

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Mike Jury, Project Manager, Saginaw Bay District Office
Remediation and Redevelopment Division

FROM: Jeff Pincumbe, Geologist, Geological Services Section
Remediation and Redevelopment Division

DATE: October 29, 2018



SUBJECT: Loud Drive, Iosco County, Site ID #35000154
Sampling Data Package-September 2018, GSS Job #680

This data package is for Part 201 work requested by the Department of Environmental Quality (DEQ), Remediation and Redevelopment Division's (RRD's), Saginaw Bay District office for the subject site located in Iosco County, Michigan (Fig 1). RRD's Geological Services Section (GSS) collected groundwater samples from 4 monitor wells on September 25, 2018. GSS received the final laboratory results on October 18, 2018.

The data package includes the following:

- Site Location Map (Fig 1)
- Monitor Well Location Map (Fig 2)
- Groundwater Contour Map (Fig 3)
- Sampling Field Data (Table 1)
- Laboratory Tables with Comparison to Action Levels (Table 2)
- Elevation Data (Table 3)
- VISTA Laboratory Results (Appendix A)

On September 25, 2018 GSS collected groundwater samples from 4 monitor wells at the site using a low flow method (Fig 2) (Table 1). The groundwater samples were submitted to VISTA Analytical Laboratory and analyzed for Perfluorinated Hydrocarbons (PFCs) (Table 2) (Appendix A).

Static water levels were measured at the time of sampling and converted to a top of groundwater elevation (Table 3). Staff used the top of groundwater elevations to create a Groundwater Contour Map (Fig 3) which indicates that there is a groundwater high between Lake Huron and Van Etten Lake with groundwater flowing both to the east and west.

Laboratory analyses detected PFCs in the groundwater samples collected from LMW-3 and LMW-5. The concentration of PFCs in the sample from LMW-3 was 1.5 ng/L and the concentration in the sample from LMW-5 was 5.23 ng/L. Both concentrations are below the PFC Action Level of 70 ng/L.

If you have any questions, contact me at 517-243-3171.

Attachments

cc: Burrell P. Shirey, DEQ

704617 E
441109 N

714736 E
441109 N

F41 / Colbath Road

Loud Drive

River Road

704617 E
433003 N

714736 E
433003 N

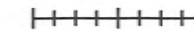
LEGEND

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

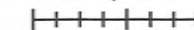
AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
 AERIAL PHOTO DATE: NA
 AERIAL RESOLUTION: USGS Topographic



