the detection of low levels found in the water supply, we have the following recommendations for your consideration. These recommendations are essentially the same actions we have advised public water systems to follow for the past 30-plus years when a new contaminant has been confirmed as present in their drinking water.

1. Inform the public of these sample results through posting on your website or other means. The MDEQ, in collaboration with the MDHHS, has developed a toolkit containing communication templates to help notify school staff, students, and parents on the presence of PFAS in the drinking water and the response measures that are being initiated. This is a resource available to you if you choose and can be modified to fit your needs. The toolkit is available at www.michigan.gov/pfasresponse and click on "visit news and education."

2. Please continue with your regularly scheduled monitoring. The MDEQ recommends you also continue monitoring for PFAS on an annual basis to demonstrate the concentrations are consistently and reliably below any existing LHA.

These recommendations are based on the best available and most current information and may change depending on additional information related to site conditions; the availability of new data; or other new information as it becomes available. We may recommend further action at that time.

As part of the MDEQ's proactive statewide sampling initiative, the results of this sampling will be posted online on the MPART website within two weeks of this notification. The results can be found online by going to the MPART website address listed below, and by clicking on "Michigan PFAS Sites," and scrolling down and selecting "Public Water Supply Information." We recommend you inform your consumers as soon as possible. If you need assistance, please contact me.

For information on PFOS, PFOA, and other PFAS, including possible health outcomes, you may visit these websites:

- **State of Michigan PFAS Action Response Team** (MPART) website serving as the main resource for public information on PFAS contamination in Michigan: www.michigan.gov/pfasresponse
- **United States Environmental Protection Agency** (USEPA) website including basic information, USEPA actions, and links to informational resources: www.epa.gov/pfas
- **Agency for Toxic Substances and Disease Registry** (ATSDR) website including health information, exposure, and links to additional resources: www.atsdr.cdc.gov/pfas

Thank you once again for your continued collaboration with this investigation. The ongoing partnership between the MDEQ and Michigan's public water supplies plays an integral role in the state's continued efforts to ascertain and address the incidence of PFAS in drinking water for Michiganders.

If you have any questions concerning this sampling, please contact me at the telephone number below; by email at DEQ-PFAS-DrinkingWater@michigan.gov; or by mail at DEQ-DWMAD, P.O. Box 30817, Lansing, Michigan 48909-8311.

Sincerely,

Lois Elliott Graham

Lois Elliott Graham, R.S., M.S.A.
Drinking Water and Municipal Assistance Division
810-730-8674

Enclosure
cc: Mr. Anthony Drautz, Oakland County Health Division
Mr. Steven Crider, Supervisor, Drinking Water Unit, MDHHS
Mr. Dan Dettweiler, MDEQ

August 02, 2018

Vista Work Order No. 1801665

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 July 11, 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.

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

Sincerely,

Martha Maier

Martha Maier
Laboratory Director

Vista Work Order No. 1801665
Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

EPA Method 537, Rev. 1.1

The sample was 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 sample was extracted and analyzed within the method hold times.

Quality Control

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

Two Laboratory Fortified Blanks (LFB/LFBD) 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/LFBD recoveries were within the method acceptance criteria.

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

TABLE OF CONTENTS

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801665-01	GWEF1807100915GSC	10-Jul-18 09:15	11-Jul-18 10:01	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Vista Analytical Laboratory

Sample ID: LRB — **EPA Method 537**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8G0103-BLK1	Column:	BEH C18
Project:	MDEQ STATE MUNICIPAL SAMPLING						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFHxA	307-24-4	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFHpA	375-85-9	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFHxS	355-46-4	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFOA	335-67-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFNA	375-95-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFOS	1763-23-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFDA	335-76-2	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
MeFOSAA	2355-31-9	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
EtFOSAA	2991-50-6	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFUnA	2058-94-8	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFDoA	307-55-1	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFTrDA	72629-94-8	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
PFTeDA	376-06-7	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	97	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
13C2-PFDA	SURR	98	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	1
d5-EtFOSAA	SURR	84	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 15:33	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.

Vista Analytical Laboratory

Sample ID: LFBD — **EPA Method 537**

Name:	Merit Laboratories, Inc.	Lab Sample:	B8G0103-BS1/B8G0103-BSD1
Project:	MDEQ STATE MUNICIPAL SAMPLING	QC Batch:	B8G0103
Matrix:	Aqueous	Samp Size:	0.25/0.25 L
		Date Extracted:	13-Jul-18
		Column:	BEH C18

Analyte	CAS Number	LFB (ng/L)	LFB Spike Amt	LFB % Rec	LFB Quals	LFBD (ng/L)	LFBD Spike Amt	LFBD % Rec	RPD	LFBD Quals	%Rec Limits	RPD Limits	LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
PFBS	375-73-5	14	18	82		17	18	98	18		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFHxA	307-24-4	15	20	75		18	20	88	16		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFHpA	375-85-9	15	20	77		17	20	86	12		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFHxS	355-46-4	16	18	87		16	18	89	3		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFOA	335-67-1	17	20	87		19	20	94	7		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFNA	375-95-1	20	20	100		20	20	101	1		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFOS	1763-23-1	15	19	79		15	19	82	4		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFDA	335-76-2	17	20	87		20	20	102	16		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
MeFOSAA	2355-31-9	23	20	114		20	20	100	14		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
EtFOSAA	2991-50-6	22	20	109		16	20	82	28		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFUnA	2058-94-8	19	20	93		19	20	97	4		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFDoA	307-55-1	16	20	81		17	20	84	3		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFTrDA	72629-94-8	21	20	106		19	20	93	13		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1
PFTeDA	376-06-7	22	20	111		19	20	94	16		70-130		31-Jul-18 16:45	1	30-Jul-18 15:58	1