0 180 360 720 Meters



0 650 1,300 2,600 Feet



1 inch = 2,667 feet

Wurtsmith Air Force Base

ERNIE ID 53000152, 53000153, 53000154
 OSCODA & AU SABLE TOWNSHIPS, IOSCO COUNTY

SITE LOCATIONS MAP

GEOLOGIST
 Jeff Pincumbe
 Geological Services Unit



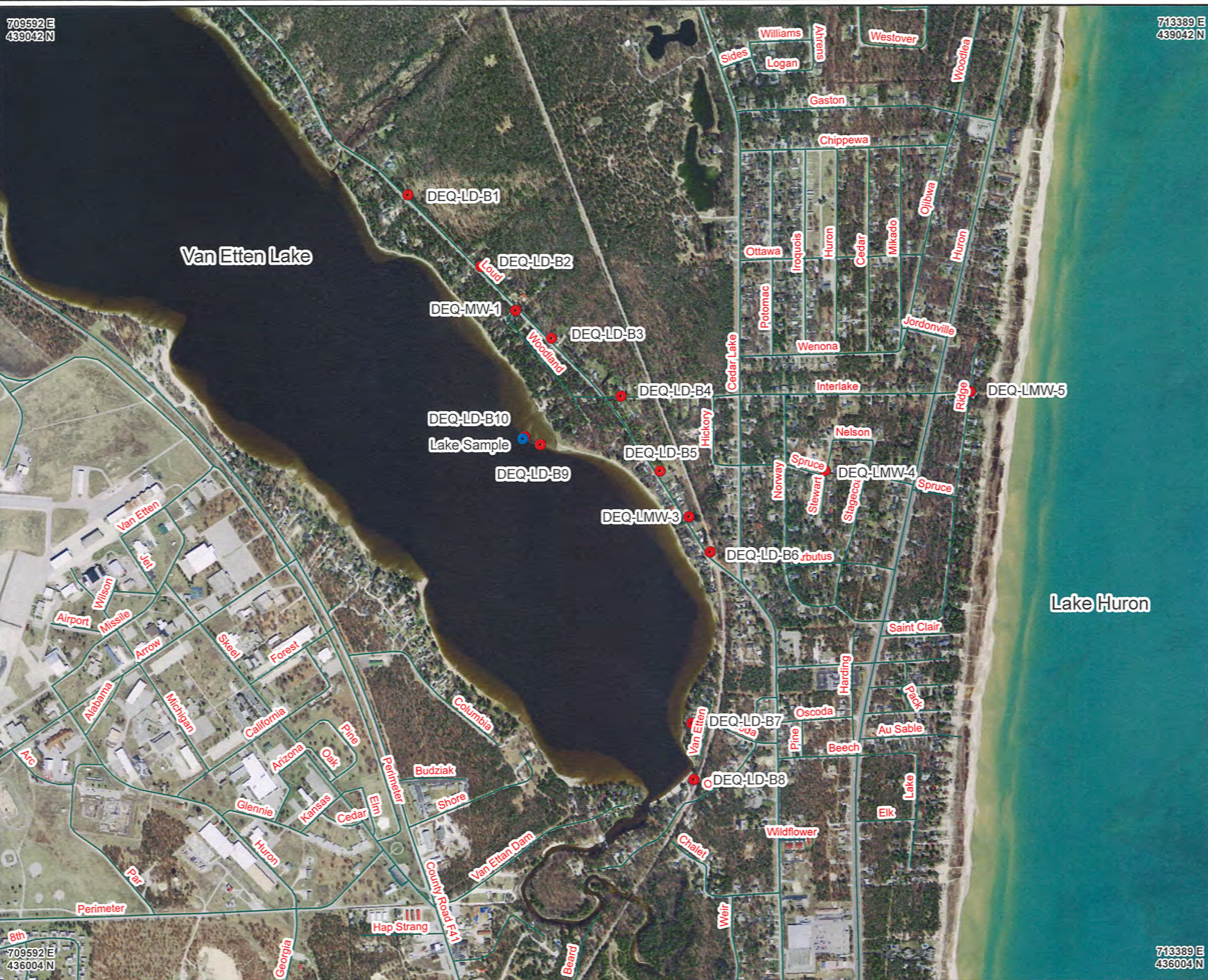
CREATION DATE
 October 2018

Remediation and
 Redevelopment
 Division

FIGURE 1

709592 E
439042 N

713389 E
439042 N



709592 E
436004 N

713389 E
436004 N

LEGEND

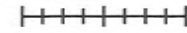
- Database Events
- Soil Boring / Monitor Well
- Lake Sample

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

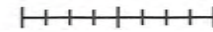
AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
 AERIAL PHOTO DATE: 2010
 AERIAL RESOLUTION: 1 foot Natural Color



0 65 130 260 Meters



0 250 500 1,000 Feet



1 inch = 1,000 feet

Wurtsmith - Loud Drive
 ERNIE ID # 35000152
 OSCODA TOWNSHIP, IOSCO COUNTY
 T24N R9E SECTIONS 21, 22 & 27

SITE MAP

GEOLOGIST
 Jeff Pincumbe
 Geological Services Unit
 Remediation and
 Redevelopment
 Division

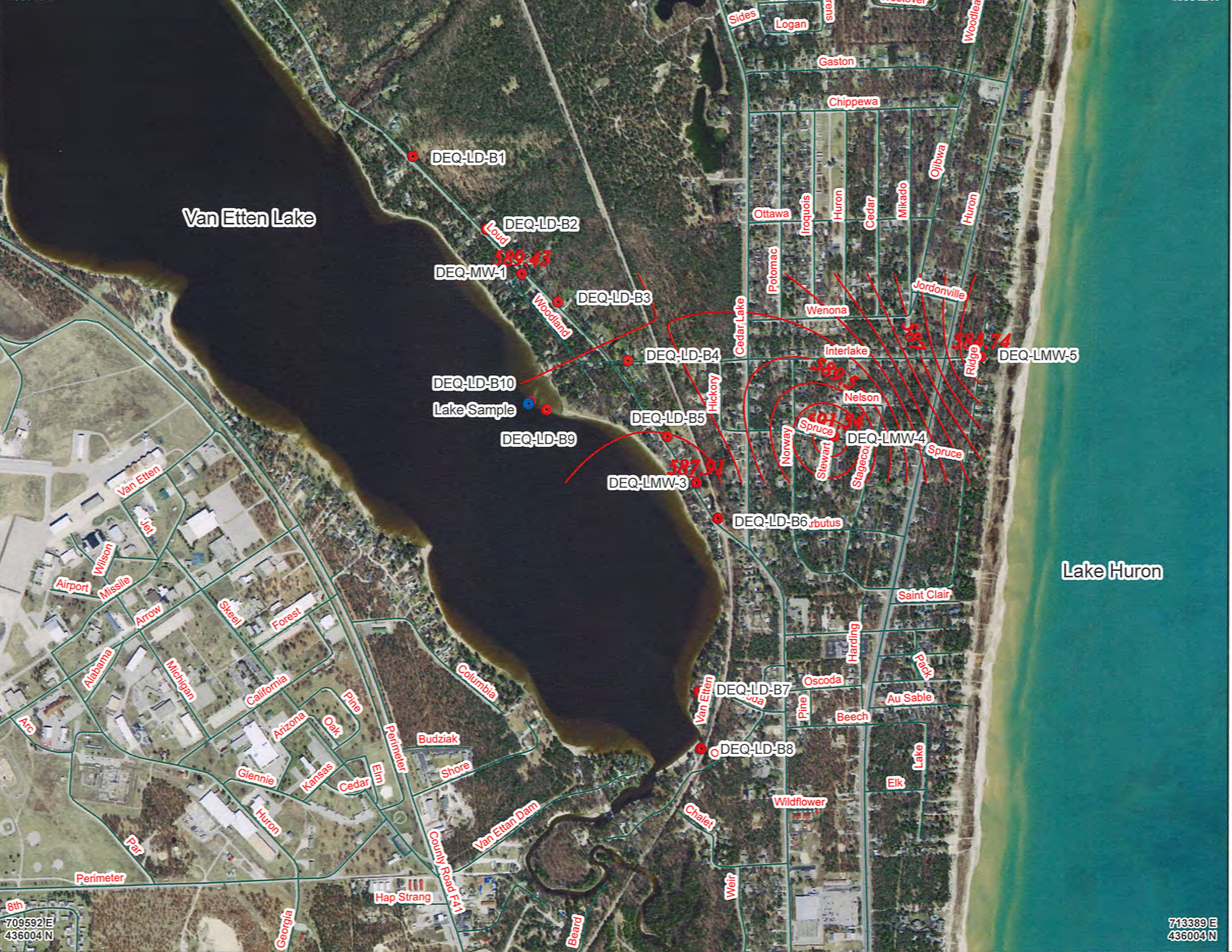


CREATION DATE
 October 2018

FIGURE 2

709592 E
439042 N

713389 E
439042 N



709592 E
436004 N

713389 E
436004 N

LEGEND

- Soil Boring / Monitor Well
- September 25 2018 Groundwater Contour
- Lake Sample

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
 AERIAL PHOTO DATE: 2010
 AERIAL RESOLUTION: 1 foot Natural Color



0 65 130 260 Meters
 0 250 500 1,000 Feet
 1 inch = 1,000 feet

Wurtsmith - Loud Drive ERNIE ID # 35000152 OSCODA TOWNSHIP, IOSCO COUNTY T24N R9E SECTIONS 21, 22 & 27		
Groundwater Contour Map September 25, 2018		
GEOLOGIST Jeff Pincumbe Geological Services Unit		CREATION DATE October 2018
Remediation and Redevelopment Division		FIGURE 3

VISTA Analytical Laboratory Report
 VISTA Work Order No. 1803165
 Report Date: 9/18/18
 Client: MDEQ-RRD-SAGINAW BAY
 Attention: Mike Jury
 Project Name: LOUD DRIVE PCE
 Location Code: 6B16

Location	LMW-1	LMW-3	LMW-3 Dup	LMW-4	LMW-5
Depth					
Date	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018
	Action Level				
Perfluorooctanoic Acid (PFOA)	ND	1.5	1.71	ND	2.35
Perfluorooctane Sulfonate (PFOS)	ND	ND	ND	ND	2.88
Total PFOA and PFOS	70 ng/l	1.5	1.71	ND	5.23

ND = Not Detected

Monitor Wells	Top of Casing (TOC) Elevation	Ground Elevation	Total Depth from TOC	Total Depth from Ground	Static Water Level (TOC) 9/25/18	Groundwater Elevation 9/25/18
LMW-1	597.13	597.69	14.20	14.76	7.70	589.43
LMW-3	597.29	597.87	15.90	16.48	9.38	587.91
LMW-4	598.74	598.82	15.00	15.09	7.20	591.54
LMW-5	586.64	586.91	10.10	10.37	1.90	584.74
LD-B-1	NA	599.44				
LD-B-2	NA	599.49				
LD-B-3	NA	596.451				
LD-B-4	NA	595.54				
LD-B-5	NA	596.30				
LD-B-6	NA	604.11				
LD-B-7	NA	593.74				
LD-B-8	NA	591.67				

NA = Not Available

APPENDIX A

Loud Drive, Iosco County
Site ID #35000154

VISTA Analytical Laboratory Results



October 18, 2018

Vista Work Order No. 1803165

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 September 27, 2018 under your Project Name 'Loud Drive 35000152'.

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
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. 1803165

Case Narrative

Sample Condition on Receipt:

Five 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. The sample ID discrepancy was resolved as directed.

Analytical Notes:

PFAS Isotope Dilution Method

Sample "DEQ-LMW-4" contained particulate and was centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537). The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

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 Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

The labeled standard 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
1803165-01	DEQ-LMW-1	25-Sep-18 14:15	27-Sep-18 11:31	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1803165-02	DEQ-LMW-3	25-Sep-18 15:00	27-Sep-18 11:31	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1803165-03	DEQ-LMW-3 DUP	25-Sep-18 15:00	27-Sep-18 11:31	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1803165-04	DEQ-LMW-4	25-Sep-18 15:00	27-Sep-18 11:31	HDPE Bottle, 250 mL HDPE Bottle, 250 mL
1803165-05	DEQ-LMW-5	25-Sep-18 14:15	27-Sep-18 11:31	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8I0213-BLK1	Column:	BEH C18
Project:	Loud Drive 35000152						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFPeA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFBS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-4:2 FTS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFHxA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFPeS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFHpA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFHxS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Br-PFHxS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Total PFHxS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-6:2 FTS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFOA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Br-PFOA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Total PFOA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFHpS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFNA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFOSA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFOS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Br-PFOS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Total PFOS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFDA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-8:2FTS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFNS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-MeFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Br-MeFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Total MeFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-EtFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Br-EtFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
Total EtFOSAA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFUnA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFDS	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFDoA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFTrDA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
L-PFTeDA	ND	1.37	2.00	4.00		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	107	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C3-PFPeA	IS	103	60 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C3-PFBS	IS	114	60 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1

Sample ID: Method Blank **PFAS Isotope Dilution Method**

Client Data	Laboratory Data
Name: Merit Laboratories, Inc.	Lab Sample: B8I0213-BLK1
Project: Loud Drive 35000152	Column: BEH C18
Matrix: Aqueous	

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	137	40 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFHxA	IS	113	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C4-PFHpA	IS	119	60 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
18O2-PFHxS	IS	112	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-6:2 FTS	IS	126	40 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFOA	IS	99.1	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C5-PFNA	IS	70.0	50 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C8-PFOA	IS	38.3	20 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C8-PFOS	IS	100	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFDA	IS	67.5	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-8:2 FTS	IS	109	40 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
d3-MeFOSAA	IS	79.0	50 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
d5-EtFOSAA	IS	86.3	50 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFUnA	IS	77.0	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFDoA	IS	85.4	30 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1
13C2-PFTeDA	IS	103	20 - 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 03:04	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8I0213-BS1	Column:	BEH C18
Project:	Loud Drive 35000152						

Analyte	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	38.0	40.0	95.1	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFPeA	39.2	40.0	98.1	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFBS	37.4	40.0	93.5	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-4:2 FTS	33.0	40.0	82.6	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFHxA	36.0	40.0	89.9	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFPeS	34.6	40.0	86.6	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFHpA	36.0	40.0	90.1	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
Total PFHxS	39.1	40.0	97.8	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-6:2 FTS	30.7	40.0	76.8	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
Total PFOA	33.5	40.0	83.8	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFHpS	40.6	40.0	102	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFNA	38.3	40.0	95.8	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFOA	37.8	40.0	94.6	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
Total PFOS	36.9	40.0	92.3	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFDA	34.8	40.0	86.9	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-8:2FTS	36.9	40.0	92.2	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFNS	38.1	40.0	95.3	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
Total MeFOSAA	38.4	40.0	96.1	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
Total EtFOSAA	37.1	40.0	92.7	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFUnA	37.4	40.0	93.4	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFDS	33.7	40.0	84.1	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFDoA	38.1	40.0	95.2	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFTrDA	34.7	40.0	86.9	60 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
L-PFTeDA	31.0	40.0	77.6	70 - 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	101	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C3-PFPeA	IS	98.6	60- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C3-PFBS	IS	114	60- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-4:2 FTS	IS	128	40- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFHxA	IS	106	70- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C4-PFHpA	IS	115	60- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
18O2-PFHxS	IS	105	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-6:2 FTS	IS	124	40- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFOA	IS	95.6	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C5-PFNA	IS	71.8	50- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1

Sample ID: OPR

PFAS Isotope Dilution Method

Client Data

Name: Merit Laboratories, Inc.
Project: Loud Drive 35000152

Matrix: Aqueous

Laboratory Data

Lab Sample: B8I0213-BS1 Column: BEH C18

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOSA	IS	41.5	20- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C8-PFOS	IS	94.5	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFDA	IS	73.2	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-8:2 FTS	IS	106	40- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
d3-MeFOSAA	IS	81.3	50- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
d5-EtFOSAA	IS	85.5	50- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFUnA	IS	78.3	60- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFDoA	IS	82.8	30- 130		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1
13C2-PFTeDA	IS	93.8	20- 150		B8I0213	08-Oct-18	0.250 L	17-Oct-18 02:54	1

Sample ID: DEQ-LMW-1
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-01	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 14:15	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFPeA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFBS	2.01	1.47	2.15	4.28	J	B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-4:2 FTS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFHxA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFPeS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFHpA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFHxS	2.45	1.47	2.15	4.28	J	B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Br-PFHxS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Total PFHxS	2.61	1.47	2.15	4.28	J	B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-6:2 FTS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFOA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Br-PFOA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Total PFOA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFHpS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFNA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFOSA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFOS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Br-PFOS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Total PFOS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFDA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-8:2FTS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFNS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-MeFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Br-MeFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Total MeFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-EtFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Br-EtFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
Total EtFOSAA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFUnA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFDS	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFDoA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFTrDA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
L-PFTeDA	ND	1.47	2.15	4.28		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	104	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C3-PFPeA	IS	101	60 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C3-PFBS	IS	109	60 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1

Sample ID: DEQ-LMW-1 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-01	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 14:15	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	122	40 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFHxA	IS	114	70 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C4-PFHpA	IS	126	60 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
18O2-PFHxS	IS	106	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-6:2 FTS	IS	115	40 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFOA	IS	107	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C5-PFNA	IS	81.2	50 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C8-PFOA	IS	36.1	20 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C8-PFOS	IS	108	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFDA	IS	69.7	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-8:2 FTS	IS	105	40 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
d3-MeFOSAA	IS	86.3	50 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
d5-EtFOSAA	IS	80.9	50 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFUnA	IS	78.1	60 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFDoA	IS	80.3	30 - 130		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1
13C2-PFTeDA	IS	82.0	20 - 150		B8I0213	08-Oct-18	0.233 L	17-Oct-18 04:29	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

Sample ID: DEQ-LMW-3
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-02	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFPeA	1.48	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFBS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-4:2 FTS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFHxA	1.85	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFPeS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFHpA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFHxS	1.53	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Br-PFHxS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Total PFHxS	1.53	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-6:2 FTS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFOA	1.50	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Br-PFOA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Total PFOA	1.50	1.41	2.06	4.12	J	B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFHpS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFNA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFOSA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFOS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Br-PFOS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Total PFOS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFDA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-8:2FTS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFNS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-MeFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Br-MeFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Total MeFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-EtFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Br-EtFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
Total EtFOSAA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFUnA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFDS	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFDoA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFTrDA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
L-PFTeDA	ND	1.41	2.06	4.12		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	108	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C3-PFPeA	IS	96.4	60 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C3-PFBS	IS	103	60 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1

Sample ID: DEQ-LMW-3 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-02	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	121	40 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFHxA	IS	111	70 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C4-PFHpA	IS	132	60 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
18O2-PFHxS	IS	102	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-6:2 FTS	IS	122	40 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFOA	IS	115	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C5-PFNA	IS	92.4	50 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C8-PFOA	IS	40.2	20 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C8-PFOS	IS	107	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFDA	IS	76.1	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-8:2 FTS	IS	111	40 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
d3-MeFOSAA	IS	80.7	50 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
d5-EtFOSAA	IS	79.6	50 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFUnA	IS	80.6	60 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFDoA	IS	82.8	30 - 130		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1
13C2-PFTeDA	IS	110	20 - 150		B8I0213	08-Oct-18	0.243 L	17-Oct-18 04:40	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

Sample ID: DEQ-LMW-3 DUP
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-03	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFPeA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFBS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-4:2 FTS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFHxA	1.87	1.40	2.05	4.09	J	B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFPeS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFHpA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFHxS	1.55	1.40	2.05	4.09	J	B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Br-PFHxS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Total PFHxS	1.74	1.40	2.05	4.09	J	B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-6:2 FTS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFOA	1.71	1.40	2.05	4.09	J	B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Br-PFOA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Total PFOA	1.71	1.40	2.05	4.09	J	B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFHpS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFNA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFOSA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFOS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Br-PFOS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Total PFOS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFDA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-8:2FTS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFNS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-MeFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Br-MeFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Total MeFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-EtFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Br-EtFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
Total EtFOSAA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFUnA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFDS	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFDoA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFTrDA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
L-PFTeDA	ND	1.40	2.05	4.09		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	109	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C3-PFPeA	IS	96.8	60 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C3-PFBS	IS	109	60 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1

Sample ID: DEQ-LMW-3 DUP **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-03	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	124	40 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFHxA	IS	109	70 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C4-PFHpA	IS	126	60 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
18O2-PFHxS	IS	106	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-6:2 FTS	IS	121	40 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFOA	IS	104	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C5-PFNA	IS	86.0	50 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C8-PFOA	IS	41.7	20 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C8-PFOS	IS	102	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFDA	IS	76.0	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-8:2 FTS	IS	99.1	40 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
d3-MeFOSAA	IS	84.3	50 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
d5-EtFOSAA	IS	83.9	50 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFUnA	IS	80.4	60 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFDoA	IS	85.2	30 - 130		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1
13C2-PFTeDA	IS	114	20 - 150		B8I0213	08-Oct-18	0.244 L	17-Oct-18 04:50	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

Sample ID: DEQ-LMW-4
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-04	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	1.37	1.36	1.98	3.97	J	B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFPeA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFBS	6.18	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-4:2 FTS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFHxA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFPeS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFHpA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFHxS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Br-PFHxS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Total PFHxS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-6:2 FTS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFOA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Br-PFOA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Total PFOA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFHpS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFNA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFOSA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFOS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Br-PFOS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Total PFOS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFDA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-8:2FTS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFNS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-MeFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Br-MeFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Total MeFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-EtFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Br-EtFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
Total EtFOSAA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFUnA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFDS	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFDoA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFTrDA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
L-PFTeDA	ND	1.36	1.98	3.97		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	108	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C3-PFPeA	IS	82.0	60 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C3-PFBS	IS	107	60 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1

Sample ID: DEQ-LMW-4 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-04	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 15:00	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	120	40 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFHxA	IS	110	70 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C4-PFHpA	IS	141	60 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
18O2-PFHxS	IS	114	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-6:2 FTS	IS	110	40 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFOA	IS	110	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C5-PFNA	IS	89.2	50 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C8-PFOA	IS	34.5	20 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C8-PFOS	IS	91.3	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFDA	IS	78.9	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-8:2 FTS	IS	98.3	40 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
d3-MeFOSAA	IS	83.8	50 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
d5-EtFOSAA	IS	92.4	50 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFUnA	IS	80.2	60 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFDoA	IS	99.8	30 - 130		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1
13C2-PFTeDA	IS	127	20 - 150		B8I0213	08-Oct-18	0.252 L	17-Oct-18 05:22	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

Sample ID: DEQ-LMW-5
PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-05	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 14:15	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
L-PFBA	8.39	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFPeA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFBS	6.00	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-4:2 FTS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFHxA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFPeS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFHpA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFHxS	6.09	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Br-PFHxS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Total PFHxS	7.31	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-6:2 FTS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFOA	2.35	1.44	2.10	4.20	J	B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Br-PFOA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Total PFOA	2.35	1.44	2.10	4.20	J	B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFHpS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFNA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFOSA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFOS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Br-PFOS	2.45	1.44	2.10	4.20	J	B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Total PFOS	2.88	1.44	2.10	4.20	J	B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFDA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-8:2FTS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFNS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-MeFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Br-MeFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Total MeFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-EtFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Br-EtFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
Total EtFOSAA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFUnA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFDS	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFDoA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFTrDA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
L-PFTeDA	ND	1.44	2.10	4.20		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA	IS	111	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C3-PFPeA	IS	97.0	60 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C3-PFBS	IS	104	60 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1

Sample ID: DEQ-LMW-5 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	Merit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1803165-05	Column:	BEH C18
Project:	Loud Drive 35000152	Date Collected:	25-Sep-18 14:15	Date Received:	27-Sep-18 11:31		
Location:	Loud Drive						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-4:2 FTS	IS	121	40 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFHxA	IS	112	70 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C4-PFHpA	IS	125	60 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
18O2-PFHxS	IS	108	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-6:2 FTS	IS	115	40 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFOA	IS	114	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C5-PFNA	IS	95.1	50 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C8-PFOA	IS	54.9	20 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C8-PFOS	IS	101	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFDA	IS	88.2	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-8:2 FTS	IS	98.9	40 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
d3-MeFOSAA	IS	92.0	50 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
d5-EtFOSAA	IS	91.7	50 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFUnA	IS	93.0	60 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFDoA	IS	92.4	30 - 130		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1
13C2-PFTeDA	IS	130	20 - 150		B8I0213	08-Oct-18	0.238 L	17-Oct-18 05:33	1

DL - Detection Limit

LOD - Limit of Detection

Results reported to the DL.

LOQ - Limit of quantitation

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	18-008-0
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	2018017
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	4042-009
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-18-8
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.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A



Analysis Request Sheet

180316 ⁵ Matrix 9/27/18 4.0°C

Lab Work Order Number: Project Name: **Loud Drive** **WATER**

Site Code/Project Number: **35000152** AY: CC Email 1: **pincumbej @ MICHIGAN.GOV** Project TAT Days: Sample Collector: **Jeff Pincumbe**

Dept-Division-District: **DEQ-RRD-Sag-Bay** Index: **6B16** CC Email 2: **shireyb @ MICHIGAN.GOV** Project Due Date: Sample Collector Phone: **517-243-3171**

State Project Manager: **Mike Jury** PCA: CC Email 3: Contract Firm:

State Project Manager Email: **jurym1 @ MICHIGAN.GOV** Project: Overflow Lab Choice 1: Accept Analysis hold time codes: Contract Firm Primary Contact:

State Project Manager Phone: **989-894-6255** Phase: Overflow Lab Choice 2: Primary Contact Phone:

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	DEQ-LMN-1	9-25-18	1415	2	PFAS ANALYSIS
2	DEQ-LMN-3		1500	1	
3	DEQ-LMN-3 DUP		1500	1	
4	DEQ-LMN-4		1500	1	
5	DEQ-LMN-5		1415	1	
6					
7					
8					
9					
10					

ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic Volatiles - Full List 1 2 3 4 5 6 7 8 9 10 BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10 Chlorinated only 1 2 3 4 5 6 7 8 9 10 GRO 1 2 3 4 5 6 7 8 9 10 1,4 Dioxane 1 2 3 4 5 6 7 8 9 10	Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10 Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10 Diss - Boron - B 1 2 3 4 5 6 7 8 9 10 Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10 Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10 Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10 Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10 Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10 Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10 Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10 Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10 Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10 Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10 Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10	Silver - Ag 1 2 3 4 5 6 7 8 9 10 Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Arsenic - As 1 2 3 4 5 6 7 8 9 10 Boron - B 1 2 3 4 5 6 7 8 9 10 Barium - Ba 1 2 3 4 5 6 7 8 9 10 Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Copper - Cu 1 2 3 4 5 6 7 8 9 10 Iron - Fe 1 2 3 4 5 6 7 8 9 10 Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Lithium - Li 1 2 3 4 5 6 7 8 9 10 Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Lead - Pb 1 2 3 4 5 6 7 8 9 10 Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Selenium - Se 1 2 3 4 5 6 7 8 9 10 Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Uranium - U 1 2 3 4 5 6 7 8 9 10 Vanadium - V 1 2 3 4 5 6 7 8 9 10 Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Potassium - K 1 2 3 4 5 6 7 8 9 10 Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Sodium - Na 1 2 3 4 5 6 7 8 9 10 Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10	GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10 CA Chlorophyll 1 2 3 4 5 6 7 8 9 10 GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10 GN Nitrite - NO ₂ 1 2 3 4 5 6 7 8 9 10 GN Nitrate - NO ₃ (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10 GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10 MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Turbidity 1 2 3 4 5 6 7 8 9 10 JMN Total Alkalinity 1 2 3 4 5 6 7 8 9 10 JMN Bicarb/Carb Alkalinity (Includes Total Alkalinity) 1 2 3 4 5 6 7 8 9 10 MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10 JMN Fluoride - F 1 2 3 4 5 6 7 8 9 10 MN Sulfate - SO ₄ 1 2 3 4 5 6 7 8 9 10 MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10 MN Conductivity 1 2 3 4 5 6 7 8 9 10 MN pH 1 2 3 4 5 6 7 8 9 10 GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10 GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10 GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10 GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10 GA Ammonia - NH ₃ 1 2 3 4 5 6 7 8 9 10 GA Nitrate+Nitrite - NO ₃ +NO ₂ 1 2 3 4 5 6 7 8 9 10 GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10 GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org: Jeff Pincumbe - MDEQ	B. Benedict VAL	09/27/18 1152
	Signature: <i>Jeff Pincumbe</i>	<i>B. Benedict</i>	
	Print Name & Org: <input type="text"/>	<input type="text"/>	
Signature: <input type="text"/>	<input type="text"/>		
Print Name & Org: <input type="text"/>	<input type="text"/>		
Signature: <input type="text"/>	<input type="text"/>		



Sample Log in Checklist

PAGE # 1 of 1
 WO# 1803165
 SDG# -
 TAT Std

Section 1: Container Receipt			
Delivered By: <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> UPS <input type="checkbox"/> On Trac <input type="checkbox"/> GSO <input type="checkbox"/> DHL <input type="checkbox"/> Hand Delivered <input type="checkbox"/> Other:			
Number of Containers	Arrival Date	Arrival time	Cooler Received LR-SLC Initiated By/Date
1	9/27/18	1131	CRSAB 9/27/18

Section 2: Sample Receipt Condition and Initial Storage					
Container Condition	Chain of Custody	Preservation Type	Temperature	Storage Location	Initials/Date
<input checked="" type="checkbox"/> Shipping container intact <input checked="" type="checkbox"/> Shipping seals intact <input type="checkbox"/> Custody Seals present <input type="checkbox"/> Custody seals intact	<input checked="" type="checkbox"/> COC present <input checked="" type="checkbox"/> Multiple COC's: <u>3</u> <input checked="" type="checkbox"/> "Relinquished By" Section complete	<input checked="" type="checkbox"/> Ice <input type="checkbox"/> Blue Ice <input type="checkbox"/> Dry Ice <input type="checkbox"/> Other	Thermometer ID: IR-4 <input type="checkbox"/> Probe used Temp (uncorrected): <u>4.1</u> °C Temp (corrected): <u>4.0</u> °C	<input checked="" type="checkbox"/> WR2 <input type="checkbox"/> WF2 <input type="checkbox"/> NA	<u>CRSAB</u> <u>9/27/18</u>

Section 3: Sample Log In	
Airbill/Trk # <u>1Z 4XX 260 22 1001 5025</u>	
Shipping container <input type="checkbox"/> Vista <input checked="" type="checkbox"/> Client <input type="checkbox"/> Retain <input checked="" type="checkbox"/> Return <input type="checkbox"/> Dispose	By/date
Log In Time: <u>1357</u>	<u>CRSAB 9/27/18</u>
COC clearly identifies: <ul style="list-style-type: none"> • Sample name* • Sample matrix • Test method • Sample collection date or time • Collector's name • Preservation type 	<input type="checkbox"/> Acceptable <input checked="" type="checkbox"/> Not acceptable – anomaly form required <u>CRSAB 9/27/18</u>
All samples present and accounted for on COC	<u>CRSAB 9/27/18</u>
Sample IDs are legible	<u>CRSAB 9/27/18</u>
Samples conform to the description on the COC	<u>CRSAB 9/27/18</u>
Samples are intact and suitable for testing	<u>CRSAB 9/27/18</u>
Preservation documented as required: <input checked="" type="checkbox"/> NA <input type="checkbox"/> Na ₂ S ₂ O ₃ <input type="checkbox"/> Trizma <input type="checkbox"/> Other _____	<u>CRSAB 9/27/18</u>
Samples stored <input type="checkbox"/> WR2 Shelf: <u>E4/F3</u> <input type="checkbox"/> WF2 Shelf: _____ <input type="checkbox"/> R1 Shelf: _____	<u>CRSAB 9/27/18</u>
Comments:	<u>* See login checklist sample inventory. CRSAB 9/27/18</u>

Sample Inventory

WO#: 1803165
Cooler # 1 of 1

Sample Label ID	Notes
<p>DEQ-LMW-3-Dup 2 DEQ-MW-1</p>	<p><u>COC IDs</u> DEQ-LMW-3 DUP DEQ-LMW-1</p> <p>Note some labels have "Loud Drive" & some have "Load Drive" on label under site.</p> <p>Recorded By/Date: <u>UBB 9/27/18</u></p>

Chain of Custody Anomaly/Sample Acceptance Form



Merit Laboratories, Inc.
 Maya Murshak
 mayamurshak@meritlabs.com
 (517) 827-2744

Workorder Number: 1803165
 Date Received: 27-Sep-18 11:31
 Documented by/date: B. Benedict 09/27/2018

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

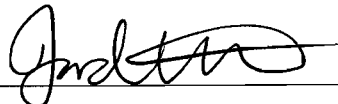
Martha Maier
 mmaier@vista-analytical.com
 916-673-1520

Sample IDs on Chain of Custody do not match Sample Container Labels

Chain of Custody ID	Container Label ID
DEQ-LMW-1	DEQ-MW-1
DEQ-LMW-3 DUP	DEQ-LMW-3 DUP 2

Client Authorization

Proceed with Analysis: YES NO

Signature and Date  9/28/18

Client Comments/Instructions Per Jeff Pincumbe via email, use COC IDs.