Labeled Standards	Type	LFB % Rec	LFB Quals	LFBD % Rec	LFBD Quals	Limits	LFB Analyzed	LFB Dil	LFBD Analyzed	LFBD Dil
13C2-PFHxA	SURR	83		93		70-130	31-Jul-18 16:45	1	30-Jul-18 15:58	1
13C2-PFDA	SURR	92		95		70-130	31-Jul-18 16:45	1	30-Jul-18 15:58	1
d5-EtFOSAA	SURR	113		85		70-130	31-Jul-18 16:45	1	30-Jul-18 15:58	1

Data Reported per Michigan DEQ instructions.

Vista Analytical Laboratory

Sample ID: GWEF1807100915GSC — **EPA Method 537**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Drinking Water	Lab Sample:	1801665-01	Column:	BEH C18
Project:	MDEQ STATE MUNICIPAL SAMPLING	Date Collected:	10-Jul-18 09:15	Date Received:	11-Jul-18 10:01		
Location:	LEONARDES-2057463						

Analyte	CAS Number	Conc. (ng/L)	RL	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFHxA	307-24-4	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFHpA	375-85-9	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFHxS	355-46-4	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFOA	335-67-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFNA	375-95-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFOS	1763-23-1	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFDA	335-76-2	ND	2		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
MeFOSAA	2355-31-9	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
EtFOSAA	2991-50-6	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFUnA	2058-94-8	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFDoA	307-55-1	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFTrDA	72629-94-8	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
PFTeDA	376-06-7	ND	4		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
13C2-PFDA	SURR	103	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	1
d5-EtFOSAA	SURR	85	70 - 130		B8G0103	13-Jul-18	0.25 L	30-Jul-18 20:40	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
	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.

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1801665 Temp: 3.5 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

Project ID: MDEQ STATE MUNICIPAL SAMPLING PO#: 60570309 Sampler: GARTH COUSINEAU (name)

TAT (check one): Standard: x 21 days; Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
MIKE JURY	MDEQ	401 KETCHUM ST, SUITE B	BAY CITY	MI	989-894-6255	989-891-9237

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Garth Cousineau	7/10/18	1900	KIM FRIC	7/11/18	1021
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
Ph: (916) 673-1520; Fax: (916) 673-0106

ATTN: Jennifer Miller

Method of Shipment:

Tracking No.:

Add Analysis(es) Requested

Container(s)

PFAS Isotope Dilution

USEPA Method 537

Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	List of 21	List of 24 withdrawn	List of 24	List of 24 withdrawn	List of 28	Other Please List Below	PFOA/PFOS	HDPE/PP/HDPE 14oz	PFAS List M	Comments
GWEF1807100915GSC	7/10/18	0915	LEONARDES-2057453	2	P	DW									X	TZ

Special Instructions/Comments: Send Results and Acknowledgements to the list provided by e-mail to Vista.

SEND DOCUMENTATION AND RESULTS TO:

Name: MIKE JURY
Company: MDEQ
Address: 401 KETCHUM ST, SUITE B
City: BAY CITY State: MI Zip: 48708
Phone: 989-894-6255 Fax: 989-891-9237
Email: doris.bogden@aecom.com

Container Types: P = HDPE, PJ = HDPE Jar, O = Other:

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma:

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other:

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1801665 **TAT** std

Samples Arrival:	**Date/Time** 7/11/18 1001	**Initials:** KE	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 07/11/18 1416	**Initials:** WDS	**Location:** WR-2 **Shelf/Rack:** F-3 / F4

Delivered By:	FedEx	UPS	On Trac	GSO	DHL	Hand Delivered	Other
Preservation:	Ice		Blue Ice		Dry Ice		None

Temp °C: 3.6 (uncorrected)	**Time:** 10:26	**Thermometer ID:** IR-4
Temp °C: 3.5 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received?	KE		
Holding Time Acceptable?	KE		
Shipping Container(s) Intact?	KE		
Shipping Custody Seals Intact?			KE
Shipping Documentation Present?	KE		
Airbill 1-2 Trk # 7817 9595 2747	KE		
Sample Container Intact?	KE		
Sample Custody Seals Intact?			KE
Chain of Custody / Sample Documentation Present?	KE		
COC Anomaly/Sample Acceptance Form completed?		KE	

If Chlorinated or Drinking Water Samples, Acceptable Preservation?					KE		
Preservation Documented:	$Na_2S_2O_3$	Trizma	None		Yes	No	NA
Shipping Container	Vista	Client	Retain	Return		Dispose	

Comments: