

Appendix **D**

Soil Borings and Well Construction Logs

PROJECT: Iqaluit Airport PFAS Investigation
 LOCATION: Iqaluit Airport
 COORDINATES: N 521883.4; E 7069391.0
 DATUM: UTM
 AECOM PROJECT No.: 60615381
 CLIENT: PSPC/Transport Canada

RECORD OF MONITORING WELL: MW19-01

SHEET 1 OF 1

START DATE: 2019.10.30
 END DATE: 2019.10.30
 BORING METHOD: Air Rotary
 CONTRACTOR: Canadril Ltd.

BOREHOLE DIAMETER: 4.5"
 WELL CASING DIAMETER: 2"
 Completion Method: Stick-up

DEPTH SCALE (METRES)	BORING METHOD	SOIL PROFILE		SAMPLES			VOC VAPOUR CONCENTRATIONS [PPM]				SHEAR STRENGTH Cu, kPa Field Vane nat. + Quick Triaxia Field Vane rem. ⊕ Unconfined - Δ				REMARKS & GRAIN SIZE DISTRIBUTION (%)	SPECIFIC GRAVITY	WELL INSTALLATION AND WATER LEVELS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	N VALUE	2	4	6	8	20	40	60				80
								WATER CONTENT PERCENT Wp ——— W ——— WI										
		GROUND SURFACE		18.70 0.00											GR SA SI CL			
0	Power Augering Air Rotary	SILTY SAND (SM) some cobbles, damp																
1																		
2																		
3		BEDROCK		15.95 2.75														
4				14.40 4.30														
5		END OF BOREHOLE																
6		Notes: 1. Water table was not observed during drilling. 2. The 50 mm diameter monitoring well was installed after completion of drilling. 3. Top of pipe is 0.86 m above ground surface and elevated is at 19.3 m. PVC cap is used at the top. 4. The readings were obtained from MW as follows: Elev. (m) Depth (m bgs) Date Dry Dry 2019.11.04																
7																		
8																		
9																		
10																		

(LOG TO BE READ IN CONJUNCTION WITH REPORT)

DEPTH SCALE

1 : 50

AECOM

LOGGED BY: MS/RM

CHECKED BY: JDS

GENERAL REPORT BH 60615382-IQALUIT AIRPORT.GPJ GAL-MISS.GDT 20/2/6

PROJECT: Iqaluit Airport PFAS Investigation
 LOCATION: Iqaluit Airport
 COORDINATES: N 522323.9; E 7068934.9
 DATUM: UTM
 AECOM PROJECT No.: 60615381
 CLIENT: PSPC/Transport Canada

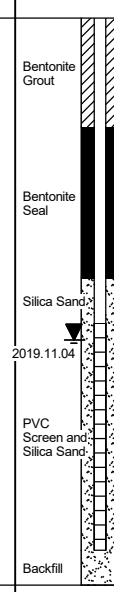
RECORD OF MONITORING WELL: MW19-02

SHEET 1 OF 1

START DATE: 2019.10.30
 END DATE: 2019.10.30
 BORING METHOD: Air Rotary
 CONTRACTOR: Canadril Ltd.

BOREHOLE DIAMETER: 4.5"
 WELL CASING DIAMETER: 2"
 Completion Method: Stick-up

DEPTH SCALE (METRES)	BORING METHOD	SOIL PROFILE		SAMPLES			VOC VAPOUR CONCENTRATIONS [PPM]				SHEAR STRENGTH Cu, kPa				REMARKS & GRAIN SIZE DISTRIBUTION (%)	SPECIFIC GRAVITY	WELL INSTALLATION AND WATER LEVELS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	N VALUE	2 4 6 8				20 40 60 80						
								WATER CONTENT PERCENT										
0	Power Augering Air Rotary	GROUND SURFACE		16.50														
		SILTY SAND (SM) some cobbles		0.00														
2				14.50														
		BEDROCK		2.00														
4		END OF BOREHOLE		12.75														
5		Notes:		3.75														
6		1. Water table was not observed during drilling.																
7		2. The 50 mm diameter monitoring well was installed after completion of drilling.																
8		3. Top of pipe is 0.79 m above ground surface and elevated is at 17.3 m. PVC cap is used at the top.																
9		4. The readings were obtained from MW as follows:																
10		Elev. (m) Depth (m bgs) Date																
		14.4 2.13 2019.11.04																



(LOG TO BE READ IN CONJUNCTION WITH REPORT)

DEPTH SCALE

1 : 50

AECOM

LOGGED BY: MS/RM

CHECKED BY: JDS

GENERAL REPORT BH 60615382-IQALUIT AIRPORT.GPJ GAL-MISS.GDT 20/2/6

PROJECT: Iqaluit Airport PFAS Investigation
 LOCATION: Iqaluit Airport
 COORDINATES: N 522776.0; E 7068912.1
 DATUM: UTM
 AECOM PROJECT No.: 60615381
 CLIENT: PSPC/Transport Canada

RECORD OF MONITORING WELL: MW19-03

SHEET 1 OF 1

START DATE: 2019.10.30
 END DATE: 2019.10.30
 BORING METHOD: Air Rotary
 CONTRACTOR: Canadril Ltd.

BOREHOLE DIAMETER: 4.5"
 WELL CASING DIAMETER: 2"
 Completion Method: Stick-up

DEPTH SCALE (METRES)	BORING METHOD	SOIL PROFILE		SAMPLES			VOC VAPOUR CONCENTRATIONS [PPM]				SHEAR STRENGTH Cu, kPa				REMARKS & GRAIN SIZE DISTRIBUTION (%)	SPECIFIC GRAVITY	WELL INSTALLATION AND WATER LEVELS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	N VALUE	Field Vane nat. + Field Vane rem. ⊕				Quick Triaxia ● Unconfined - Δ						
								2 4 6 8				20 40 60 80						
0	Power Augering Air Rotary	GROUND SURFACE		3.70											GR SA SI CL			
		SILTY SAND (SM) some cobbles, wet		0.00														
1																		
2																		
3																		
4																		
5		END OF BOREHOLE		-0.80 4.50														
6		Notes:																
7		1. Water table was not observed during drilling.																
8		2. The 50 mm diameter monitoring well was installed after completion of drilling.																
9		3. Top of pipe is 0.84 m above ground surface and elevated is at 4.5 m. PVC cap is used at the top.																
10		4. The readings were obtained from MW as follows:																
		Elev. (m) Depth (m bgs) Date																
		0.8 2.84 2019.11.04																

(LOG TO BE READ IN CONJUNCTION WITH REPORT)

DEPTH SCALE

1 : 50

AECOM

LOGGED BY: MS/RM

CHECKED BY: JDS

GENERAL REPORT BH 60615382-IQALUIT AIRPORT.GPJ GAL-MISS.GDT 20/2/6

Appendix **E**

Laboratory Certificate of Analysis and Chain-of-custody Documentation



ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Eurofins Environmental Testing
8-146 Colonnade Rd
Ottawa ON K2E 7Y1

Report Date: December 17, 2019 12:05

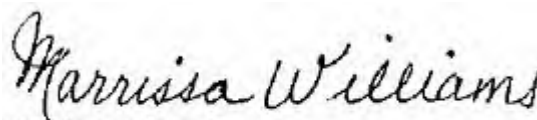
Project: 1920595

Account #: 43091
Group Number: 2074059
PO Number: OTT-1911-11
State of Sample Origin: ON

Electronic Copy To Eurofins Env Testing Canada
Electronic Copy To Eurofins Env Testing Canada
Electronic Copy To Eurofins Env Testing Canada

Attn: Rebecca Koshy
Attn: Rita Efenowwe
Attn: Justin Marshy

Respectfully Submitted,



Marrissa Williams
Project Manager

(717) 556-7246

To view our laboratory's current scopes of accreditation please go to <https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/> . Historical copies may be requested through your project manager.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection</u> <u>Date/Time</u>	<u>ELLE#</u>
1465298 MW-19-02 Groundwater	11/05/2019	1199376
1465303 MS-MW19-02 Groundwater	11/05/2019	1199377
1465304 MSD-MW19-02 Groundwater	11/05/2019	1199378
1465299 MW19-03 Groundwater	11/05/2019	1199379
1465300 SW19-01 Groundwater	11/01/2019	1199380
1465301 DUP1-GW Groundwater	11/05/2019	1199381
1465302 DUP1-SW Groundwater	11/01/2019	1199382
1465305 Equ2-WLT Groundwater	11/04/2019	1199383
1465306 Equ1-Drill Rod Rinsate Groundwater	10/30/2019	1199384
1465307 -IDW-GW Groundwater	11/01/2019	1199385
1465308 Trip Blank Water	11/01/2019	1199386

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: 1465298 MW-19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199376
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified						
			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	1.8 J	1.8	4.4	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.47 J	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	1.2 J	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.85 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	2.5	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	1.6 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	0.97 J	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	5.4	0.44	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The recovery for extraction

*=This limit was used in the evaluation of the final result

Sample Description: 1465298 MW-19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199376
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	standards is also outside of the QC acceptance limits in the associated matrix spike and matrix spike duplicate sample. The data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 15:26	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465303 MS-MW19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199377
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	16	0.91	4.6	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	21	0.46	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	23	1.8	4.6	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	21	0.91	2.7	1
14473	NEtFOSAA	2991-50-6	21	0.46	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	22	0.91	4.6	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	20	0.91	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	24	0.55	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	18	0.91	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	19	0.91	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	20	0.46	1.8	1
14473	Perfluorobutanoic acid	375-22-4	25	1.8	4.6	1
14473	Perfluorodecanesulfonic acid	335-77-3	21	0.46	1.8	1
14473	Perfluorodecanoic acid	335-76-2	22	0.46	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	21	0.46	2.7	1
14473	Perfluorododecanoic acid	307-55-1	20	0.46	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	22	0.46	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	22	0.46	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	23	0.91	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	20	0.46	1.8	1
14473	Perfluorohexanoic acid	307-24-4	23	0.46	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	22	0.46	1.8	1
14473	Perfluorononanoic acid	375-95-1	22	0.46	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	25	0.91	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	22	0.46	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	18	0.46	1.8	1
14473	Perfluorooctanoic acid	335-67-1	22	0.46	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	24	0.46	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	29	0.46	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	22	0.46	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	21	0.46	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	22	0.46	1.8	1

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The recovery for extraction

*=This limit was used in the evaluation of the final result

Sample Description: 1465303 MS-MW19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199377
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	standards is also outside of the QC acceptance limits in the associated background and matrix spike duplicate sample. The data is reported.					
	The sample injection standard peak areas were outside of the QC limits in both the matrix spike and matrix spike duplicate sample.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 15:35	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465304 MSD-MW19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199378
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	15	0.90	4.5	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	20	0.45	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	21	1.8	4.5	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	22	0.90	2.7	1
14473	NEtFOSAA	2991-50-6	20	0.45	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	21	0.90	4.5	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	20	0.90	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	22 Z	0.54	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	21	0.90	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	20	0.90	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	20	0.45	1.8	1
14473	Perfluorobutanoic acid	375-22-4	23	1.8	4.5	1
14473	Perfluorodecanesulfonic acid	335-77-3	22	0.45	1.8	1
14473	Perfluorodecanoic acid	335-76-2	23	0.45	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	22	0.45	2.7	1
14473	Perfluorododecanoic acid	307-55-1	19	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	21	0.45	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	22	0.45	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	22	0.90	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	19	0.45	1.8	1
14473	Perfluorohexanoic acid	307-24-4	23	0.45	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	22	0.45	1.8	1
14473	Perfluorononanoic acid	375-95-1	22	0.45	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	23	0.90	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	21	0.45	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	19	0.45	1.8	1
14473	Perfluorooctanoic acid	335-67-1	22	0.45	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	25	0.45	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	28	0.45	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	21	0.45	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	19	0.45	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	22	0.45	1.8	1

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The recovery for extraction

*=This limit was used in the evaluation of the final result

Sample Description: 1465304 MSD-MW19-02 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199378
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	standards is also outside of the QC acceptance limits in the associated matrix spike and background sample. The data is reported.					
	The sample injection standard peak areas were outside of the QC limits in both the matrix spike and matrix spike duplicate sample.					
	Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the recovery for the target analyte(s) is within the QC limits in the sample, the data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 15:53	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465299 MW19-03 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199379
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.97	4.8	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	2.2	0.48	1.9	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	520	19	48	10
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.97	2.9	1
14473	NEtFOSAA	2991-50-6	N.D.	0.48	2.9	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.97	4.8	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.97	2.9	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.58	1.9	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.97	2.9	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.97	2.9	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.58 J	0.48	1.9	1
14473	Perfluorobutanoic acid	375-22-4	130	1.9	4.8	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.48	1.9	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.48	1.9	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.48	2.9	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.48	1.9	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.48	1.9	1
14473	Perfluoroheptanoic acid	375-85-9	61	0.48	1.9	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.97	2.9	1
14473	Perfluorohexanesulfonic acid	355-46-4	6.5	0.48	1.9	1
14473	Perfluorohexanoic acid	307-24-4	290	0.48	1.9	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.48	1.9	1
14473	Perfluorononanoic acid	375-95-1	1.5 J	0.48	1.9	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.97	2.9	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.48	1.9	1
14473	Perfluorooctanesulfonic acid	1763-23-1	4.1	0.48	1.9	1
14473	Perfluorooctanoic acid	335-67-1	11	0.48	1.9	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.48	1.9	1
14473	Perfluoropentanoic acid	2706-90-3	1,000	4.8	19	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.48	1.9	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.48	1.9	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.48	1.9	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465299 MW19-03 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199379
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	and the target analyte(s) is not detected in the sample,the data is reported.					
	The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was re-extracted within the method holding time and the recovery for extraction standards was again outside of the QC acceptance limits.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 16:02	Jason W Knight	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 03:15	Jason W Knight	10
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465300 SW19-01 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199380
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified						
			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	13	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	1,600	18	44	10
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	8.1	0.88	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	100	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	56	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.77 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	360	4.4	18	10
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	2.3	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	0.55 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	17	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	630	4.4	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465300 SW19-01 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199380
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19319014	11/19/2019 17:58	Devon M Whooley	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19319014	11/21/2019 16:59	Devon M Whooley	10
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	2	19319014	11/15/2019 16:00	Isaac Phillips-Cary	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465301 DUP1-GW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199381
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.99	5.0	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	2.1	0.50	2.0	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	350	2.0	5.0	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.99	3.0	1
14473	NEtFOSAA	2991-50-6	N.D.	0.50	3.0	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.99	5.0	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.99	3.0	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.59	2.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.99	3.0	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.99	3.0	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.52 J	0.50	2.0	1
14473	Perfluorobutanoic acid	375-22-4	110	2.0	5.0	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.50	2.0	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.50	2.0	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.50	3.0	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.50	2.0	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.50	2.0	1
14473	Perfluoroheptanoic acid	375-85-9	65	0.50	2.0	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.99	3.0	1
14473	Perfluorohexanesulfonic acid	355-46-4	6.6	0.50	2.0	1
14473	Perfluorohexanoic acid	307-24-4	270	0.50	2.0	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.50	2.0	1
14473	Perfluorononanoic acid	375-95-1	1.6 J	0.50	2.0	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.99	3.0	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.50	2.0	1
14473	Perfluorooctanesulfonic acid	1763-23-1	4.7	0.50	2.0	1
14473	Perfluorooctanoic acid	335-67-1	9.7	0.50	2.0	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.50	2.0	1
14473	Perfluoropentanoic acid	2706-90-3	700	5.0	20	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.50	2.0	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.50	2.0	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.50	2.0	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465301 DUP1-GW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199381
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 03:33	Jason W Knight	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 03:42	Jason W Knight	10
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465302 DUP1-SW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199382
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	13	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	3,400	180	440	100
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	7.8	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	110	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	51	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.78 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	320	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	2.0	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	0.71 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	17	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	720	4.4	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

The recovery for extraction standard 13C2-4:2-FTS is outside of the QC acceptance limits as noted on the QC Summary. The following

*=This limit was used in the evaluation of the final result

Sample Description: 1465302 DUP1-SW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199382
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	action was taken: The sample was re-extracted outside of the method holding time and the recovery for extraction standards was again outside of the QC acceptance limits.					
	Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high and the target analyte(s) is not detected in the sample, the data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 16:29	Jason W Knight	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 03:51	Jason W Knight	10
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 18:59	Jason W Knight	100
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465305 Equ2-WLT Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199383
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/04/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.87	4.3	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.43	1.7	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.7	4.3	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.87	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.43	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.87	4.3	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.87	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.52	1.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.87	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.87	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.43	1.7	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.7	4.3	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.43	1.7	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.7	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.43	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.43	1.7	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.43	1.7	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.87	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.43	1.7	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.7	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.43	1.7	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.43	1.7	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.87	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.43	1.7	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.43	1.7	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.7	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.43	1.7	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.43	1.7	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.43	1.7	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.43	1.7	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.7	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465305 Equ2-WLT Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199383
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/04/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	and the target analyte(s) is not detected in the sample, the data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 16:38	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465306 Equ1-Drill Rod Rinsate Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199384
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 10/30/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.90	4.5	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.45	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	3.1 J	1.8	4.5	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.90	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.45	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.90	4.5	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.90	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.54	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.90	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.90	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.45	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.5	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.45	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.45	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.45	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.45	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.90	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	1.2 J	0.45	1.8	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.45	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.45	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.90	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.45	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.45	1.8	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.45	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.45	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.45	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.45	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465306 Equ1-Drill Rod Rinsate Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199384
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 10/30/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	and the target analyte(s) is not detected in the sample, the data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 16:47	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465307 -IDW-GW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199385
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.91	4.6	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	1.1 J	0.46	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	190	1.8	4.6	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.91	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.46	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.91	4.6	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.91	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.55	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.91	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.91	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.46	1.8	1
14473	Perfluorobutanoic acid	375-22-4	54	1.8	4.6	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.46	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.46	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.46	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	28	0.46	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.91	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	2.4	0.46	1.8	1
14473	Perfluorohexanoic acid	307-24-4	120	0.46	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.46	1.8	1
14473	Perfluorononanoic acid	375-95-1	0.66 J	0.46	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.91	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.46	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	2.5	0.46	1.8	1
14473	Perfluorooctanoic acid	335-67-1	4.2	0.46	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.46	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	450	4.6	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.46	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.46	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465307 -IDW-GW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199385
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	and the target analyte(s) is not detected in the sample, the data is reported.					
	The recovery for several extraction standards is outside of the QC acceptance limits as noted on the QC Summary.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 16:56	Jason W Knight	1
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/18/2019 04:00	Jason W Knight	10
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465308 Trip Blank Water
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199386
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.8	4.4	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.44	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465308 Trip Blank Water
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199386
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	and the target analyte(s) is not detected in the sample, the data is reported.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19317001	11/14/2019 17:05	Jason W Knight	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19317001	11/13/2019 07:00	Austin Prince	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 19317001	Sample number(s): 1199376-1199379,1199381-1199386		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0
Batch number: 19319014	Sample number(s): 1199380		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19317001	Sample number(s): 1199376-1199379,1199381-1199386								
10:2-Fluorotelomersulfonic acid	24.68	22.27			90		45-143		
4:2-Fluorotelomersulfonic acid	23.92	21.84			91		61-131		
6:2-Fluorotelomersulfonic acid	24.28	23.03			95		56-140		
8:2-Fluorotelomersulfonic acid	24.52	25.74			105		58-143		
NEtFOSAA	25.6	21.99			86		53-140		
NEtPFOSA	25.6	23.4			91		56-136		
NEtPFOSAE	25.6	23.02			90		56-130		
NMeFOSAA	25.6	23.69			93		59-141		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
NMePFOSA	25.6	26.87			105		49-134		
NMePFOSAE	25.6	22.39			87		61-133		
Perfluorobutanesulfonic acid	22.64	20.47			90		67-135		
Perfluorobutanoic acid	25.6	24.7			96		63-160		
Perfluorodecanesulfonic acid	24.64	24.04			98		62-135		
Perfluorodecanoic acid	25.6	23.52			92		66-141		
Perfluorododecanesulfonic acid	24.8	22.99			93		57-134		
Perfluorododecanoic acid	25.6	22.04			86		65-143		
Perfluoroheptanesulfonic acid	24.36	23.42			96		67-138		
Perfluoroheptanoic acid	25.6	23.3			91		69-144		
Perfluorohexadecanoic acid	25.6	22.77			89		60-148		
Perfluorohexanesulfonic acid	24.2	21			87		63-132		
Perfluorohexanoic acid	25.6	22.48			88		69-139		
Perfluorononanesulfonic acid	24.56	23.84			97		70-137		
Perfluorononanoic acid	25.6	24.31			95		66-144		
Perfluorooctadecanoic acid	25.6	25.15			98		47-159		
Perfluorooctanesulfonamide	25.6	21.99			86		67-126		
Perfluorooctanesulfonic acid	24.48	19.49			80		53-129		
Perfluorooctanoic acid	25.6	22.94			90		67-139		
Perfluoropentanesulfonate	24	24.61			103		73-134		
Perfluoropentanoic acid	25.6	26.43			103		73-135		
Perfluorotetradecanoic acid	25.6	21.7			85		69-141		
Perfluorotridecanoic acid	25.6	25.05			98		66-146		
Perfluoroundecanoic acid	25.6	22.91			90		66-140		
Batch number: 19319014	Sample number(s): 1199380								
10:2-Fluorotelomersulfonic acid	24.68	22.93			93		45-143		
4:2-Fluorotelomersulfonic acid	23.92	23.58			99		61-131		
6:2-Fluorotelomersulfonic acid	24.28	25.78			106		56-140		
8:2-Fluorotelomersulfonic acid	24.52	21.71			89		58-143		
NEtFOSAA	25.6	22.95			90		53-140		
NEtPFOSA	25.6	24.93			97		56-136		
NEtPFOSAE	25.6	21.78			85		56-130		
NMeFOSAA	25.6	26.18			102		59-141		
NMePFOSA	25.6	28.16			110		49-134		
NMePFOSAE	25.6	25.07			98		61-133		
Perfluorobutanesulfonic acid	22.64	24.21			107		67-135		
Perfluorobutanoic acid	25.6	27.5			107		63-160		
Perfluorodecanesulfonic acid	24.64	24.16			98		62-135		
Perfluorodecanoic acid	25.6	24			94		66-141		
Perfluorododecanesulfonic acid	24.8	24.19			98		57-134		
Perfluorododecanoic acid	25.6	24.04			94		65-143		
Perfluoroheptanesulfonic acid	24.36	26.14			107		67-138		
Perfluoroheptanoic acid	25.6	24.92			97		69-144		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluorohexadecanoic acid	25.6	24.36			95		60-148		
Perfluorohexanesulfonic acid	24.2	21.13			87		63-132		
Perfluorohexanoic acid	25.6	24.52			96		69-139		
Perfluorononanesulfonic acid	24.56	28.36			115		70-137		
Perfluorononanoic acid	25.6	27.75			108		66-144		
Perfluorooctadecanoic acid	25.6	26.11			102		47-159		
Perfluorooctanesulfonamide	25.6	25.07			98		67-126		
Perfluorooctanesulfonic acid	24.48	20.62			84		53-129		
Perfluorooctanoic acid	25.6	23.42			91		67-139		
Perfluoropentanesulfonate	24	27.35			114		73-134		
Perfluoropentanoic acid	25.6	27.65			108		73-135		
Perfluorotetradecanoic acid	25.6	26.21			102		69-141		
Perfluorotridecanoic acid	25.6	24.67			96		66-146		
Perfluoroundecanoic acid	25.6	23.07			90		66-140		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 19317001	Sample number(s): 1199376-1199379,1199381-1199386 UNSPK: 1199376									
10:2Fluorotelomersulfonic acid	N.D.	22.46	15.85	22.21	15.48	71	70	45-143	2	30
4:2-Fluorotelomersulfonic acid	N.D.	21.77	20.71	21.53	19.98	95	93	61-131	4	30
6:2-Fluorotelomersulfonic acid	1.76	22.1	22.74	21.85	21	95	88	56-140	8	30
8:2-Fluorotelomersulfonic acid	N.D.	22.31	21.28	22.07	21.82	95	99	58-143	3	30
NEtFOSAA	N.D.	23.3	20.55	23.04	20.26	88	88	53-140	1	30
NEtPFOSA	N.D.	23.3	21.89	23.04	20.6	94	89	56-136	6	30
NEtPFOSAE	N.D.	23.3	20.16	23.04	19.6	87	85	56-130	3	30
NMeFOSAA	N.D.	23.3	24.46	23.04	22.24	105	97	59-141	9	30
NMePFOSA	N.D.	23.3	18.38	23.04	21.47	79	93	49-134	15	30
NMePFOSAE	N.D.	23.3	19.08	23.04	19.93	82	86	61-133	4	30
Perfluorobutanesulfonic acid	0.470	20.6	19.53	20.37	19.64	93	94	67-135	1	30
Perfluorobutanoic acid	N.D.	23.3	25.15	23.04	22.74	108	99	63-160	10	30
Perfluorodecanesulfonic acid	N.D.	22.42	21.31	22.17	22.19	95	100	62-135	4	30
Perfluorodecanoic acid	N.D.	23.3	22.44	23.04	22.78	96	99	66-141	2	30
Perfluorododecanesulfonic acid	N.D.	22.57	21.09	22.32	21.92	93	98	57-134	4	30
Perfluorododecanoic acid	N.D.	23.3	20.46	23.04	18.85	88	82	65-143	8	30
Perfluoroheptanesulfonic acid	N.D.	22.17	22.12	21.92	20.55	100	94	67-138	7	30
Perfluoroheptanoic acid	1.21	23.3	21.58	23.04	21.91	87	90	69-144	2	30
Perfluorohexadecanoic acid	N.D.	23.3	22.71	23.04	21.89	97	95	60-148	4	30

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Perfluorohexanesulfonic acid	0.847	22.02	20.45	21.78	19.22	89	84	63-132	6	30
Perfluorohexanoic acid	2.55	23.3	23.24	23.04	22.73	89	88	69-139	2	30
Perfluorononanesulfonic acid	N.D.	22.35	22.14	22.1	22.27	99	101	70-137	1	30
Perfluorononanoic acid	N.D.	23.3	21.94	23.04	22.06	94	96	66-144	1	30
Perfluorooctadecanoic acid	N.D.	23.3	24.74	23.04	23.19	106	101	47-159	6	30
Perfluorooctanesulfonamide	N.D.	23.3	22.31	23.04	20.99	96	91	67-126	6	30
Perfluorooctanesulfonic acid	1.59	22.28	18.41	22.03	19.46	75	81	53-129	6	30
Perfluorooctanoic acid	0.971	23.3	22.1	23.04	22.35	91	93	67-139	1	30
Perfluoropentanesulfonate	N.D.	21.84	23.81	21.6	25.25	109	117	73-134	6	30
Perfluoropentanoic acid	5.37	23.3	29.19	23.04	28.36	102	100	73-135	3	30
Perfluorotetradecanoic acid	N.D.	23.3	21.87	23.04	21.43	94	93	69-141	2	30
Perfluorotridecanoic acid	N.D.	23.3	21.41	23.04	19.37	92	84	66-146	10	30
Perfluoroundecanoic acid	N.D.	23.3	21.9	23.04	21.79	94	95	66-140	1	30

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 19317001

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1199376	83	108	141	171*	65	75
1199377	84	111	162	189*	72	84
1199378	85	112	160	192*	72	90
1199379	84	96	151	153	62	84
1199381	80	93	142	124	59	80
1199382	88	99	141	201*	97	107
1199383	86	84	83	96	89	95
1199384	80	79	77	85	76	76
1199385	109	127	199*	202*	81	104
1199386	79	81	77	84	82	80
Blank	90	88	86	97	99	94
LCS	87	85	82	88	85	88
MS	84	111	162	189*	72	84
MSD	85	112	160	192*	72	90
Limits:	43-130	38-150	23-175	22-169	36-137	35-143

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19317001

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199376	82	185*	84	82	100	79
1199377	91	197*	92	93	107	89
1199378	91	213*	91	90	111	89
1199379	96	161	85	85	101	93
1199381	83	147	81	84	93	78
1199382	114	158	85	87	93	89
1199383	86	100	88	92	91	91
1199384	78	93	78	81	81	74
1199385	111	211*	110	110	133*	107
1199386	78	87	79	81	81	82
Blank	94	105	93	91	91	83
LCS	88	93	87	86	83	91
MS	91	197*	92	93	107	89
MSD	91	213*	91	90	111	89
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199376	134	71	82	95	80	67
1199377	147	67	85	81	80	73
1199378	147	79	89	91	87	73
1199379	145	82	97	126	81	75
1199381	129	80	83	100	62	56
1199382	109	78	83	95	81	67
1199383	101	89	102	123	98	95
1199384	100	74	77	110	55	76
1199385	174*	93	102	116	100	84
1199386	82	77	83	93	86	85
Blank	84	81	83	88	85	79
LCS	89	92	96	96	87	88
MS	147	67	85	81	80	73
MSD	147	79	89	91	87	73
Limits:	37-169	36-143	44-128	42-149	36-127	21-134
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	
1199376	62	52	26	54	26	
1199377	4*	3*	2*	4*	1*	
1199378	42	32	11	33	12	
1199379	45	24	8*	25	8*	
1199381	48	34	15	35	13	
1199382	54	36	12	32	11	

*- Outside of specification

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(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19317001

	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA
1199383	85	74	45	73	40
1199384	61	39	23	42	16
1199385	67	52	24	55	21
1199386	76	75	46	70	44
Blank	76	73	38	73	35
LCS	90	85	57	82	59
MS	4*	3*	2*	4*	1*
MSD	42	32	11	33	12
Limits:	10-134	10-137	10-107	10-135	10-107

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19319014

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1199380	82	85	122	146	92	107
Blank	88	93	86	80	84	86
LCS	83	81	75	82	91	89
Limits:	43-130	38-150	23-175	22-169	36-137	35-143
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199380	104	121	86	78	83	80
Blank	91	92	87	89	84	97
LCS	90	87	89	80	77	84
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199380	102	68	78	83	73	56
Blank	106	97	95	97	92	100
LCS	96	87	93	93	88	97
Limits:	37-169	36-143	44-128	42-149	36-127	21-134
	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	
1199380	70	29	12	31	12	
Blank	92	81	44	80	43	
LCS	89	84	49	87	50	
Limits:	10-134	10-137	10-107	10-135	10-107	

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.



STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: _____

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☐ NO ☐)														
Company:	Eurofins Ottawa			Company:														
Contact:	Rebecca Koshy			Contact:														
Address:	146-8 Colonnade Rd., Ottawa, ON K2E 7Y1			Address:														
Telephone:	613-727-5692	Fax:		Telephone:		Fax:												
Email:	#1: Ottawa.subcontract@eurofins.com			Email:	#1:													
Email:	#2:			Email:	#2:													
Project:	1920595			PO #:	OTT-1911-11			Quote #:										
REGULATION/GUIDELINE REQUIRED				TURN-AROUND TIME														
☐ Sanitary Sewer, City: _____				☐ ODWSOG														
☐ Storm Sewer, City: _____				☐ PWQO														
☐ O. Reg 153, Table: _____, Type: _____				☐ O. Reg 347/558														
☐ Excess Soil, Table: _____, Type: _____				☒ Other: None														
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Details				Sample Analysis Required								Field Parameters		RN# (Lab Use Only)
				Field Filtered -->														
Sample ID	Date/Time Collected	Sample Matrix	Resample? Y = Yes N = No	# of Containers	Metals and Inorganics	Metals (ex. Hg, B, CrVI)	BTEX	VOC	PHC FL-F4	PFAS-32								
1465298 MW-19-02	5/11/2019	GW		2						✓								
1465299 MW19-03	5/11/2019	GW		2						✓								
1465300 SW19-01	1/11/2019	GW		2						✓								
1465301 DUP1-GW	5/11/2019	GW		2						✓								
1465302 DUP1-SW	1/11/2019	GW		2						✓								
1465303 MS-MW19-02	5/11/2019	GW		2						✓								
1465304 MSD-MW19-02	5/11/2019	GW		2						✓								
1465305 Equ2-WLT	4/11/2019	GW		2						✓								
1465306 Equ1-Drill Rod Rinstate	30/10/2019	GW		2						✓								
1465307 -IDW-GW	1/11/2019	GW		2						✓								
PRINT		SIGN			DATE/TIME			TEMP (°C)		COMMENTS:								
Sampled By:																		
Relinquished By:	Kiran						5/11/19 1520											
Received By:	Wadey Miller			3			11/8/19 1002											
CUSTODY SEAL: YES ☐ NO ☐																		



STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: _____

[illegible]

Client: EUROFINS OTTAWA**Delivery and Receipt Information**

Delivery Method:	<u>UPS</u>	Arrival Date:	<u>11/08/2019</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>3</u>

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	UNP
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by *Julissa Rivera-Santa***Samples Chilled Details**

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192050133	2.5	IR	Wet	Y	Bagged	N

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
1465307- IDW-GW	10/31/2019 --	

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
P^	Concentration difference between the primary and confirmation column $> 40\%$. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.

Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.



ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Eurofins Environmental Testing
8-146 Colonnade Rd
Ottawa ON K2E 7Y1

Report Date: December 04, 2019 15:01

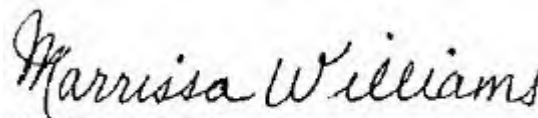
Project: 1920598

Account #: 43091
Group Number: 2074061
PO Number: OTT-1911-11
State of Sample Origin: ON

Electronic Copy To Eurofins Env Testing Canada
Electronic Copy To Eurofins Env Testing Canada
Electronic Copy To Eurofins Env Testing Canada

Attn: Rebecca Koshy
Attn: Rita Efenowwe
Attn: Justin Marshy

Respectfully Submitted,


Marrissa Williams
Project Manager

(717) 556-7246

To view our laboratory's current scopes of accreditation please go to <https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/> . Historical copies may be requested through your project manager.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection</u> <u>Date/Time</u>	<u>ELLE#</u>
1465311 IDW-Soil Soil	11/01/2019	1199388
1465311 IDW-Soil Soil	11/01/2019	1199389

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: 1465311 IDW-Soil Soil
1920598

Eurofins Environmental Testing
ELLE Sample #: SW 1199388
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/g	ng/g	ng/g	
14027	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.61	2.0	1
14027	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.61	2.0	1
14027	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	0.61	2.0	1
14027	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.61	3.1	1
14027	NEtFOSAA	2991-50-6	N.D.	0.20	2.0	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14027	NEtPFOSA	4151-50-2	N.D.	0.51	2.0	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14027	NEtPFOSAE	1691-99-2	N.D.	0.51	2.0	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14027	NMeFOSAA	2355-31-9	N.D.	0.20	2.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14027	NMePFOSA	31506-32-8	N.D.	0.51	2.0	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14027	NMePFOSAE	24448-09-7	N.D.	0.51	2.0	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14027	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.41	2.0	1
14027	Perfluorobutanoic acid	375-22-4	N.D.	0.82	2.0	1
14027	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.20	0.61	1
14027	Perfluorodecanoic acid	335-76-2	N.D.	0.20	0.61	1
14027	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.20	2.0	1
14027	Perfluorododecanoic acid	307-55-1	N.D.	0.20	0.61	1
14027	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.20	0.61	1
14027	Perfluoroheptanoic acid	375-85-9	N.D.	0.20	0.61	1
14027	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.20	0.61	1
14027	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.20	0.61	1
14027	Perfluorohexanoic acid	307-24-4	N.D.	0.20	0.61	1
14027	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.20	0.61	1
14027	Perfluorononanoic acid	375-95-1	N.D.	0.20	0.61	1
14027	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.20	0.61	1
14027	Perfluorooctanesulfonamide	754-91-6	N.D.	0.20	0.61	1
14027	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.20	0.61	1
14027	Perfluorooctanoic acid	335-67-1	N.D.	0.20	0.61	1
14027	Perfluoropentanesulfonate	2706-91-4	N.D.	0.20	0.61	1
14027	Perfluoropentanoic acid	2706-90-3	N.D.	0.20	0.61	1
14027	Perfluorotetradecanoic acid	376-06-7	N.D.	0.20	0.61	1
14027	Perfluorotridecanoic acid	72629-94-8	N.D.	0.20	0.61	1
14027	Perfluoroundecanoic acid	2058-94-8	N.D.	0.20	0.61	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary.

*=This limit was used in the evaluation of the final result

Sample Description: 1465311 IDW-Soil Soil
1920598

Eurofins Environmental Testing
ELLE Sample #: SW 1199388
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Wet Chemistry		SW-846 9045C Sept 1994	Std. Units	Std. Units	Std. Units	
00394	pH	n.a.	8.51	0.0100	0.0100	1
	The pH was measured in water at 20.8 C.					
Wet Chemistry		SM 2540 G-2011	%	%	%	
		%Moisture Calc				
00111	Moisture	n.a.	10.1	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

State of Alaska Lab Certification No. UST-061

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14027	PFAS in Soil by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19318005	11/26/2019 00:24	Jason W Knight	1
14090	PFAS Solid Prep	EPA 537 Version 1.1 Modified	1	19318005	11/14/2019 09:30	Austin Prince	1
00394	pH	SW-846 9045C Sept 1994	1	19317039404B	11/13/2019 18:32	Kristen Wroblewski	1
00111	Moisture	SM 2540 G-2011 %Moisture Calc	1	19316820007B	11/13/2019 11:53	William C Schwebel	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465311 IDW-Soil Soil
SPLP Leachate
1920598

Eurofins Environmental Testing
ELLE Sample #: TL 1199389
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	2.5	12	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	1.2	5.0	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	33	5.0	12	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	2.5	7.5	1
14473	NEtFOSAA	2991-50-6	N.D.	1.2	7.5	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	2.5	12	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	2.5	7.5	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	1.5	5.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	2.5	7.5	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	2.5	7.5	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	1.2	5.0	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	5.0	12	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	1.2	5.0	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	1.2	5.0	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	1.2	7.5	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	1.2	5.0	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	1.2	5.0	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	1.2	5.0	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	2.5	7.5	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	1.2	5.0	1
14473	Perfluorohexanoic acid	307-24-4	1.6 J	1.2	5.0	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	1.2	5.0	1
14473	Perfluorononanoic acid	375-95-1	N.D.	1.2	5.0	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	2.5	7.5	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	1.2	5.0	1
14473	Perfluorooctanesulfonic acid	1763-23-1	28	1.2	5.0	1
14473	Perfluorooctanoic acid	335-67-1	5.9	1.2	5.0	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	1.2	5.0	1
14473	Perfluoropentanoic acid	2706-90-3	2.6 J	1.2	5.0	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	1.2	5.0	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	1.2	5.0	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	1.2	5.0	1

The recovery for a target analyte(s) in the Laboratory Control

*=This limit was used in the evaluation of the final result

Sample Description: 1465311 IDW-Soil Soil
SPLP Leachate
1920598

Eurofins Environmental Testing
ELLE Sample #: TL 1199389
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
	Spike(s) is outside the QC acceptance limits as noted on the QC Summary.					
	The recovery for several extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The following action was taken: The sample was re-extracted outside of the method holding time and the recovery for several extraction standards was again outside of the QC acceptance limits.					
	Reporting limits were raised due to interference from the sample matrix.					

Sample Comments

State of Alaska Lab Certification No. UST-061

The EPA 1312 requirement to extract a minimum of 100 g of sample was not met. The required extraction ratio of 20X extraction fluid to sample was maintained.

If the analysis is for determination of Hazardous Waste Characteristics, see Table 1 in EPA Code of Federal Regulations 40 CFR 261.24.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14473	PFAS in Water by LC/MS/MS	EPA 537 Version 1.1 Modified	1	19318023	11/18/2019 09:46	Danielle D McCully	1
14091	PFAS Water Prep	EPA 537 Version 1.1 Modified	1	19318023	11/14/2019 17:00	Isaac Phillips-Cary	1
15110	SPLP PFAS Leachate Extraction	SW-846 1312	1	19317-9169-15110	11/13/2019 13:29	Craig S Pfautz	n.a.

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/g	ng/g	ng/g
Batch number: 19318005	Sample number(s): 1199388		
10:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
4:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
6:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
8:2-Fluorotelomersulfonic acid	N.D.	0.60	3.0
NEtFOSAA	N.D.	0.20	2.0
NEtPFOSA	N.D.	0.50	2.0
NEtPFOSAE	N.D.	0.50	2.0
NMeFOSAA	N.D.	0.20	2.0
NMePFOSA	N.D.	0.50	2.0
NMePFOSAE	N.D.	0.50	2.0
Perfluorobutanesulfonic acid	N.D.	0.40	2.0
Perfluorobutanoic acid	0.86 J	0.80	2.0
Perfluorodecanesulfonic acid	N.D.	0.20	0.60
Perfluorodecanoic acid	N.D.	0.20	0.60
Perfluorododecanesulfonic acid	N.D.	0.20	2.0
Perfluorododecanoic acid	N.D.	0.20	0.60
Perfluoroheptanesulfonic acid	N.D.	0.20	0.60
Perfluoroheptanoic acid	N.D.	0.20	0.60
Perfluorohexadecanoic acid	N.D.	0.20	0.60
Perfluorohexanesulfonic acid	N.D.	0.20	0.60
Perfluorohexanoic acid	N.D.	0.20	0.60
Perfluorononanesulfonic acid	N.D.	0.20	0.60
Perfluorononanoic acid	N.D.	0.20	0.60
Perfluorooctadecanoic acid	N.D.	0.20	0.60
Perfluorooctanesulfonamide	N.D.	0.20	0.60
Perfluorooctanesulfonic acid	N.D.	0.20	0.60
Perfluorooctanoic acid	N.D.	0.20	0.60
Perfluoropentanesulfonate	N.D.	0.20	0.60
Perfluoropentanoic acid	N.D.	0.20	0.60
Perfluorotetradecanoic acid	N.D.	0.20	0.60
Perfluorotridecanoic acid	N.D.	0.20	0.60
Perfluoroundecanoic acid	N.D.	0.20	0.60
	ng/l	ng/l	ng/l
Batch number: 19318023	Sample number(s): 1199389		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Method Blank (continued)

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/g	LCS Conc ng/g	LCSD Spike Added ng/g	LCSD Conc ng/g	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19318005	Sample number(s): 1199388								
10:2Fluorotelomersulfonic acid	24.1	19.98			83		45-147		
4:2-Fluorotelomersulfonic acid	23.36	21.01			90		58-134		
6:2-Fluorotelomersulfonic acid	23.7	21.82			92		51-144		
8:2-Fluorotelomersulfonic acid	23.94	19.51			81		54-152		
NEtFOSAA	25	23.4			94		51-145		
NEtPFOSA	25	21.93			88		52-134		
NEtPFOSAE	25	22.02			88		52-141		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/g	LCS Conc ng/g	LCSD Spike Added ng/g	LCSD Conc ng/g	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
NMeFOSAA	25	23.19			93		55-152		
NMePFOSA	25	22.08			88		40-132		
NMePFOSAE	25	20.66			83		56-144		
Perfluorobutanesulfonic acid	22.12	18.87			85		63-139		
Perfluorobutanoic acid	25	23.78			95		56-188		
Perfluorodecanesulfonic acid	24.08	21.54			89		60-142		
Perfluorodecanoic acid	25	22.38			90		65-144		
Perfluorododecanesulfonic acid	24.2	22.29			92		50-146		
Perfluorododecanoic acid	25	20.39			82		62-150		
Perfluoroheptanesulfonic acid	23.78	22.38			94		67-139		
Perfluoroheptanoic acid	25	22.96			92		65-153		
Perfluorohexadecanoic acid	25	20.24			81		46-164		
Perfluorohexanesulfonic acid	23.64	19.34			82		59-139		
Perfluorohexanoic acid	25	23.71			95		64-149		
Perfluorononanesulfonic acid	24	23.2			97		62-145		
Perfluorononanoic acid	25	23.83			95		64-151		
Perfluorooctadecanoic acid	25	20.39			82		27-171		
Perfluorooctanesulfonamide	25	20.94			84		61-133		
Perfluorooctanesulfonic acid	23.9	18.32			77		54-132		
Perfluorooctanoic acid	25	23.89			96		65-147		
Perfluoropentanesulfonate	23.44	23.04			98		64-144		
Perfluoropentanoic acid	25	25.28			101		71-139		
Perfluorotetradecanoic acid	25	19.46			78		66-147		
Perfluorotridecanoic acid	25	19.48			78		63-152		
Perfluoroundecanoic acid	25	21.32			85		65-146		
	ng/l	ng/l	ng/l	ng/l					
Batch number: 19318023	Sample number(s): 1199389								
10:2-Fluorotelomersulfonic acid	24.68	22.77			92		45-143		
4:2-Fluorotelomersulfonic acid	23.92	19.4			81		61-131		
6:2-Fluorotelomersulfonic acid	24.28	20.16			83		56-140		
8:2-Fluorotelomersulfonic acid	24.52	22.1			90		58-143		
NEtFOSAA	25.6	19.68			77		53-140		
NEtPFOSA	25.6	23.37			91		56-136		
NEtPFOSAE	25.6	22.26			87		56-130		
NMeFOSAA	25.6	21.26			83		59-141		
NMePFOSA	25.6	25.19			98		49-134		
NMePFOSAE	25.6	20.74			81		61-133		
Perfluorobutanesulfonic acid	22.64	18.49			82		67-135		
Perfluorobutanoic acid	25.6	23.7			93		63-160		
Perfluorodecanesulfonic acid	24.64	22.89			93		62-135		
Perfluorodecanoic acid	25.6	20.36			80		66-141		
Perfluorododecanesulfonic acid	24.8	21.47			87		57-134		
Perfluorododecanoic acid	25.6	19.74			77		65-143		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluoroheptanesulfonic acid	24.36	20.96			86		67-138		
Perfluoroheptanoic acid	25.6	22.79			89		69-144		
Perfluorohexadecanoic acid	25.6	20.05			78		60-148		
Perfluorohexanesulfonic acid	24.2	18.39			76		63-132		
Perfluorohexanoic acid	25.6	21.43			84		69-139		
Perfluorononanesulfonic acid	24.56	23.5			96		70-137		
Perfluorononanoic acid	25.6	21.53			84		66-144		
Perfluorooctadecanoic acid	25.6	9.83			38*		47-159		
Perfluorooctanesulfonamide	25.6	21.33			83		67-126		
Perfluorooctanesulfonic acid	24.48	18.03			74		53-129		
Perfluorooctanoic acid	25.6	21.62			84		67-139		
Perfluoropentanesulfonate	24	21.52			90		73-134		
Perfluoropentanoic acid	25.6	23.94			94		73-135		
Perfluorotetradecanoic acid	25.6	20.31			79		69-141		
Perfluorotridecanoic acid	25.6	20.55			80		66-146		
Perfluoroundecanoic acid	25.6	21.8			85		66-140		
	Std. Units	Std. Units	Std. Units	Std. Units					
Batch number: 19317039404B	Sample number(s): 1199388								
pH	7.00	7.00			100		95-105		
	%	%	%	%					
Batch number: 19316820007B	Sample number(s): 1199388								
Moisture	89.5	89.46			100		99-101		

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Soil by LC/MS/MS
Batch number: 19318005

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1199388	118*	112	120	115	124*	113
Blank	124*	130*	120	127	121*	117
LCS	110	104	108	108	105	115
Limits:	40-117	38-118	38-120	28-137	36-120	38-124
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199388	116	130	112	114	130*	118

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Soil by LC/MS/MS
Batch number: 19318005

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
Blank	114	156*	122*	117	129*	121*
LCS	113	123	109	115	114	110
Limits:	39-120	25-154	44-115	45-118	39-123	43-118

	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199388	130	125	121	127	119	121
Blank	147	122	123	132	114	119
LCS	124	115	116	121	112	120
Limits:	26-155	10-152	34-124	10-156	28-126	26-125

	13C8-PFOSA	d7-NMePFOSAE	d9-NEtPFOSAE	d5-NEtPFOSA	d3-NMePFOSA
1199388	121	107	122	109	109
Blank	131*	122	128	119	105
LCS	117	113	113	110	108
Limits:	31-127	10-142	10-150	10-145	10-141

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19318023

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1199389	42*	43	45	73	43	46
Blank	116	111	115	115	112	120
LCS	103	99	102	105	98	105
Limits:	43-130	38-150	23-175	22-169	36-137	35-143

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199389	48	88	49*	50*	55	50
Blank	115	127	118	117	118	110
LCS	100	111	100	98	100	107
Limits:	33-140	29-182	52-124	52-121	48-130	50-124

	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199389	74	56	52	66	44	40
Blank	113	116	107	121	108	111
LCS	105	115	102	116	101	99
Limits:	37-169	36-143	44-128	42-149	36-127	21-134

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19318023

	13C8-PFOSA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA
1199389	23	6*	2*	6*	2*
Blank	111	90	72	87	66
LCS	98	91	44	82	41
Limits:	10-134	10-137	10-107	10-135	10-107

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Lancaster



Eurofins Workorder #: _____

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Page 1 of 16



Group Number(s): 2074001

Client: EUROFINS OTTAWA**Delivery and Receipt Information**

Delivery Method:	<u>UPS</u>	Arrival Date:	<u>11/08/2019</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>3</u>

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Julissa Rivera-Santa***Samples Chilled Details**

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192050133	2.5	IR	Wet	Y	Bagged	N

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
1465311 IDW-SOIL	10/31/2019 --	

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
P^	Concentration difference between the primary and confirmation column $>40\%$. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.

Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Certificate of Analysis

Client: AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Attention: Ms. Mahsa Shayan
PO#: 60615382
Invoice to: AECOM (Markham)

Report Number: 1920599
Date Submitted: 2019-11-07
Date Reported: 2019-11-26
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

Page 1 of 4

Dear Mahsa Shayan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:


Addrine
Thomas
2019.11.26
16:33:54 -05'00'

APPROVAL:

Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

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Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920599
Date Submitted: 2019-11-07
Date Reported: 2019-11-26
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1465312 Soil 2019-10-31 IDW-Soil
Analyte	MRL	Units	Guideline		
F1 (C6-C10)	10	ug/g			<10
F1-BTEX (C6-C10)	10	ug/g			<10
F2 (C10-C16)	10	ug/g			<10
F3 (C16-C34)	20	ug/g			180
F4 (C34-C50)	20	ug/g			110
Moisture-Humidite	0.1	%			8.8
Alpha-androstrane	0	%			79
F	0.5	ug/g			2.0
Toluene-d8	0	%			102
Benzene	0.02	ug/g			<0.02
Ethylbenzene	0.05	ug/g			<0.05
m/p-xylene	0.05	ug/g			<0.05
o-xylene	0.05	ug/g			<0.05
Toluene	0.20	ug/g			<0.20
Xylene; total	0.05	ug/g			<0.05

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920599
Date Submitted: 2019-11-07
Date Reported: 2019-11-26
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 375841 Analysis/Extraction Date 2019-11-13 Analyst C M Method CCME			
Petroleum Hydrocarbons F2	<10 ug/g	96	80-120
Petroleum Hydrocarbons F3	<20 ug/g	96	80-120
Petroleum Hydrocarbons F4	<20 ug/g	96	80-120
Moisture-Humidite		100	80-120
Run No 375842 Analysis/Extraction Date 2019-11-09 Analyst TJB Method V 8260B			
Benzene	<0.02 ug/g	85	60-130
Ethylbenzene	<0.05 ug/g	85	60-130
m/p-xylene	<0.05 ug/g	89	60-130
o-xylene	<0.05 ug/g	89	60-130
Toluene	<0.20 ug/g	90	60-130
Run No 375843 Analysis/Extraction Date 2019-11-13 Analyst TJB Method CCME			
Petroleum Hydrocarbons F1	<10 ug/g	99	80-120
Petroleum Hydrocarbons F1-BTEX			
Run No 375844 Analysis/Extraction Date 2019-11-13 Analyst TJB			

Certificate of Analysis

AECOM (Markham)
 105 Commerce Drive West
 Markham, Ontario
 L3T 7W3
 Ms. Mahsa Shayan
 60615382
 AECOM (Markham)

Report Number: 1920599
 Date Submitted: 2019-11-07
 Date Reported: 2019-11-26
 Project: Iqaluit Airport PFAS Investigation
 COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Xylene Mixture			
Run No 376555 Analysis/Extraction Date 2019-11-26 Analyst REE Method SUBCONTRACT-SU-INORG			
F	<0.5 ug/g	85	

Certificate of Analysis

Client: AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Attention: Ms. Mahsa Shayan
PO#: 60615382
Invoice to: AECOM (Markham)

Report Number: 1920596
Date Submitted: 2019-11-07
Date Reported: 2019-11-28
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

Page 1 of 4

Dear Mahsa Shayan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:



Charlie
Long Qu
2019.11.2
8 15:32:36
-05'00'

APPROVAL:

Long Qu, Organics Supervisor

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Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920596
Date Submitted: 2019-11-07
Date Reported: 2019-11-28
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1465309 GW 2019-10-31 IDW-GW
Analyte	MRL	Units	Guideline		
F1 (C6-C10)	20	ug/L			<20
F1-BTEX (C6-C10)	20	ug/L			<20
F2 (C10-C16)	20	ug/L			2720
F3 (C16-C34)	50	ug/L			<50
F4 (C34-C50)	50	ug/L			<50
Alpha-androstrane	0	%			80
Toluene-d8	0	%			100
Benzene	0.5	ug/L			<0.5
Ethylbenzene	0.5	ug/L			<0.5
m/p-xylene	0.4	ug/L			<0.4
o-xylene	0.4	ug/L			<0.4
Toluene	0.5	ug/L			<0.5
Xylene; total	0.5	ug/L			<0.5

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920596
Date Submitted: 2019-11-07
Date Reported: 2019-11-28
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 375796 Analysis/Extraction Date 2019-11-09 Analyst TJB Method EPA 8260			
Benzene		100	60-130
Ethylbenzene		100	60-130
m/p-xylene		100	60-130
o-xylene		98	60-130
Toluene		108	60-130
Run No 375799 Analysis/Extraction Date 2019-11-12 Analyst TJB Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L	100	60-140
Petroleum Hydrocarbons F1-BTEX			
Run No 375801 Analysis/Extraction Date 2019-11-12 Analyst TJB Method EPA 8260			
Xylene Mixture			
Run No 375848 Analysis/Extraction Date 2019-11-13 Analyst C M Method CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	104	60-140
Petroleum Hydrocarbons F3	<50 ug/L	104	60-140

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number:	1920596
Date Submitted:	2019-11-07
Date Reported:	2019-11-28
Project:	Iqaluit Airport PFAS Investigation
COC #:	851222

Certificate of Analysis

Client: AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Attention: Ms. Mahsa Shayan
PO#:
Invoice to: AECOM (Markham)

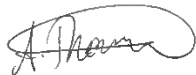
Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

Page 1 of 8

Dear Mahsa Shayan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:


Addrine
Thomas
2019.12.18
14:23:46 -05'00'

APPROVAL:

Addrine Thomas, Inorganics Supervisor

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Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

				Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1471422 GW 2019-10-30 IDW-GW (Total)	1471423 GW 2019-10-31 IDW-GW (Dissolved)
	Analyte	MRL	Units	Guideline		
try	Cl	1	mg/L		42	
	N-NO2	0.10	mg/L		<0.10	
	N-NO3	0.10	mg/L		<0.10	
	NO2 + NO3 as N	0.10	mg/L		<0.10	
	SO4	1	mg/L		23	
	Alkalinity as CaCO3	5	mg/L		153	
	CO3 as CaCO3	1	mg/L		N/A-PH	
	Conductivity	5	uS/cm		445	
	HCO3 as CaCO3	1	mg/L		153	
	OH	0.01	mg/L		N/A-PH	
	pH	1.00			7.92	
	TDS (COND - CALC)	1	mg/L		289	
	Hardness as CaCO3	1	mg/L		197	
	Ion Balance	0.01			1.24	
	Hg	0.0001	mg/L		N/A	
	Ag	0.01	mg/L		<0.01	
	Al	0.1	mg/L		69.7	
	As	0.02	mg/L		0.02	
	B	0.1	mg/L		0.2	
	Ba	0.01	mg/L		0.54	
	Be	0.01	mg/L		<0.01	
	Ca	1	mg/L		59	48
	Co	0.01	mg/L		0.04	
	Cr	0.05	mg/L		0.07	
	Fe	0.03	mg/L			<0.03

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

					1471422 GW 2019-10-30 IDW-GW (Total)	1471423 GW 2019-10-31 IDW-GW (Dissolved)
Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.		
Fe	0.1	mg/L			143	
K	1	mg/L			12	4
Li	0.01	mg/L			0.07	
Mg	1	mg/L			12	8
Mn	0.01	mg/L			2.98	1.13
Mo	0.01	mg/L			0.02	
Na	2	mg/L			37	44
Ni	0.01	mg/L			0.07	
P	0.002	mg/L			0.696	
Pb	0.01	mg/L			0.04	
S		mg/L			N/A	
Sb	0.01	mg/L			<0.01	
Se	0.02	mg/L			<0.02	
Si	0.1	mg/L			21.6	
Sn	0.1	mg/L			<0.1	
Sr	0.05	mg/L			0.22	
Ti	0.1	mg/L			0.4	
Tl	0.01	mg/L			<0.01	
U	0.01	mg/L			<0.01	
V	0.05	mg/L			0.10	
Zn	0.04	mg/L			0.57	
N-NH3	0.010	mg/L			0.154	

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 377326 Analysis/Extraction Date 2019-12-11 Analyst AET Method EPA 350.1			
N-NH3	<0.010 mg/L	119	80-120
Run No 377329 Analysis/Extraction Date 2019-12-11 Analyst H D Method M SM3120B-3500C			
Calcium	<1 mg/L	100	90-110
Potassium	<1 mg/L	100	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	101	82-118
Run No 377335 Analysis/Extraction Date 2019-12-11 Analyst H D Method EPA 200.8			
Iron	<0.03 mg/L	98	91-109
Manganese	<0.01 mg/L	99	92.9-107
Run No 377373 Analysis/Extraction Date 2019-12-12 Analyst H D Method EPA 200.8			
Boron (total)	<0.1 mg/L	110	84.9-115
P	<0.002 mg/L	96	82-118
Titanium	<0.1 mg/L	103	80-120

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 377397 Analysis/Extraction Date 2019-12-12 Analyst H D Method M SM3120B-3500C			
Silicon	<0.1 mg/L	103	70-130
Run No 377420 Analysis/Extraction Date 2019-12-12 Analyst K J Method SM2320,2510,4500H/F			
Alkalinity (CaCO ₃)	<5 mg/L	104	90-110
Conductivity	<5 uS/cm	101	90-110
pH		100	90-110
Run No 377515 Analysis/Extraction Date 2019-12-16 Analyst AET Method SM 4110			
Chloride	<1 mg/L	104	90-110
Run No 377548 Analysis/Extraction Date 2019-12-16 Analyst SKH Method SM 4110			
N-NO ₂	<0.10 mg/L	98	90-110
N-NO ₃	<0.10 mg/L	111	90-110
NO ₂ + NO ₃ as N			
SO ₄	<1 mg/L	100	90-110
Run No 377586 Analysis/Extraction Date 2019-12-17 Analyst SKH Method M SM3112B-3500B			

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Mercury	<0.0001 mg/L	96	76-123
Run No 377596 Analysis/Extraction Date 2019-12-17 Analyst SKH Method EPA 200.8			
Silver	<0.01 mg/L	100	70-130
Aluminum	<0.1 mg/L	103	70-130
Arsenic	<0.02 mg/L	98	70-130
Barium	<0.01 mg/L	102	70-130
Beryllium	<0.01 mg/L	95	70-130
Cobalt	<0.01 mg/L	103	70-130
Chromium Total	<0.05 mg/L	104	70-130
Iron	<0.1 mg/L	88	70-130
Li	<0.01 mg/L	102	70-130
Manganese	<0.01 mg/L	102	70-130
Molybdenum	<0.01 mg/L	94	70-130
Nickel	<0.01 mg/L	107	70-130
Lead	<0.01 mg/L	102	70-130
S			70-130
Antimony	0.01 mg/L	101	70-130

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Selenium	<0.02 mg/L	105	70-130
Sn	<0.1 mg/L	77	70-130
Strontium	<0.05 mg/L	103	70-130
Thallium	<0.01 mg/L	105	70-130
Uranium	<0.01 mg/L	91	70-130
Vanadium	<0.05 mg/L	99	70-130
Zinc	<0.04 mg/L	121	70-130
Run No 377599 Analysis/Extraction Date 2019-12-17 Analyst AET Method SM 2320B			
CO3 as CaCO3			
Hardness as CaCO3			
HCO3 as CaCO3			
Ion Balance			
OH			
TDS (COND - CALC)			

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan

Report Number: 1922449
Date Submitted: 2019-12-10
Date Reported: 2019-12-18
Project: Iqaluit Airport Investigation
COC #: 851223

AECOM (Markham)

Sample Comment Summary

ID: 1471422 IDW-GW (Total)	The Ion Balance is outside Eurofins acceptable tolerance levels. There is insufficient sample remaining to reanalyse for confirmation. Insufficient sample to perform or Sulphur analysis.
----------------------------	--

Certificate of Analysis

Client: AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Attention: Ms. Mahsa Shayan
PO#: 60615382
Invoice to: AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

Page 1 of 8

Dear Mahsa Shayan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:



Charlie Long Qu
2019.12.19
13:25:09 -05'00'

APPROVAL:

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1465310 R347 2019-10-31 IDW-Soil
Analyte	MRL	Units	Guideline		
REG 558 Leach					Y
Zero Headspace Extraction					Y
Hg	0.001	mg/L	LQC 0.1		<0.001
Ag	0.01	mg/L	LQC 5		<0.01
As	0.02	mg/L	LQC 2.5		<0.02
B	0.1	mg/L	LQC 500.0		<0.1
Ba	0.01	mg/L	LQC 100.0		0.31
Be	0.01	mg/L			<0.01
Cd	0.008	mg/L	LQC 0.5		<0.008
Co	0.01	mg/L			0.01
Cr	0.05	mg/L	LQC 5.0		<0.05
Cu	0.01	mg/L			0.11
Fe	0.1	mg/L			0.5
Ni	0.01	mg/L			0.03
Pb	0.01	mg/L	LQC 5.0		<0.01
Sb	0.01	mg/L			<0.01
Se	0.02	mg/L	LQC 1.0		<0.02
Tl	0.01	mg/L			<0.01
U	0.01	mg/L	LQC 10.0		<0.01
V	0.05	mg/L			<0.05
Zn	0.04	mg/L			0.53
Zr	0.02	mg/L			<0.02
Moisture-Humidite	0.1	%			8.6
1,2-dichloroethane-d4	0	%			91
4-bromofluorobenzene	0	%			109

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

					Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1465310 R347 2019-10-31 IDW-Soil
Analyte	MRL	Units	Guideline		
Toluene-d8	0	%			106
1,1-dichloroethylene	0.5	ug/L	LQC 1400		<0.5
1,2-dichlorobenzene	0.4	ug/L	LQC 20000		<0.4
1,2-dichloroethane	0.2	ug/L	LQC 500		<0.2
1,4-dichlorobenzene	0.4	ug/L	LQC 500		<0.4
Benzene	0.5	ug/L	LQC 500		<0.5
Carbon Tetrachloride	0.2	ug/L	LQC 500		<0.2
Chloroform	0.5	ug/L	LQC 10000		<0.5
Dichloromethane	4.0	ug/L	LQC 5000		<4.0
Ethylbenzene	0.5	ug/L			<0.5
m/p-xylene	0.4	ug/L			<0.4
Methyl Ethyl Ketone (MEK)	10	ug/L	LQC 200000		<10
Monochlorobenzene	0.5	ug/L	LQC 8000		<0.5
o-xylene	0.4	ug/L			<0.4
Tetrachloroethylene	0.3	ug/L	LQC 3000		<0.3
Toluene	0.5	ug/L			<0.5
Trichloroethylene	0.3	ug/L	LQC 5000		<0.3
Vinyl Chloride	0.2	ug/L	LQC 200		<0.2

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 375834 Analysis/Extraction Date 2019-11-11 Analyst SG Method ASTM 2216			
Moisture-Humidite			80-120
REG 558 Leach			
Zero Headspace Extraction			
Run No 375882 Analysis/Extraction Date 2019-11-13 Analyst TJB Method EPA 8260			
Dichloroethylene, 1,1-		109	60-130
Dichlorobenzene, 1,2-		101	60-130
Dichloroethane, 1,2-		107	60-130
Dichlorobenzene, 1,4-		108	60-130
Benzene		100	60-130
Carbon Tetrachloride		120	60-130
Chloroform		102	60-130
Methylene Chloride		102	60-130
Ethylbenzene		100	60-130
m/p-xylene		100	60-130
Chlorobenzene		106	60-130

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
o-xylene		98	60-130
Tetrachloroethylene		107	60-130
Toluene		108	60-130
Trichloroethylene		107	60-130
Vinyl Chloride		115	60-130
Run No 375883 Analysis/Extraction Date 2019-11-13 Analyst TJB Method EPA 8260			
Methyl Ethyl Ketone	<10 ug/L	100	60-130
Run No 375949 Analysis/Extraction Date 2019-11-14 Analyst H D Method EPA 200.8			
Boron (total)	<0.1 mg/L	108	84.9-115
Run No 375953 Analysis/Extraction Date 2019-11-14 Analyst H D Method EPA 200.8			
Silver	<0.01 mg/L	90	70-130
Arsenic	<0.02 mg/L	92	70-130
Barium	<0.01 mg/L	93	70-130
Beryllium	<0.01 mg/L	87	70-130
Cadmium	<0.008 mg/L	97	70-130

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chromium Total	<0.05 mg/L	106	70-130
Copper	<0.01 mg/L	104	70-130
Iron	<0.1 mg/L	82	70-130
Nickel	<0.01 mg/L	102	70-130
Lead	<0.01 mg/L	94	70-130
Antimony	<0.01 mg/L	91	70-130
Selenium	<0.02 mg/L	99	70-130
Thallium	<0.01 mg/L	95	70-130
Uranium	<0.01 mg/L	80	70-130
Vanadium	<0.05 mg/L	91	70-130
Zinc	<0.04 mg/L	112	70-130
Run No 376043 Analysis/Extraction Date 2019-11-15 Analyst SKH Method M SM3112B-3500B			
Mercury	<0.001 mg/L	97	76-123
Run No 376754 Analysis/Extraction Date 2019-11-29 Analyst H D Method EPA 200.8			
Zr	<0.02 mg/L	90	74.7-125.3

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number:	1920597
Date Submitted:	2019-11-07
Date Reported:	2019-12-19
Project:	Iqaluit Airport PFAS Investigation
COC #:	851222

Certificate of Analysis

AECOM (Markham)
105 Commerce Drive West
Markham, Ontario
L3T 7W3
Ms. Mahsa Shayan
60615382
AECOM (Markham)

Report Number: 1920597
Date Submitted: 2019-11-07
Date Reported: 2019-12-19
Project: Iqaluit Airport PFAS Investigation
COC #: 851222

Sample Comment Summary

ID: 1465310 IDW-Soil Metals analysis was performed on an aqua-regia digest of the sample material, except for Boron.
--

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS-USEPA 537 Modified- surrogate Detection	SPLP- Extraction	Reg 153 BTEX AND PHCS F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Hdsp. Extr	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
99
300
01
02
03
04
05
06
07

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				

CLIENT INFORMATION

Company: **AECOM Canada Ltd.**
 Contact: **Mahsa Shayan**
 Address: **105 Commerce Valley Dr. West, Markham, ON L3T 7W3, Canada**
 Telephone: **905-747-7460** Cell: **416-523-7725**
 Email: #1: **mahsa.shayan@aecom.com**

Email: #2: _____
 Project: **Iqaluit Airport PFAS Investigation** Quote #: **190371**

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample ID	Date/Time Collected	Sample Matrix	# of Containers
IDW-Soil	Oct 31, 2019	soil	6
SW19-02- Keep on hold	Nov 1, 2019	SW	2
SW19-03- Keep on hold	Nov 1, 2019	SW	2
Trip Blank	Nov 1, 2019	W	2
Field Reagent: On hold: PFAS Free water container	Nov 5, 2019	W	1

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: **AECOM Canada Ltd** Fax: _____
 Contact: **Mahsa Shayan** Email: #1: _____
 Address: **105 Commerce Valley Dr. W. Markham, ON L3T 7W3, Canada** Email: #2: _____
 Telephone: _____ PO #: **60615382**

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: Health Canada 2019 Soil and GW St
☐ None

☐ O. Reg 153
 Table # _____, Course / Fine, Surface / subsurface.
 Type: Com-ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

Sample Details

Sample Analysis Required

Field Filtered →

Sample Matrix # of Containers		O.Reg.153 parameters							PFAS - 32 (EPA method 537 modified, include dilution)	SPLP - Extraction	Reg 153 BTEX and PHCs F144 (N)	Reg 558 - TICLP Extraction	Reg 558 - Two Hgsp. Est	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC FL - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only									
soil	6	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	1	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

RNI
(Lab Use Only)

08
08

PRINT

SIGN

DATE/TIME

TEMP (°C)

COMMENTS:

Sampled By: **Mahsa Shayan/Rory McNeil**
 Relinquished By: **Mahsa shayan/Rory McNeil**
 Received By: _____

Nov 5, 2019/8 am
 Nov 5, 2019/ 10:10 am
 15

Isotope dilution method for PFAS analysis in groundwater and soil (EPA Method 537- modified)--- SW19-02, SW19-03, and Field Reagent samples to be kept on hold for later analysis

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODW/SOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

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Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS-USEPA 537 Modified- surrogate Detection	SPLP- Extraction	Reg 153 BTEX AND PHCS F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Hdsp. Extr	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
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PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				

CLIENT INFORMATION

Company: **AECOM Canada Ltd.**
 Contact: **Mahsa Shayan**
 Address: **105 Commerce Valley Dr. West, Markham, ON L3T 7W3, Canada**
 Telephone: **905-747-7460** Cell: **416-523-7725**
 Email: #1: **mahsa.shayan@aecom.com**

Email: #2: _____
 Project: **Iqaluit Airport PFAS Investigation** Quote #: **190371**

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

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Sample ID	Date/Time Collected	Sample Matrix	# of Containers
IDW-Soil	Oct 31, 2019	soil	6
SW19-02- Keep on hold	Nov 1, 2019	SW	2
SW19-03- Keep on hold	Nov 1, 2019	SW	2
Trip Blank	Nov 1, 2019	W	2
Field Reagent: On hold: PFAS Free water container	Nov 5, 2019	W	1

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: **AECOM Canada Ltd** Fax: _____
 Contact: **Mahsa Shayan** Email: #1: _____
 Address: **105 Commerce Valley Dr. W. Markham, ON L3T 7W3, Canada** Email: #2: _____
 Telephone: _____ PO #: **60615382**

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: Health Canada 2019 Soil and GW St
☐ None

☐ O. Reg 153
 Table # _____, Course / Fine, Surface / subsurface.
 Type: Com-ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

Sample Details

Sample Analysis Required

Field Filtered →

Sample Matrix # of Containers		O.Reg.153 parameters							PFAS - 32 (EPA method 537 modified, include dilution)	SPLP - Extraction	Reg 153 BTEX and PHCs F144 (N)	Reg 558 - TICLP Extraction	Reg 558 - Two Hgsp. Est	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC FL - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only									
soil	6	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	1	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

RNI
(Lab Use Only)

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08

PRINT

SIGN

DATE/TIME

TEMP (°C)

COMMENTS:

Sampled By: **Mahsa Shayan/Rory McNeil**
 Relinquished By: **Mahsa shayan/Rory McNeil**
 Received By: _____

Nov 5, 2019/8 am
 Nov 5, 2019/ 10:10 am
 15

Isotope dilution method for PFAS analysis in groundwater and soil (EPA Method 537- modified)--- SW19-02, SW19-03, and Field Reagent samples to be kept on hold for later analysis

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODW/SOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

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Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS (EPA 537) Method: surrogate standard	SPLP- Extraction	Reg 153 BTEX AND PHCS F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Hdcp. EPA	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
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PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382
Fax:
Email: #1:
Email: #2:

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal
Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

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Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS (EPA 537) Method: surrogate standard	SPLP- Extraction	Reg 153 BTEX AND PHCS F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Indsp. EPA	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
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PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				

CLIENT INFORMATION

Company: **AECOM Canada Ltd.**
 Contact: **Mahsa Shayan**
 Address: **105 Commerce Valley Dr. West, Markham, ON L3T 7W3, Canada**
 Telephone: **905-747-7460** Cell: **416-523-7725**
 Email: #1: **mahsa.shayan@aecom.com**

Email: #2: _____
 Project: **Iqaluit Airport PFAS Investigation** Quote #: **190371**

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

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Sample ID	Date/Time Collected	Sample Matrix	# of Containers
IDW-Soil	Oct 31, 2019	soil	6
SW19-02- Keep on hold	Nov 1, 2019	SW	2
SW19-03- Keep on hold	Nov 1, 2019	SW	2
Trip Blank	Nov 1, 2019	W	2
Field Reagent: On hold: PFAS Free water container	Nov 5, 2019	W	1

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐

Company: **AECOM Canada Ltd** Fax: _____
 Contact: **Mahsa Shayan** Email: #1: _____
 Address: **105 Commerce Valley Dr. W. Markham, ON L3T 7W3, Canada** Email: #2: _____
 Telephone: _____ PO #: **60615382**

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: Health Canada 2019 Soil and GW St
☐ None

☐ O. Reg 153
 Table # _____, Course / Fine, Surface / subsurface.
 Type: Com-ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

Sample Details				Sample Analysis Required													
Field Filtered →				O.Reg.153 parameters					PFAS 32 (EPA method 537 modified, include dilution)	SPLP - Extraction	Reg 153 BTEX and PHCs F144 (N)	Reg 558 - TIC, P Extraction	Reg 558 - Two Hgsp. Bar	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
Sample Matrix	# of Containers	PHC FL - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only									
soil	6	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☒	☐
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
W	1	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

RNI
(Lab Use Only)

PRINT		SIGN	DATE/TIME	TEMP (°C)	COMMENTS: Isotope dilution method for PFAS analysis in groundwater and soil (EPA Method 537- modified)—SW19-02, SW19-03, and Field Reagent samples to be kept on hold for later analysis
Sampled By:	Mahsa Shayan/Rory McNeil		Nov 5, 2019/8 am		
Relinquished By:	Mahsa shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:					
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No					

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODW/SOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

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Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS (EPA 537) Method: surrogate standard	SPLP- Extraction	Reg 153 BTEX AND PHCS F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Hdq. Extr	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
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PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				

CLIENT INFORMATION

Company: **AECOM Canada Ltd.**
 Contact: **Mahsa Shayan**
 Address: **105 Commerce Valley Dr. West, Markham, ON L3T 7W3, Canada**
 Telephone: **905-747-7460** Cell: **416-523-7725**
 Email: #1: **mahsa.shayan@aecom.com**

Email: #2: _____
 Project: **Iqaluit Airport PFAS Investigation** Quote #: **190371**

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

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Sample ID	Date/Time Collected	Sample Matrix	# of Containers
IDW-Soil	Oct 31, 2019	soil	6
SW19-02- Keep on hold	Nov 1, 2019	SW	2
SW19-03- Keep on hold	Nov 1, 2019	SW	2
Trip Blank	Nov 1, 2019	W	2
Field Reagent: On hold: PFAS Free water container	Nov 5, 2019	W	1

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: **AECOM Canada Ltd** Fax: _____
 Contact: **Mahsa Shayan** Email: #1: _____
 Address: **105 Commerce Valley Dr. W. Markham, ON L3T 7W3, Canada** Email: #2: _____
 Telephone: _____ PO #: **60615382**

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: Health Canada 2019 Soil and GW St
☐ None

☐ O. Reg 153
 Table # _____, Course / Fine, Surface / subsurface.
 Type: Com-ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

Sample Details

Sample Analysis Required

Field Filtered →

Sample Matrix	# of Containers	O.Reg.153 parameters								PFAS - 32 EPA method 537 modified (include dilution)	SPLP - Extraction	Reg 153 BTEX and PHCs F144 (a)	Reg 558 - TIC, P Extraction	Reg 558 - Zero Hgsp. Bar	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC FL - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only										
soil	6	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
SW	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
W	2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
W	1	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
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		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

RNI
(Lab Use Only)

08
08

PRINT		SIGN		DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By:	Mahsa Shayan/Rory McNeil			Nov 5, 2019/8 am	15	Isotope dilution method for PFAS analysis in groundwater and soil (EPA Method 537- modified)— SW19-02, SW19-03, and Field Reagent samples to be kept on hold for later analysis
Relinquished By:	Mahsa shayan/Rory McNeil			Nov 5, 2019/ 10:10 am		
Received By:						
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No						

CLIENT INFORMATION

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: 905-747-7460 Cell: 416-523-7725
Email: #1: mahsa.shayan@aecom.com
Email: #2:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: AECOM Canada Ltd.
Contact: Mahsa Shayan
Address: 105 Commerce Valley Dr. W., Markham, ON L3T 7W3, Canada
Telephone: PO #: 60615382
Fax:
Email: #1:
Email: #2:

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____
☐ Storm Sewer, City: _____
☐ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: 2019 Health Canada PFAS Soil and I
☐ None

☐ O. Reg 153
Table # _____, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal
Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☒ No

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details

Field Filtered ->

Sample Analysis Required

Sample Matrix	# of Containers	O.Reg.153 parameters							PFAS (EPA 537) Method: surrogate standard	SPLP- Extraction	Reg 153 BTEX AND PAHs F1-F4	Reg 558 - TOLP Extraction	Reg 558 - Zero Hgsp. EPA	Reg 558 - VOCs	Reg 558 - Metals Only	Fluoride - IC	
		PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + inorganics	Metals only									
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	2								✓								
GW	6								✓		✓						

RN#
(Lab Use Only)

1465298
99
300
01
02
03
04
05
06
07

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By: Mahsa Shayan/ Rory McNeil		Nov 5, 2019/ 8 am		Isotope dilution method for PFAS analysis in Groundwater and soil (EPA Method 537-Modified)
Relinquished By: Mahsa Shayan/Rory McNeil		Nov 5, 2019/ 10:10 am		
Received By:			1.5	
CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No				



eurofins

STANDARD CHAIN-OF-CUSTODY

851222

Euroflins Workorder #:

192244

~~1720595~~

[illegible]

From: Shayan, Mahsa <Mahsa.Shayan@aecom.com>
Sent: Wednesday, November 27, 2019 10:58 AM
To: Rita Efenovwe <RitaEfenovwe@eurofins.com>
Subject: Additional Analysis for Iqaluit Samples
Importance: High

EXTERNAL EMAIL*

Hi Rita,

Our client has just asked us to add some additional analysis for waste characterization for Iqaluit Airport samples. Please let me know if these analyses are possible (do we have samples left with the lab?)
The additional analysis includes:

For IDW-GW:

Misc. Inorganics, Anions and Nutrients: Alkalinity, Conductivity, pH, Bicarbonate, Carbonate, Hydroxide, Dissolved Chloride, Dissolved Sulphate, Dissolved Nitrite, Dissolved Nitrate
Elements: Total Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Calcium, Chromium, Cobalt, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Sulfur, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc, Mercury, Dissolved Calcium, Dissolved Iron, Dissolved Magnesium, Dissolved Manganese, Dissolved Potassium, Dissolved Sodium
Calculated Parameters: Hardness, Iron Balance, Dissolved Nitrate, Nitrate plus Nitrite, Dissolved Nitrite, Calculated Total Dissolved Solids

For IDW-soil (same parameters were missing in Fort Smith report):

Leachable Metals: Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Uranium, Vanadium, Zinc, Zirconium
Leachable Volatiles: Benzene, Toluene, Ethylbenzene, o-Xylene, m & p-Xylene, Xylenes (Total)

Appendix **F**

Data Quality/Validation Report

DATA VALIDATION REPORT – Stage 2A Review

SDG No.:	1920595+1920598+1920600	Analysis:	Per- and Polyfluorinated Alkyl Substances
Laboratory:	Eurofins	Project:	Iqaluit
Reviewer:	Naoum Tavantzis	Date:	February 2 nd , 2020

This report presents the findings of a review of the referenced data. The report consists of this summary, a listing of the samples included in the review, the qualifying flags applied, copies of data reports, supporting documentation, and an explanation of the data qualifying flags employed. The review performed is based on the specifics of the analytical method referenced and qualified according to the level of review requested in the quality assurance and quality control section of the project-specific term of reference (TOR), and the specifics of the analytical methods employed. Modifications reflect the level of review requested and the specifics of the analytical methods employed.

Major

Anomalies: None.

Minor

Anomalies: The following blanks displayed concentrations greater than the detection limit:

Sample ID	Analyte	Concentration (ng/L)
1465306 Equ1-Drill Rod Rinsate	6:2 FTS	3.1
	PFHxS	1.2
19318005-MB	PFBA	0.86

The field sample results that displayed detections less than five times the concentrations found in the rinsate blank were qualified U,bf and the result is recommended to be considered a false positive. The field sample result associated with the PFBA detection in the method blank was non-detect; no impact on the data is anticipated. The laboratory control spike pair (LCS/LCSD) prepared in preparation batch 19329002 displayed percent recoveries less than the lower quality control (QC) limits for the following:

Analyte	QC Limits (%)	LCS Recovery (%)	LCSD Recovery (%)
4:2 FTS	61-131	60	63
NMeFOSAA	59-141	57	78
PFBS	67-135	70	68
PFDoDA	65-143	66	61
PFHpA	69-144	68	65
PFHxS	63-132	64	62
PFHxA	69-139	67	70
PFOSA	67-126	59	63
PFTeDA	69-141	62	66
PFTTrDA	66-146	66	60
PFUnDA	66-140	62	67

The positive associated field duplicate results were qualified J-,l, while non-detects were qualified UJ,l. In addition, the LCS/LCSD displayed a relative percent difference (RPD) greater than the QC limit of 30% for NMeFOSAA at 31%. The associated field sample results were non-detect; no data qualifying action was required. The following field samples displayed extracted internal standard recoveries (EIS) outside the laboratory QC limits:

Sample ID	EIS	Associated Target Compound(s)	QC Limits (%)	Area Count (%)
1465298 MW-19-02	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	171
	¹³ C ₂ -6:2-FTS	6:2 FTS	29-182	185
1465298 MW-10-02 MS	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	189
	¹³ C ₂ -6:2-FTS	6:2 FTS	29-182	197
	¹³ C ₈ -PFOSA	PFOSA	10-134	4
	d ₇ -NMePFOSAE	NMePFOSAE	10-137	3
	d ₃ -NMePFOSA	NMePFOSA	10-107	2
	d ₉ -NEtPFOSAE	NEtPFOSAE	10-135	4
	d ₅ -NEtPFOSA	NEtPFOSA	10-107	1
1465298 MW-10-02 MSD	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	192
	¹³ C ₂ -6:2-FTS	6:2 FTS	29-182	213
1465302 DUP1-SW	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	201
1465299 MW19-03	d ₃ -NMePFOSA	NMePFOSA	10-107	8
	d ₅ -NEtPFOSA	NEtPFOSA	10-107	8
1465307-IDW-GW	¹³ C ₃ -PFBS	PFBS, PFPeS	23-175	199
	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	202
	¹³ C ₂ -6:2-FTS	6:2 FTS	29-182	211
	¹³ C ₉ -PFNA	PFNA	48-130	133
	¹³ C ₂ -8:2-FTS	8:2 FTS	37-169	174
1465311 IDW-Soil	¹³ C ₄ -PFBA	PFBA	40-117	118
	¹³ C ₅ -PFHxA	PFHxA	36-120	124
	¹³ C ₉ -PFNA	PFNA	39-123	130
19317001-MB	¹³ C ₄ -PFBA	PFBA	40-117	124
	¹³ C ₅ -PFPeA	PFPeA	38-118	130
	¹³ C ₅ -PFHxA	PFHxA	36-120	121
	¹³ C ₂ -6:2-FTS	6:2 FTS	25-154	156
	¹³ C ₈ -PFOA	PFOA	44-115	122
	¹³ C ₉ -PFNA	PFNA	39-123	121
	¹³ C ₆ -PFDA	PFDA	43-118	121
	¹³ C ₈ -PFOSA	PFOSA	31-127	131
1465311 IDW-Soil Leachate	¹³ C ₄ -PFBA	PFBA	43-130	42
	¹³ C ₈ -PFOA	PFOA	52-124	49
	¹³ C ₈ -PFOS	PFOS	52-121	50
	d ₇ -NMePFOSAE	NMePFOSAE	10-137	6
	d ₃ -NMePFOSA	NMePFOSA	10-107	2
	d ₉ -NEtPFOSAE	NEtPFOSAE	10-135	6
	d ₅ -NEtPFOSA	NEtPFOSA	10-107	2
1465313-SW19-02	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	194
	¹³ C ₄ -PFHpA	PFHpA	33-140	142
	¹³ C ₈ -PFOA	PFOA	52-124	130
	¹³ C ₆ -PFDA	PFDA	50-124	125
1465314-SW19-03	¹³ C ₂ -4:2-FTS	4:2 FTS	22-169	182
19329002-MB	¹³ C ₄ -PFBA	PFBA	43-130	132
	¹³ C ₈ -PFOS	PFOS	52-121	133
	¹³ C ₉ -PFNA	PFNA	48-130	134
	¹³ C ₆ -PFDA	PFDA	50-124	142
	¹³ C ₇ -PFUnDA	PFUnDA	44-128	149
	D ₅ -NetFOSAA	NEtFOSAA	42-149	154
	¹³ C ₂ -PFDoDA	PFDoDA, PFTrDA	36-127	137
	¹³ C ₈ -PFOSA	PFOSA	10-134	139

The positive field sample results associated with the high EIS recoveries were qualified J-,i, unless previously qualified due to a LCS recovery anomaly. The positive field sample results associated with the low EIS recoveries were qualified J+,i, while non-detects were qualified UJ,i. The field duplicate pairs performed on field samples 1465299 MW19-03 and 1465300 SW19-01 displayed field duplicate precision results out of QC limits for 6:2 FTS. The positive associated field duplicate results were qualified J,f. The laboratory received a cooler at temperatures greater than the recommended 6°C for the samples submitted in sample delivery group 2075318 at 8.3°C. The positive associated field sample results were qualified J,t while non-detects were qualified UJ,t, unless previously qualified due to a LCS or EIS recovery anomaly.

Correctable

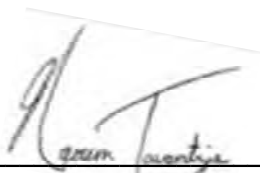
Anomalies:

The laboratory noted that several field samples were associated with a continuing calibration verification recovery greater than the upper QC limit for NMeFOSAA. While this is out of the scope of a level II review, this would not have resulted in qualification since the associated field sample results were non-detect.

Comments:

Only the PFAS data was reviewed and addressed in this report. On the basis of this evaluation, the laboratory appears to have followed the specified method, with the exception of anomalies discussed previously. All data are usable, as qualified, for their intended purposed based on the quality control data reviewed.

Signed:



Naoum Tavantzis

Analyte	Unit	1465298 MW-19-02				1465299 MW19-03				1465301 DUP1-GW				1465300 SW19-01				1465302 DUP1-SW				1465305 Equ2-WLT				1465306 Equ1-Drill Rod Rinsate			
		Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC
10:2 FTS	ng/L	ND				ND				ND				ND				ND				ND				ND			
4:2 FTS	ng/L	ND				2.2				2.1				13				13		J-	i	ND				ND			
6:2 FTS	ng/L	1.8	U	U	bf	520		J	f	350		J	f	1600		J	f	3400		J	f	ND				3.1	J		
8:2 FTS	ng/L	ND				ND				ND				8.1				7.8				ND				ND			
NEtFOSAA	ng/L	ND				ND				ND				ND				ND				ND				ND			
NEtPFOSA	ng/L	ND				ND		UJ	i	ND				ND				ND				ND				ND			
NEtPFOSAE	ng/L	ND				ND				ND				ND				ND				ND				ND			
NMeFOSAA	ng/L	ND				ND	Z			ND				ND				ND	Z			ND	Z			ND	Z		
NMePFOSA	ng/L	ND				ND		UJ	i	ND				ND				ND				ND				ND			
NMePFOSAE	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFBS	ng/L	0.47	J			0.58	J			0.52	J			ND				ND				ND				ND			
PFBA	ng/L	ND				130				110				100				110				ND				ND			
PFDS	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFDA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFDoDS	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFDoDA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFHpS	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFHpA	ng/L	1.2	J			61				65				56				51				ND				ND			
PFHxDA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFHxS	ng/L	0.85	U	U	bf	6.5	U	U	bf	6.6	U	U	bf	0.77	U	U	bf	0.78	U	U	bf	ND				1.2	J		
PFHxA	ng/L	2.5	J			290				270				360				320				ND				ND			
PFNS	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFNA	ng/L	ND				1.5	J			1.6	J			2.3				2.0				ND				ND			
PFODA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFOSA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFOS	ng/L	1.6	J			4.1				4.7				0.55	J			0.71	J			ND				ND			
PFOA	ng/L	0.97	J			11				9.7				17				17				ND				ND			
PFPeS	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFPeA	ng/L	5.4				1000				700				630				720				ND				ND			
PFTeDA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFTTrDA	ng/L	ND				ND				ND				ND				ND				ND				ND			
PFUnDA	ng/L	ND				ND				ND				ND				ND				ND				ND			

Definitions

- U The analyte was analyzed for, but not detected at a level greater than or equal to the level of the adjusted Detection Limit
- J The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample
- J- Reported value may not be accurate or precise, but the result may be biased low.
- J+ Reported value may not be accurate or precise, but the result may be biased high.
- Z Target analyte(s) in the CCV standard are outside laboratory QC limits.

Reason Codes

- bf Field Blank contamination
- i Internal standard anomaly
- f Field duplicate imprecision
- | Laboratory control limit
- percent recovery anomaly

Analyte	Unit	1465307-IDW-GW				1465308 Trip Blank				1465311 IDW-Soil Leachate				1465313-SW19-02				1465314-SW19-03			
		Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC	Result	LF	DV	RC
10:2 FTS	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
4:2 FTS	ng/L	1.1	J	J-	i	ND				ND				1.1	J	J-	l	1.3	J	J-	l
6:2 FTS	ng/L	190				ND				33				67		J-	t	81		J-	t
8:2 FTS	ng/L	ND				ND				ND				2.5	J	J-	t	7.3		J-	t
NEtFOSAA	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
NEtPFOSA	ng/L	ND				ND				ND		UJ	i	ND		UJ	t	ND		UJ	t
NEtPFOSAE	ng/L	ND				ND				ND		UJ	i	ND		UJ	t	ND		UJ	t
NMeFOSAA	ng/L	ND	Z			ND	Z			ND				ND		UJ	l	ND		UJ	l
NMePFOSA	ng/L	ND				ND				ND		UJ	i	ND		UJ	t	ND		UJ	t
NMePFOSAE	ng/L	ND				ND				ND		UJ	i	ND		UJ	t	ND		UJ	t
PFBS	ng/L	ND				ND				ND				ND		UJ	l	1.1	J	J-	l
PFBA	ng/L	54				ND				ND		J+	i	8.4		J-	t	11		J-	t
PFDS	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFDA	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFDoDS	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFDoDA	ng/L	ND				ND				ND				ND		UJ	l	ND		UJ	l
PFHpS	ng/L	ND				ND				ND				ND		UJ	t	1.3	J	J-	t
PFHpA	ng/L	28				ND				ND				7.4		J-	l	17		J-	l
PFHxDA	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFHxS	ng/L	2.4				ND				ND				6.7		J-	l	21		J-	l
PFHxA	ng/L	120				ND				1.6	J			26		J-	l	40		J-	l
PFNS	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFNA	ng/L	0.66	J	J-	i	ND				ND				0.55	J	J-	t	1.7	J	J-	t
PFODA	ng/L	ND				ND				ND				ND		UJ	t	ND		UJ	t
PFOSA	ng/L	ND				ND				ND				ND		UJ	l	ND		UJ	l
PFOS	ng/L	2.5				ND				28		J+	i	29		J-	t	120		J-	t
PFOA	ng/L	4.2				ND				5.9		J+	i	4.4		J-	i	12		J-	t
PFPeS	ng/L	ND				ND				ND				ND		UJ	t	1.4	J	J-	t
PFPeA	ng/L	450				ND				2.6	J			50		J-	t	75		J-	t
PFTeDA	ng/L	ND				ND				ND				ND		UJ	l	ND		UJ	l
PFTTrDA	ng/L	ND				ND				ND				ND		UJ	l	ND		UJ	l
PFUnDA	ng/L	ND				ND				ND				ND		UJ	l	ND		UJ	l

Analyte	Unit	1465311 IDW-Soil			
		Result	LF	DV	RC
10:2 FTS	ng/g	ND			
4:2 FTS	ng/g	ND			
6:2 FTS	ng/g	ND			
8:2 FTS	ng/g	ND			
NEtFOSAA	ng/g	ND			
NEtPFOSA	ng/g	ND			
NEtPFOSAE	ng/g	ND			
NMeFOSAA	ng/g	ND			
NMePFOSA	ng/g	ND			
NMePFOSAE	ng/g	ND			
PFBS	ng/g	ND			
PFBA	ng/g	ND			
PFDS	ng/g	ND			
PFDA	ng/g	ND			
PFDoDS	ng/g	ND			
PFDoSA	ng/g	ND			
PFHpS	ng/g	ND			
PFHpA	ng/g	ND			
PFHxDA	ng/g	ND			
PFHxS	ng/g	ND			
PFHxA	ng/g	ND			
PFNS	ng/g	ND			
PFNA	ng/g	ND			
PFODA	ng/g	ND			
PFOSA	ng/g	ND			
PFOS	ng/g	ND			
PFOA	ng/g	ND			
PFPeS	ng/g	ND			
PFPeA	ng/g	ND			
PFTeDA	ng/g	ND			
PFTTrDA	ng/g	ND			
PFUnDA	ng/g	ND			

Definitions

LF=Laboratory Flag

DV=Data Validation Flag

RC= Reason Code

ND= Non-detect

Iqaluit Field Duplicates

1

Client Sample ID: 1465299 1465301
MW19-03 DUP1-GW
Date Sampled: 11/5/19 11/5/19

	Units	LOQ	5x LOQ	Sample Conc		Duplicate Conc		% RPD	Delta	2x LOQ	Pass/ Fail
Perfluorinated Alkyl Substances											
4:2 FTS	ng/L	2.0	10	2.2		2.1		4.7%	0.10	4.0	Pass
6:2 FTS	ng/L	5.0	25	520		350		39.1%	170	10	Fail
PFBS	ng/L	2.0	10	0.58	J	0.52	J	10.9%	0.060	4.0	Pass
PFBA	ng/L	5.0	25	130		110		16.7%	20	10	Pass
PFHpA	ng/L	2.0	10	61		65		6.3%	4.0	4.0	Pass
PFHxS	ng/L	2.0	10	6.5	U	6.6	U	1.5%	0.10	4.0	Pass
PFHxA	ng/L	2.0	10.0	290		270		7.1%	20	4.0	Pass
PFNA	ng/L	2.0	10	1.5	J	1.6	J	6.5%	0.10	4.0	Pass
PFOS	ng/L	2.0	10	4.1		4.7		13.6%	0.60	4.0	Pass
PFOA	ng/L	2.0	10	11		9.7		12.6%	1.3	4.0	Pass
PFPeA	ng/L	20.0	100	1000		700		35.3%	300	40	Fail

Control limit [sample]>5xLOQ use 30%
[sample]<5xLOQ use Delta<2xLOQ

Iqaluit Field Duplicates

2

Client Sample ID: 1465300 1465302
SW19-01 DUP1-SW
Date Sampled: 11/1/19 11/1/19

	Units	LOQ	5x LOQ	Sample Conc	Duplicate Conc	% RPD	Delta	2x LOQ	Pass/ Fail
Perfluorinated Alkyl Substances									
4:2 FTS	ng/L	1.8	9.0	13	13	0.0%	0.0	3.6	Pass
6:2 FTS	ng/L	440	2200	1600	3400	72.0%	1800	880	Fail
8:2 FTS	ng/L	2.6	13	8.1	7.8	3.8%	0.30	5.2	Pass
PFBA	ng/L	4.4	22	100	110	9.5%	10	8.8	Pass
PFHpA	ng/L	1.8	9.0	56	51	9.3%	5.0	3.6	Pass
PFHxS	ng/L	1.8	9.0	0.77 U	0.78 U	1.3%	0.010	3.6	Pass
PFHxA	ng/L	1.8	9.0	360	320	11.8%	40	3.6	Pass
PFNA	ng/L	1.8	9.0	2.3	2.0	14.0%	0.30	3.6	Pass
PFOS	ng/L	1.8	9.0	0.55 J	0.71 J	25.4%	0.16	3.6	Pass
PFOA	ng/L	1.8	9.0	17	17	0.0%	0.0	3.6	Pass
PFPeA	ng/L	18	90	630	720	13.3%	90	36	Pass

Control limit [sample]>5xLOQ use 30%
[sample]<5xLOQ use Delta<2xLOQ

Sample Description: 1465298 MW-19-02 Groundwater
1920595

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/05/2019

Eurofins Environmental Testing
ELLE Sample #: GW 1199376
ELLE Group #: 2074059
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified						
			ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	1.8 J	1.8	4.4	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.47 J	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	1.2 J	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.85 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	2.5	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	1.6 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	0.97 J	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	5.4	0.44	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

The recovery for extraction standards is outside of the QC acceptance limits as noted on the QC Summary. The recovery for extraction

*=This limit was used in the evaluation of the final result

Sample Description: 1465299 MW19-03 Groundwater
1920595Eurofins Environmental Testing
ELLE Sample #: GW 1199379
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	EPA 537 Version 1.1 Modified		ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.97	4.8	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	2.2	0.48	1.9	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	520	19	48	10
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.97	2.9	1
14473	NEtFOSAA	2991-50-6	N.D.	0.48	2.9	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.97	4.8	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.97	2.9	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.58	1.9	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.97	2.9	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.97	2.9	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.58 J	0.48	1.9	1
14473	Perfluorobutanoic acid	375-22-4	130	1.9	4.8	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.48	1.9	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.48	1.9	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.48	2.9	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.48	1.9	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.48	1.9	1
14473	Perfluoroheptanoic acid	375-85-9	61	0.48	1.9	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.97	2.9	1
14473	Perfluorohexanesulfonic acid	355-46-4	6.5	0.48	1.9	1
14473	Perfluorohexanoic acid	307-24-4	290	0.48	1.9	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.48	1.9	1
14473	Perfluorononanoic acid	375-95-1	1.5 J	0.48	1.9	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.97	2.9	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.48	1.9	1
14473	Perfluorooctanesulfonic acid	1763-23-1	4.1	0.48	1.9	1
14473	Perfluorooctanoic acid	335-67-1	11	0.48	1.9	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.48	1.9	1
14473	Perfluoropentanoic acid	2706-90-3	1,000	4.8	19	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.48	1.9	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.48	1.9	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.48	1.9	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*This limit was used in the evaluation of the final result

Sample Description: 1465300 SW19-01 Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199380
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous		EPA 537 Version 1.1 Modified	ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	13	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	1,600	18	44	10
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	8.1	0.88	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	100	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	56	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.77 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	360	4.4	18	10
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	2.3	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	0.55 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	17	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	630	4.4	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465301 DUP1-GW Groundwater
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199381
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/05/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous		EPA 537 Version 1.1 Modified	ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.99	5.0	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	2.1	0.50	2.0	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	350	2.0	5.0	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.99	3.0	1
14473	NEtFOSAA	2991-50-6	N.D.	0.50	3.0	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.99	5.0	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.99	3.0	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.59	2.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.99	3.0	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.99	3.0	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	0.52 J	0.50	2.0	1
14473	Perfluorobutanoic acid	375-22-4	110	2.0	5.0	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.50	2.0	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.50	2.0	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.50	3.0	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.50	2.0	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.50	2.0	1
14473	Perfluoroheptanoic acid	375-85-9	65	0.50	2.0	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.99	3.0	1
14473	Perfluorohexanesulfonic acid	355-46-4	6.6	0.50	2.0	1
14473	Perfluorohexanoic acid	307-24-4	270	0.50	2.0	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.50	2.0	1
14473	Perfluorononanoic acid	375-95-1	1.6 J	0.50	2.0	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.99	3.0	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.50	2.0	1
14473	Perfluorooctanesulfonic acid	1763-23-1	4.7	0.50	2.0	1
14473	Perfluorooctanoic acid	335-67-1	9.7	0.50	2.0	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.50	2.0	1
14473	Perfluoropentanoic acid	2706-90-3	700	5.0	20	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.50	2.0	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.50	2.0	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.50	2.0	1

*=This limit was used in the evaluation of the final result

Sample Description: 1465302 DUP1-SW Groundwater
1920595Eurofins Environmental Testing
ELLE Sample #: GW 1199382
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	EPA 537 Version 1.1 Modified		ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	13	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	3,400	180	440	100
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	7.8	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	110	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	51	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	0.78 J	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	320	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	2.0	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	0.71 J	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	17	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	720	4.4	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

The recovery for extraction standard 13C2-4:2-FTS is outside of the QC acceptance limits as noted on the QC Summary. The following

*=This limit was used in the evaluation of the final result

Sample Description: **1465305 Equ2-WLT Groundwater
1920595**Eurofins Environmental Testing
ELLE Sample #: **GW 1199383**
ELLE Group #: **2074059**
Matrix: **Groundwater**Project Name: **1920595**Submittal Date/Time: **11/08/2019 10:02**Collection Date/Time: **11/04/2019**

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	EPA 537 Version 1.1 Modified		ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.87	4.3	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.43	1.7	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.7	4.3	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.87	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.43	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.87	4.3	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.87	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.52	1.7	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.87	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.87	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.43	1.7	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.7	4.3	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.43	1.7	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.7	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.43	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.7	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.43	1.7	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.43	1.7	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.87	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.43	1.7	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.7	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.43	1.7	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.43	1.7	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.87	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.43	1.7	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.43	1.7	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.7	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.43	1.7	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.43	1.7	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.43	1.7	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.43	1.7	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.7	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465306 Equ1-Drill Rod Rinsate Groundwater
1920595Eurofins Environmental Testing
ELLE Sample #: GW 1199384
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 10/30/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.90	4.5	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.45	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	3.1 J	1.8	4.5	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.90	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.45	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.90	4.5	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.90	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.54	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.90	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.90	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.45	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.5	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.45	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.45	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.45	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.45	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.90	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	1.3 J	0.45	1.8	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.45	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.45	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.90	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.45	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.45	1.8	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.45	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.45	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.45	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.45	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

* = This limit was used in the evaluation of the final result

Sample Description: 1465307 -IDW-GW Groundwater
1920595Eurofins Environmental Testing
ELLE Sample #: GW 1199385
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	EPA 537 Version 1.1 Modified		ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.91	4.6	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	1.1 J	0.46	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	190	1.8	4.6	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.91	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.46	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.91	4.6	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.91	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.55	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.91	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.91	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.46	1.8	1
14473	Perfluorobutanoic acid	375-22-4	54	1.8	4.6	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.46	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.46	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.46	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	28	0.46	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.91	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	2.4	0.46	1.8	1
14473	Perfluorohexanoic acid	307-24-4	120	0.46	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.46	1.8	1
14473	Perfluorononanoic acid	375-95-1	0.66 J	0.46	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.91	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.46	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	2.5	0.46	1.8	1
14473	Perfluorooctanoic acid	335-67-1	4.2	0.46	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.46	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	450	4.6	18	10
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.46	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.46	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

* = This limit was used in the evaluation of the final result

Sample Description: 1465308 Trip Blank Water
1920595

Eurofins Environmental Testing
ELLE Sample #: GW 1199386
ELLE Group #: 2074059
Matrix: Groundwater

Project Name: 1920595

Submittal Date/Time: 11/08/2019 10:02

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.88	4.4	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.44	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	1.8	4.4	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.88	2.6	1
14473	NEtFOSAA	2991-50-6	N.D.	0.44	2.6	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.88	4.4	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.88	2.6	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D. Z	0.53	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.88	2.6	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.88	2.6	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.44	1.8	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	1.8	4.4	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.44	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.44	2.6	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.44	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	0.44	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.88	2.6	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.44	1.8	1
14473	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.44	1.8	1
14473	Perfluorononanoic acid	375-95-1	N.D.	0.44	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.88	2.6	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.44	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.44	1.8	1
14473	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.44	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	N.D.	0.44	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.44	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.44	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.8	1

Z = A target analyte(s) in the closing continuing calibration verification standard is outside the QC acceptance limits. Since the result is high

*=This limit was used in the evaluation of the final result

Sample Description: 1465311 IDW-Soil Soil
1920598

Eurofins Environmental Testing
ELLE Sample #: SW 1199388
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/g	ng/g	ng/g	
14027	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.61	2.0	1
14027	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	0.61	2.0	1
14027	6:2-Fluorotelomersulfonic acid	27619-97-2	N.D.	0.61	2.0	1
14027	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	0.61	3.1	1
14027	NEtFOSAA	2991-50-6	N.D.	0.20	2.0	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14027	NEtPFOSA	4151-50-2	N.D.	0.51	2.0	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14027	NEtPFOSAE	1691-99-2	N.D.	0.51	2.0	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14027	NMeFOSAA	2355-31-9	N.D.	0.20	2.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14027	NMePFOSA	31506-32-8	N.D.	0.51	2.0	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14027	NMePFOSAE	24448-09-7	N.D.	0.51	2.0	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14027	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.41	2.0	1
14027	Perfluorobutanoic acid	375-22-4	N.D.	0.82	2.0	1
14027	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.20	0.61	1
14027	Perfluorodecanoic acid	335-76-2	N.D.	0.20	0.61	1
14027	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.20	2.0	1
14027	Perfluorododecanoic acid	307-55-1	N.D.	0.20	0.61	1
14027	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.20	0.61	1
14027	Perfluoroheptanoic acid	375-85-9	N.D.	0.20	0.61	1
14027	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.20	0.61	1
14027	Perfluorohexanesulfonic acid	355-46-4	N.D.	0.20	0.61	1
14027	Perfluorohexanoic acid	307-24-4	N.D.	0.20	0.61	1
14027	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.20	0.61	1
14027	Perfluorononanoic acid	375-95-1	N.D.	0.20	0.61	1
14027	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.20	0.61	1
14027	Perfluorooctanesulfonamide	754-91-6	N.D.	0.20	0.61	1
14027	Perfluorooctanesulfonic acid	1763-23-1	N.D.	0.20	0.61	1
14027	Perfluorooctanoic acid	335-67-1	N.D.	0.20	0.61	1
14027	Perfluoropentanesulfonate	2706-91-4	N.D.	0.20	0.61	1
14027	Perfluoropentanoic acid	2706-90-3	N.D.	0.20	0.61	1
14027	Perfluorotetradecanoic acid	376-06-7	N.D.	0.20	0.61	1
14027	Perfluorotridecanoic acid	72629-94-8	N.D.	0.20	0.61	1
14027	Perfluoroundecanoic acid	2058-94-8	N.D.	0.20	0.61	1

The recovery for labeled compound used as extraction standards is outside of QC acceptance limits as noted on the QC Summary.

*=This limit was used in the evaluation of the final result

Sample Description: 1465311 IDW-Soil Soil
SPLP Leachate
1920598

Eurofins Environmental Testing
ELLE Sample #: TL 1199389
ELLE Group #: 2074061
Matrix: Soil

Project Name: 1920598

Submittal Date/Time: 11/08/2019 10:02
Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified			ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	2.5	12	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	N.D.	1.2	5.0	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	33	5.0	12	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	N.D.	2.5	7.5	1
14473	NEtFOSAA	2991-50-6	N.D.	1.2	7.5	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	2.5	12	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	2.5	7.5	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	1.5	5.0	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	2.5	7.5	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	2.5	7.5	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	1.2	5.0	1
14473	Perfluorobutanoic acid	375-22-4	N.D.	5.0	12	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	1.2	5.0	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	1.2	5.0	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	1.2	7.5	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	1.2	5.0	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	1.2	5.0	1
14473	Perfluoroheptanoic acid	375-85-9	N.D.	1.2	5.0	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	2.5	7.5	1
14473	Perfluorohexanesulfonic acid	355-46-4	N.D.	1.2	5.0	1
14473	Perfluorohexanoic acid	307-24-4	1.6 J	1.2	5.0	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	1.2	5.0	1
14473	Perfluorononanoic acid	375-95-1	N.D.	1.2	5.0	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	2.5	7.5	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	1.2	5.0	1
14473	Perfluorooctanesulfonic acid	1763-23-1	28	1.2	5.0	1
14473	Perfluorooctanoic acid	335-67-1	5.9	1.2	5.0	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	1.2	5.0	1
14473	Perfluoropentanoic acid	2706-90-3	2.6 J	1.2	5.0	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	1.2	5.0	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	1.2	5.0	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	1.2	5.0	1

The recovery for a target analyte(s) in the Laboratory Control

*=This limit was used in the evaluation of the final result

Sample Description: 1465313-SW19-02 Grab Surface Water

Project Name: 1920600

Eurofins Environmental Testing
ELLE Sample #: WW 1205260
ELLE Group #: 2075318
Matrix: Surface Water

Submittal Date/Time: 11/19/2019 10:15

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous	EPA 537 Version 1.1 Modified		ng/l	ng/l	ng/l	
14473	10:2-Fluorotelomersulfonic acid	120226-60-0	N.D.	0.93	4.6	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	1.1 J	0.46	1.9	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	67	1.9	4.6	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	2.5 J	0.93	2.8	1
14473	NEtFOSAA	2991-50-6	N.D.	0.46	2.8	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.93	4.6	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.93	2.8	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.56	1.9	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.93	2.8	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.93	2.8	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	N.D.	0.46	1.9	1
14473	Perfluorobutanoic acid	375-22-4	8.4	1.9	4.6	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.46	1.9	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.9	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.46	2.8	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.9	1
14473	Perfluoroheptanesulfonic acid	375-92-8	N.D.	0.46	1.9	1
14473	Perfluoroheptanoic acid	375-85-9	7.4	0.46	1.9	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.93	2.8	1
14473	Perfluorohexanesulfonic acid	355-46-4	6.7	0.46	1.9	1
14473	Perfluorohexanoic acid	307-24-4	26	0.46	1.9	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.46	1.9	1
14473	Perfluorononanoic acid	375-95-1	0.55 J	0.46	1.9	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.93	2.8	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.46	1.9	1
14473	Perfluorooctanesulfonic acid	1763-23-1	29	0.46	1.9	1
14473	Perfluorooctanoic acid	335-67-1	4.4	0.46	1.9	1
14473	Perfluoropentanesulfonate	2706-91-4	N.D.	0.46	1.9	1
14473	Perfluoropentanoic acid	2706-90-3	50	0.46	1.9	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.46	1.9	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.46	1.9	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.9	1

The holding time was not met. The sample was submitted to the laboratory outside of the holding time.

*=This limit was used in the evaluation of the final result

Sample Description: 1465314-SW19-03 Grab Surface Water

Project Name: 1920600

Eurofins Environmental Testing

ELLE Sample #: WW 1205261

ELLE Group #: 2075318

Matrix: Surface Water

Submittal Date/Time: 11/19/2019 10:15

Collection Date/Time: 11/01/2019

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
LC/MS/MS Miscellaneous		EPA 537 Version 1.1 Modified	ng/l	ng/l	ng/l	
14473	10:2Fluorotelomersulfonic acid	120226-60-0	N.D.	0.90	4.5	1
14473	4:2-Fluorotelomersulfonic acid	757124-72-4	1.3 J	0.45	1.8	1
14473	6:2-Fluorotelomersulfonic acid	27619-97-2	81	1.8	4.5	1
14473	8:2-Fluorotelomersulfonic acid	39108-34-4	7.3	0.90	2.7	1
14473	NEtFOSAA	2991-50-6	N.D.	0.45	2.7	1
	NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid.					
14473	NEtPFOSA	4151-50-2	N.D.	0.90	4.5	1
	NEtPFOSA is the acronym for N-ethylperfluoro-1-octanesulfonamide					
14473	NEtPFOSAE	1691-99-2	N.D.	0.90	2.7	1
	NEtPFOSAE is the acronym for 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol					
14473	NMeFOSAA	2355-31-9	N.D.	0.54	1.8	1
	NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid.					
14473	NMePFOSA	31506-32-8	N.D.	0.90	2.7	1
	NMePFOSA is the acronym for N-methylperfluoro-1-octanesulfonamide					
14473	NMePFOSAE	24448-09-7	N.D.	0.90	2.7	1
	NMePFOSAE is the acronym for 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol					
14473	Perfluorobutanesulfonic acid	375-73-5	1.1 J	0.45	1.8	1
14473	Perfluorobutanoic acid	375-22-4	11	1.8	4.5	1
14473	Perfluorodecanesulfonic acid	335-77-3	N.D.	0.45	1.8	1
14473	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.8	1
14473	Perfluorododecanesulfonic acid	79780-39-5	N.D.	0.45	2.7	1
14473	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.8	1
14473	Perfluoroheptanesulfonic acid	375-92-8	1.3 J	0.45	1.8	1
14473	Perfluoroheptanoic acid	375-85-9	17	0.45	1.8	1
14473	Perfluorohexadecanoic acid	67905-19-5	N.D.	0.90	2.7	1
14473	Perfluorohexanesulfonic acid	355-46-4	21	0.45	1.8	1
14473	Perfluorohexanoic acid	307-24-4	40	0.45	1.8	1
14473	Perfluorononanesulfonic acid	68259-12-1	N.D.	0.45	1.8	1
14473	Perfluorononanoic acid	375-95-1	1.7 J	0.45	1.8	1
14473	Perfluorooctadecanoic acid	16517-11-6	N.D.	0.90	2.7	1
14473	Perfluorooctanesulfonamide	754-91-6	N.D.	0.45	1.8	1
14473	Perfluorooctanesulfonic acid	1763-23-1	120	0.45	1.8	1
14473	Perfluorooctanoic acid	335-67-1	12	0.45	1.8	1
14473	Perfluoropentanesulfonate	2706-91-4	1.4 J	0.45	1.8	1
14473	Perfluoropentanoic acid	2706-90-3	75	0.45	1.8	1
14473	Perfluorotetradecanoic acid	376-06-7	N.D.	0.45	1.8	1
14473	Perfluorotridecanoic acid	72629-94-8	N.D.	0.45	1.8	1
14473	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.8	1

The holding time was not met. The sample was submitted to the laboratory outside of the holding time.

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Perfluorohexanesulfonic acid	0.847	22.02	20.45	21.78	19.22	89	84	63-132	6	30
Perfluorohexanoic acid	2.55	23.3	23.24	23.04	22.73	89	88	69-139	2	30
Perfluorononanesulfonic acid	N.D.	22.35	22.14	22.1	22.27	99	101	70-137	1	30
Perfluorononanoic acid	N.D.	23.3	21.94	23.04	22.06	94	96	66-144	1	30
Perfluorooctadecanoic acid	N.D.	23.3	24.74	23.04	23.19	106	101	47-159	6	30
Perfluorooctanesulfonamide	N.D.	23.3	22.31	23.04	20.99	96	91	67-126	6	30
Perfluorooctanesulfonic acid	1.59	22.28	18.41	22.03	19.46	75	81	53-129	6	30
Perfluorooctanoic acid	0.971	23.3	22.1	23.04	22.35	91	93	67-139	1	30
Perfluoropentanesulfonate	N.D.	21.84	23.81	21.6	25.25	109	117	73-134	6	30
Perfluoropentanoic acid	5.37	23.3	29.19	23.04	28.36	102	100	73-135	3	30
Perfluorotetradecanoic acid	N.D.	23.3	21.87	23.04	21.43	94	93	69-141	2	30
Perfluorotridecanoic acid	N.D.	23.3	21.41	23.04	19.37	92	84	66-146	10	30
Perfluoroundecanoic acid	N.D.	23.3	21.9	23.04	21.79	94	95	66-140	1	30

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19317001

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4,2-FTS	13C5-PFHxA	13C3-PFHxS
1199376	83	108	141	171*	65	75
1199377	84	111	162	189*	72	84
1199378	85	112	160	192*	72	90
1199379	84	96	151	153	62	84
1199381	80	93	142	124	59	80
1199382	88	99	141	201*	97	107
1199383	86	84	83	96	89	95
1199384	80	79	77	85	76	76
1199385	109	127	199*	202*	81	104
1199386	79	81	77	84	82	80
Blank	90	88	86	97	99	94
LCS	87	85	82	88	85	88
MS	84	111	162	189*	72	84
MSD	85	112	160	192*	72	90
Limits:	43-130	38-150	23-175	22-169	36-137	35-143

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19317001

	13C4-PFHpA ✓	13C2-6-2-FTS	13C8-PFOA ✓	13C8-PFOS ✓	13C9-PFNA ✓	13C6-PFDA ✓
1199376	82	185*	84	82	100	79
1199377	91	197*	92	93	107	89
1199378	91	213*	91	90	111	89
1199379	96	161	85	85	101	93
1199381	83	147	81	84	93	78
1199382	114	158	85	87	93	89
1199383	86	100	88	92	91	91
1199384	78	93	78	81	81	74
1199385	111	211*	110	110	133*	107
1199386	78	87	79	81	81	82
Blank	94	105	93	91	91	83
LCS	88	93	87	86	83	91
MS	91	197*	92	93	107	89
MSD	91	213*	91	90	111	89
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8-2-FTS ✓	d3-NMeFOSAA ✓	13C7-PFUnDA ✓	d5-NEtFOSAA ✓	13C2-PFDoDA ✓	13C2-PFTeDA ✓
1199376	134	71	82	95	80	67
1199377	147	67	85	81	80	73
1199378	147	79	89	91	87	73
1199379	145	82	97	126	81	75
1199381	129	80	83	100	62	56
1199382	109	78	83	95	81	67
1199383	101	89	102	123	98	95
1199384	100	74	77	110	55	76
1199385	174*	93	102	116	100	84
1199386	82	77	83	93	86	85
Blank	84	81	83	88	85	79
LCS	89	92	96	96	87	88
MS	147	67	85	81	80	73
MSD	147	79	89	91	87	73
Limits:	37-169	36-143	44-128	42-149	36-127	21-134
	13C8-PFOA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEtPFOSAE	d5-NEtPFOSA	
1199376	62	52	26	54	26	
1199377	4*	3*	2*	4*	1*	
1199378	42	32	11	33	12	
1199379	45	24	8*	25	8*	
1199381	48	34	15	35	13	
1199382	54	36	12	32	11	

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 19317001

	13C8-PFOSA ✓	d7-NMePFOSAE ✓	d3-NMePFOSA ✓	d9-NEiPFOSAE ✓	d5-NEiPFOSA ✓
1199383	85	74	45	73	40
1199384	61	39	23	42	16
1199385	67	52	24	55	21
1199386	76	75	46	70	44
Blank	76	73	38	73	35
LCS	90	85	57	82	59
MS	4*	3*	2*	4*	1*
MSD	42	32	11	33	12
Limits:	10-134	10-137	10-107	10-135	10-107

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 19319014

	13C4-PFBA ✓	13C5-PFPeA ✓	13C3-PFBS ✓	13C2-4:2-FTS ✓	13C5-PFHxA ✓	13C3-PFHxS ✓
1199380	82	85	122	146	92	107
Blank	88	93	86	80	84	86
LCS	83	81	75	82	91	89
Limits:	43-130	38-150	23-175	22-169	36-137	35-143
	13C4-PFHpA ✓	13C2-6:2-FTS ✓	13C8-PFOA ✓	13C8-PFOS ✓	13C9-PFNA ✓	13C6-PFDA ✓
1199380	104	121	86	78	83	80
Blank	91	92	87	89	84	97
LCS	90	87	89	80	77	84
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8:2-FTS ✓	d3-NMeFOSAA ✓	13C7-PFUnDA ✓	d5-NEiFOSAA ✓	13C2-PFDoDA ✓	13C2-PFTeDA ✓
1199380	102	68	78	83	73	56
Blank	106	97	95	97	92	100
LCS	96	87	93	93	88	97
Limits:	37-169	36-143	44-128	42-149	36-127	21-134
	13C8-PFOSA ✓	d7-NMePFOSAE ✓	d3-NMePFOSA ✓	d9-NEiPFOSAE ✓	d5-NEiPFOSA ✓	
1199380	70	29	12	31	12	
Blank	92	81	44	80	43	
LCS	89	84	49	87	50	
Limits:	10-134	10-137	10-107	10-135	10-107	

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 19317001	Sample number(s): 1199376-1199379, 1199381-1199386		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0
Batch number: 19319014	Sample number(s): 1199380		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

Method Blank (continued)

Analysis Name	Result ng/l /	MDL** ng/l	LOQ ng/l
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC /	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19317001	Sample number(s): 1199376-1199379, 1199381-1199386								
10:2-Fluorotelomersulfonic acid	24.68	22.27			90		45-143		
4:2-Fluorotelomersulfonic acid	23.92	21.84			91		61-131		
6:2-Fluorotelomersulfonic acid	24.28	23.03			95		56-140		
8:2-Fluorotelomersulfonic acid	24.52	25.74			105		58-143		
NEtFOSAA	25.6	21.99			86		53-140		
NEtPFOSA	25.6	23.4			91		56-136		
NEtPFOSAE	25.6	23.02			90		56-130		
NMeFOSAA	25.6	23.69			93		59-141		

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
NMePFOSA	25.6	26.87			105		49-134		
NMePFOSAE	25.6	22.39			87		61-133		
Perfluorobutanesulfonic acid	22.64	20.47			90		67-135		
Perfluorobutanoic acid	25.6	24.7			96		63-160		
Perfluorodecanesulfonic acid	24.64	24.04			98		62-135		
Perfluorodecanoic acid	25.6	23.52			92		66-141		
Perfluorododecanesulfonic acid	24.8	22.99			93		57-134		
Perfluorododecanoic acid	25.6	22.04			86		65-143		
Perfluoroheptanesulfonic acid	24.36	23.42			96		67-138		
Perfluoroheptanoic acid	25.6	23.3			91		69-144		
Perfluorohexadecanoic acid	25.6	22.77			89		60-148		
Perfluorohexanesulfonic acid	24.2	21			87		63-132		
Perfluorohexanoic acid	25.6	22.48			88		69-139		
Perfluorononanesulfonic acid	24.56	23.84			97		70-137		
Perfluorononanoic acid	25.6	24.31			95		66-144		
Perfluorooctadecanoic acid	25.6	25.15			98		47-159		
Perfluorooctanesulfonamide	25.6	21.99			86		67-126		
Perfluorooctanesulfonic acid	24.48	19.49			80		53-129		
Perfluorooctanoic acid	25.6	22.94			90		67-139		
Perfluoropentanesulfonate	24	24.61			103		73-134		
Perfluoropentanoic acid	25.6	26.43			103		73-135		
Perfluorotetradecanoic acid	25.6	21.7			85		69-141		
Perfluorotridecanoic acid	25.6	25.05			98		66-146		
Perfluoroundecanoic acid	25.6	22.91			90		66-140		
Batch number: 19319014 Sample number(s): 1199380									
10:2-Fluorotelomersulfonic acid	24.68	22.93			93		45-143		
4:2-Fluorotelomersulfonic acid	23.92	23.58			99		61-131		
6:2-Fluorotelomersulfonic acid	24.28	25.78			106		56-140		
8:2-Fluorotelomersulfonic acid	24.52	21.71			89		58-143		
NEtFOSAA	25.6	22.95			90		53-140		
NEtPFOSA	25.6	24.93			97		56-136		
NEtPFOSAE	25.6	21.78			85		56-130		
NMeFOSAA	25.6	26.18			102		59-141		
NMePFOSA	25.6	28.16			110		49-134		
NMePFOSAE	25.6	25.07			98		61-133		
Perfluorobutanesulfonic acid	22.64	24.21			107		67-135		
Perfluorobutanoic acid	25.6	27.5			107		63-160		
Perfluorodecanesulfonic acid	24.64	24.16			98		62-135		
Perfluorodecanoic acid	25.6	24			94		66-141		
Perfluorododecanesulfonic acid	24.8	24.19			98		57-134		
Perfluorododecanoic acid	25.6	24.04			94		65-143		
Perfluoroheptanesulfonic acid	24.36	26.14			107		67-138		
Perfluoroheptanoic acid	25.6	24.92			97		69-144		

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/17/2019 12:05

Group Number: 2074059

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC ✓	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluorohexadecanoic acid	25.6	24.36			95		60-148		
Perfluorohexanesulfonic acid	24.2	21.13			87		63-132		
Perfluorohexanoic acid	25.6	24.52			96		69-139		
Perfluorononanesulfonic acid	24.56	28.36			115		70-137		
Perfluorononanoic acid	25.6	27.75			108		66-144		
Perfluorooctadecanoic acid	25.6	26.11			102		47-159		
Perfluorooctanesulfonamide	25.6	25.07			98		73-126		
Perfluorooctanesulfonic acid	24.48	20.62			84		53-129		
Perfluorooctanoic acid	25.6	23.42			91		67-139		
Perfluoropentanesulfonate	24	27.35			114		73-134		
Perfluoropentanoic acid	25.6	27.65			108		73-135		
Perfluorotetradecanoic acid	25.6	26.21			102		69-141		
Perfluorotridecanoic acid	25.6	24.67			96		66-146		
Perfluoroundecanoic acid	25.6	23.07			90		66-140		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 19317001	Sample number(s): 1199376-1199379, 1199381-1199386 UNSPK: 1199376 ✓									
10:2Fluorotelomersulfonic acid	N.D.	22.46	15.85	22.21	15.48	71	70	45-143	2	30
4:2-Fluorotelomersulfonic acid	N.D.	21.77	20.71	21.53	19.98	95	93	61-131	4	30
6:2-Fluorotelomersulfonic acid	1.76	22.1	22.74	21.85	21	95	88	56-140	8	30
8:2-Fluorotelomersulfonic acid	N.D.	22.31	21.28	22.07	21.82	95	99	58-143	3	30
NEtFOSAA	N.D.	23.3	20.55	23.04	20.26	88	88	53-140	1	30
NEtPFOSA	N.D.	23.3	21.89	23.04	20.6	94	89	56-136	6	30
NEtPFOSAE	N.D.	23.3	20.16	23.04	19.6	87	85	56-130	3	30
NMeFOSAA	N.D.	23.3	24.46	23.04	22.24	105	97	59-141	9	30
NMePFOSA	N.D.	23.3	18.38	23.04	21.47	79	93	49-134	15	30
NMePFOSAE	N.D.	23.3	19.08	23.04	19.93	82	86	61-133	4	30
Perfluorobutanesulfonic acid	0.470	20.6	19.53	20.37	19.64	93	94	67-135	1	30
Perfluorobutanoic acid	N.D.	23.3	25.15	23.04	22.74	108	99	63-160	10	30
Perfluorodecanesulfonic acid	N.D.	22.42	21.31	22.17	22.19	95	100	62-135	4	30
Perfluorodecanoic acid	N.D.	23.3	22.44	23.04	22.78	96	99	66-141	2	30
Perfluorododecanesulfonic acid	N.D.	22.57	21.09	22.32	21.92	93	98	57-134	4	30
Perfluorododecanoic acid	N.D.	23.3	20.46	23.04	18.85	88	82	65-143	8	30
Perfluoroheptanesulfonic acid	N.D.	22.17	22.12	21.92	20.55	100	94	67-138	7	30
Perfluoroheptanoic acid	1.21	23.3	21.58	23.04	21.91	87	90	69-144	2	30
Perfluorohexadecanoic acid	N.D.	23.3	22.71	23.04	21.89	97	95	60-148	4	30

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Perfluoroheptanesulfonic acid	24.36	20.96			86		67-138		
Perfluoroheptanoic acid	25.6	22.79			89		69-144		
Perfluorohexadecanoic acid	25.6	20.05			78		60-148		
Perfluorohexanesulfonic acid	24.2	18.39			76		63-132		
Perfluorohexanoic acid	25.6	21.43			84		69-139		
Perfluorononanesulfonic acid	24.56	23.5			96		70-137		
Perfluorononanoic acid	25.6	21.53			84		66-144		
Perfluorooctadecanoic acid	25.6	9.83			38*		47-159		
Perfluorooctanesulfonamide	25.6	21.33			83		67-126		
Perfluorooctanesulfonic acid	24.48	18.03			74		53-129		
Perfluorooctanoic acid	25.6	21.62			84		67-139		
Perfluoropentanesulfonate	24	21.52			90		73-134		
Perfluoropentanoic acid	25.6	23.94			94		73-135		
Perfluorotetradecanoic acid	25.6	20.31			79		69-141		
Perfluorotridecanoic acid	25.6	20.55			80		66-146		
Perfluoroundecanoic acid	25.6	21.8			85		66-140		
	Std. Units	Std. Units	Std. Units	Std. Units					
Batch number: 19317039404B	Sample number(s): 1199388								
pH	7.00	7.00			100		95-105		
	%	%	%	%					
Batch number: 19316820007B	Sample number(s): 1199388								
Moisture	89.5	89.46			100		99-101		

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed
unless otherwise noted on the analysis report.

Analysis Name: PFAS in Soil by LC/MS/MS

Batch number: 19318005

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4,2-FTS	13C5-PFHxA	13C3-PFHxS
1199388	118*	112	120	115	124*	113
Blank	124*	130*	120	127	121*	117
LCS	110	104	108	108	105	115
Limits:	40-117	38-118	38-120	28-137	36-120	38-124
	13C4-PFHpA	13C2-6,2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199388	116	130	112	114	130*	118

*- Outside of specification

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(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Soil by LC/MS/MS

Batch number: 19318005

	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
Blank	114	156*	122*	117	129*	121*
LCS	113	123	109	115	114	110
Limits:	39-120	25-154	44-115	45-118	39-123	43-118
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199388	130	125	121	127	119	121
Blank	147	122	123	132	114	119
LCS	124	115	116	121	112	120
Limits:	26-155	10-152	34-124	10-156	28-126	26-125
	13C8-PFOA	d7-NMePFOSAE	d9-NEtPFOSAE	d5-NEtPFOSA	d3-NMePFOSA	
1199388	121	107	122	109	109	
Blank	131*	122	128	119	105	
LCS	117	113	113	110	108	
Limits:	31-127	10-142	10-150	10-145	10-141	

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 19318023

	13C4-PFBA	13C5-PFPeA	13C3-PFBS	13C2-4:2-FTS	13C5-PFHxA	13C3-PFHxS
1199389	42*	43	45	73	43	46
Blank	116	111	115	115	112	120
LCS	103	99	102	105	98	105
Limits:	43-130	38-150	23-175	22-169	36-137	35-143
	13C4-PFHpA	13C2-6:2-FTS	13C8-PFOA	13C8-PFOS	13C9-PFNA	13C6-PFDA
1199389	48	88	49*	50*	55	50
Blank	115	127	118	117	118	110
LCS	100	111	100	98	100	107
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8:2-FTS	d3-NMeFOSAA	13C7-PFUnDA	d5-NEtFOSAA	13C2-PFDoDA	13C2-PFTeDA
1199389	74	56	52	66	44	40
Blank	113	116	107	121	108	111
LCS	105	115	102	116	101	99
Limits:	37-169	36-143	44-128	42-149	36-127	21-134

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Labeled Isotope Quality Control (continued)

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS

Batch number: 19318023

	13C8-PFOA	d7-NMePFOSAE	d3-NMePFOSA	d9-NEiPFOSAE	d5-NEiPFOSA
1199389	23	6*	2*	6*	2*
Blank	111	90	72	87	66
LCS	98	91	44	82	41
Limits:	10-134	10-137	10-107	10-135	10-107

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/g	MDL** ng/g	LOQ ng/g
Batch number: 19318005	Sample number(s): 1199388		
10:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
4:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
6:2-Fluorotelomersulfonic acid	N.D.	0.60	2.0
8:2-Fluorotelomersulfonic acid	N.D.	0.60	3.0
NEtFOSAA	N.D.	0.20	2.0
NEtPFOSA	N.D.	0.50	2.0
NEtPFOSAE	N.D.	0.50	2.0
NMeFOSAA	N.D.	0.20	2.0
NMePFOSA	N.D.	0.50	2.0
NMePFOSAE	N.D.	0.50	2.0
Perfluorobutanesulfonic acid	N.D.	0.40	2.0
Perfluorobutanoic acid	0.86	0.80	2.0
Perfluorodecanesulfonic acid	N.D.	0.20	0.60
Perfluorodecanoic acid	N.D.	0.20	0.60
Perfluorododecanesulfonic acid	N.D.	0.20	2.0
Perfluorododecanoic acid	N.D.	0.20	0.60
Perfluoroheptanesulfonic acid	N.D.	0.20	0.60
Perfluoroheptanoic acid	N.D.	0.20	0.60
Perfluorohexadecanoic acid	N.D.	0.20	0.60
Perfluorohexanesulfonic acid	N.D.	0.20	0.60
Perfluorohexanoic acid	N.D.	0.20	0.60
Perfluorononanesulfonic acid	N.D.	0.20	0.60
Perfluorononanoic acid	N.D.	0.20	0.60
Perfluorooctadecanoic acid	N.D.	0.20	0.60
Perfluorooctanesulfonamide	N.D.	0.20	0.60
Perfluorooctanesulfonic acid	N.D.	0.20	0.60
Perfluorooctanoic acid	N.D.	0.20	0.60
Perfluoropentanesulfonate	N.D.	0.20	0.60
Perfluoropentanoic acid	N.D.	0.20	0.60
Perfluorotetradecanoic acid	N.D.	0.20	0.60
Perfluorotridecanoic acid	N.D.	0.20	0.60
Perfluoroundecanoic acid	N.D.	0.20	0.60
	ng/l	ng/l	ng/l
Batch number: 19318023	Sample number(s): 1199389		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

Method Blank (continued)

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

Analysis Name	LCS Spike Added ng/g	LCS Conc ng/g	LCSD Spike Added ng/g	LCSD Conc ng/g	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19318005									
Sample number(s): 1199388									
10:2-Fluorotelomersulfonic acid	24.1	19.98			83		45-147		
4:2-Fluorotelomersulfonic acid	23.36	21.01			90		58-134		
6:2-Fluorotelomersulfonic acid	23.7	21.82			92		51-144		
8:2-Fluorotelomersulfonic acid	23.94	19.51			81		54-152		
NEtFOSAA	25	23.4			94		51-145		
NEtPFOSA	25	21.93			88		52-134		
NEtPFOSAE	25	22.02			88		52-141		

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 12/04/2019 15:01

Group Number: 2074061

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ng/g	LCS Conc ng/g	LCSD Spike Added ng/g	LCSD Conc ng/g	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
NMeFOSAA	25	23.19			93		55-152		
NMePFOSA	25	22.08			88		40-132		
NMePFOSAE	25	20.66			83		56-144		
Perfluorobutanesulfonic acid	22.12	18.87			85		63-139		
Perfluorobutanoic acid	25	23.78			95		56-188		
Perfluorodecanesulfonic acid	24.08	21.54			89		60-142		
Perfluorodecanoic acid	25	22.38			90		65-144		
Perfluorododecanesulfonic acid	24.2	22.29			92		50-146		
Perfluorododecanoic acid	25	20.39			82		62-150		
Perfluoroheptanesulfonic acid	23.78	22.38			94		67-139		
Perfluoroheptanoic acid	25	22.96			92		65-153		
Perfluorohexadecanoic acid	25	20.24			81		46-164		
Perfluorohexanesulfonic acid	23.64	19.34			82		59-139		
Perfluorohexanoic acid	25	23.71			95		64-149		
Perfluorononanesulfonic acid	24	23.2			97		62-145		
Perfluorononanoic acid	25	23.83			95		64-151		
Perfluorooctadecanoic acid	25	20.39			82		27-171		
Perfluorooctanesulfonamide	25	20.94			84		61-133		
Perfluorooctanesulfonic acid	23.9	18.32			77		54-132		
Perfluorooctanoic acid	25	23.89			96		65-147		
Perfluoropentanesulfonate	23.44	23.04			98		64-144		
Perfluoropentanoic acid	25	25.28			101		71-139		
Perfluorotetradecanoic acid	25	19.46			78		66-147		
Perfluorotridecanoic acid	25	19.48			78		63-152		
Perfluoroundecanoic acid	25	21.32			85		65-146		
	ng/l	ng/l	ng/l	ng/l					
Batch number: 19318023	Sample number(s): 1199389								
10:2-Fluorotelomersulfonic acid	24.68	22.77			92		45-143		
4:2-Fluorotelomersulfonic acid	23.92	19.4			81		61-131		
6:2-Fluorotelomersulfonic acid	24.28	20.16			83		56-140		
8:2-Fluorotelomersulfonic acid	24.52	22.1			90		58-143		
NEtFOSAA	25.6	19.68			77		53-140		
NEtPFOSA	25.6	23.37			91		56-136		
NEtPFOSAE	25.6	22.26			87		56-130		
NMeFOSAA	25.6	21.26			83		59-141		
NMePFOSA	25.6	25.19			98		49-134		
NMePFOSAE	25.6	20.74			81		61-133		
Perfluorobutanesulfonic acid	22.64	18.49			82		67-135		
Perfluorobutanoic acid	25.6	23.7			93		63-160		
Perfluorodecanesulfonic acid	24.64	22.89			93		62-135		
Perfluorodecanoic acid	25.6	20.36			80		66-141		
Perfluorododecanesulfonic acid	24.8	21.47			87		57-134		
Perfluorododecanoic acid	25.6	19.74			77		65-143		

*- Outside of specification

**-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 01/07/2020 11:28

Group Number: 2075318

Labeled Isotope Quality Control

Labeled isotope recoveries which are outside of the QC window are confirmed unless otherwise noted on the analysis report.

Analysis Name: PFAS in Water by LC/MS/MS
Batch number: 19329002

	13C4-PFBA ✓	13C5-PFPeA ✓	13C3-PFBS ✓	13C2-4:2-FTS ✓	13C5-PFHxA ✓	13C3-PFHxS ✓
1205260	125	128	151	194*	127	140
1205261	116	121	145	182*	114	119
Blank	132*	123	132	118	132	135
LCS	115	107	110	114	112	115
LCSD	111	107	108	111	114	125
Limits:	43-130	38-150	23-175	22-169	36-137	35-143
	13C4-PFHpA ✓	13C2-6:2-FTS ✓	13C8-PFOA ✓	13C8-PFOS ✓	13C9-PFNA ✓	13C6-PFDA ✓
1205260	142*	160	130*	118	125	125*
1205261	121	150	114	103	108	115
Blank	132	143	139*	133*	134*	142*
LCS	118	123	113	108	107	117
LCSD	122	117	115	112	114	108
Limits:	33-140	29-182	52-124	52-121	48-130	50-124
	13C2-8:2-FTS ✓	d3-NMeFOSAA ✓	13C7-PFUnDA ✓	d5-NEiFOSAA ✓	13C2-PFDoDA ✓	13C2-PFTeDA ✓
1205260	155	111	128	128	119	113
1205261	150	108	120	132	110	99
Blank	146	111	149*	154*	137*	131
LCS	119	122	128	123	115	117
LCSD	114	102	112	121	110	104
Limits:	37-169	36-143	44-128	42-149	36-127	21-134
	13C8-PFOSA ✓	d7-NMePFOSAE ✓	d3-NMePFOSA ✓	d9-NEiPFOSAE ✓	d5-NEiPFOSA ✓	
1205260	111	74	26	70	21	
1205261	87	52	18	53	20	
Blank	139*	108	71	105	72	
LCS	117	88	56	89	58	
LCSD	103	94	64	95	64	
Limits:	10-134	10-137	10-107	10-135	10-107	

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 01/07/2020 11:28

Group Number: 2075318

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result ng/l	MDL** ng/l	LOQ ng/l
Batch number: 19329002	Sample number(s): 1205260-1205261		
10:2-Fluorotelomersulfonic acid	N.D.	1.0	5.0
4:2-Fluorotelomersulfonic acid	N.D.	0.50	2.0
6:2-Fluorotelomersulfonic acid	N.D.	2.0	5.0
8:2-Fluorotelomersulfonic acid	N.D.	1.0	3.0
NEtFOSAA	N.D.	0.50	3.0
NEtPFOSA	N.D.	1.0	5.0
NEtPFOSAE	N.D.	1.0	3.0
NMeFOSAA	N.D.	0.60	2.0
NMePFOSA	N.D.	1.0	3.0
NMePFOSAE	N.D.	1.0	3.0
Perfluorobutanesulfonic acid	N.D.	0.50	2.0
Perfluorobutanoic acid	N.D.	2.0	5.0
Perfluorodecanesulfonic acid	N.D.	0.50	2.0
Perfluorodecanoic acid	N.D.	0.50	2.0
Perfluorododecanesulfonic acid	N.D.	0.50	3.0
Perfluorododecanoic acid	N.D.	0.50	2.0
Perfluoroheptanesulfonic acid	N.D.	0.50	2.0
Perfluoroheptanoic acid	N.D.	0.50	2.0
Perfluorohexadecanoic acid	N.D.	1.0	3.0
Perfluorohexanesulfonic acid	N.D.	0.50	2.0
Perfluorohexanoic acid	N.D.	0.50	2.0
Perfluorononanesulfonic acid	N.D.	0.50	2.0
Perfluorononanoic acid	N.D.	0.50	2.0
Perfluorooctadecanoic acid	N.D.	1.0	3.0
Perfluorooctanesulfonamide	N.D.	0.50	2.0
Perfluorooctanesulfonic acid	N.D.	0.50	2.0
Perfluorooctanoic acid	N.D.	0.50	2.0
Perfluoropentanesulfonate	N.D.	0.50	2.0
Perfluoropentanoic acid	N.D.	0.50	2.0
Perfluorotetradecanoic acid	N.D.	0.50	2.0
Perfluorotridecanoic acid	N.D.	0.50	2.0
Perfluoroundecanoic acid	N.D.	0.50	2.0

LCS/LCSD

*- Outside of specification

**-. This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Eurofins Environmental Testing
Reported: 01/07/2020 11:28

Group Number: 2075318

LCS/LCSD

Analysis Name	LCS Spike Added ng/l	LCS Conc ng/l	LCSD Spike Added ng/l	LCSD Conc ng/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 19329002	Sample number(s): 1205260-1205261								
10:2-Fluorotelomersulfonic acid	24.68	16.37	24.68	15.37	66	62	45-143	6	30
4:2-Fluorotelomersulfonic acid	23.92	14.39	23.92	15.1	60*	63	61-131	5	30
6:2-Fluorotelomersulfonic acid	24.28	16.09	24.28	16.47	66	68	56-140	2	30
8:2-Fluorotelomersulfonic acid	24.52	15.64	24.52	16.06	64	65	58-143	3	30
NEtFOSAA	25.6	17.28	25.6	14.68	67	57	53-140	16	30
NEtPFOSA	25.6	17.76	25.6	18.67	69	73	56-136	5	30
NEtPFOSAE	25.6	17.91	25.6	17.26	70	67	56-130	4	30
NMeFOSAA	25.6	14.62	25.6	19.9	57*	78	59-141	31*	30
NMePFOSA	25.6	20.11	25.6	19.16	79	75	49-134	8	30
NMePFOSAE	25.6	18.54	25.6	16.65	72	65	61-133	11	30
Perfluorobutanesulfonic acid	22.64	15.86	22.64	14.9	70	66*	67-135	6	30
Perfluorobutanoic acid	25.6	18.28	25.6	18.35	71	72	63-160	0	30
Perfluorodecanesulfonic acid	24.64	17.18	24.64	17.11	70	69	62-135	0	30
Perfluorodecanoic acid	25.6	17.91	25.6	18.71	70	73	66-141	4	30
Perfluorododecanesulfonic acid	24.8	17.37	24.8	17.59	70	71	57-134	1	30
Perfluorododecanoic acid	25.6	16.91	25.6	15.73	66	61*	65-143	7	30
Perfluoroheptanesulfonic acid	24.36	18.62	24.36	16.78	76	69	67-138	10	30
Perfluoroheptanoic acid	25.6	17.4	25.6	16.55	68*	68*	69-144	5	30
Perfluorohexadecanoic acid	25.6	15.74	25.6	17.11	61	67	60-148	8	30
Perfluorohexanesulfonic acid	24.2	15.55	24.2	14.92	64	62*	63-132	4	30
Perfluorohexanoic acid	25.6	17.26	25.6	17.8	67*	70	69-139	3	30
Perfluorononanesulfonic acid	24.56	18.23	24.56	18.45	74	75	70-137	1	30
Perfluorononanoic acid	25.6	17.11	25.6	18.44	67	72	66-144	7	30
Perfluorooctadecanoic acid	25.6	18.58	25.6	19.93	73	78	47-159	7	30
Perfluorooctanesulfonamide	25.6	15.15	25.6	16.07	59*	63*	67-126	6	30
Perfluorooctanesulfonic acid	24.48	14.44	24.48	14.62	59	60	53-129	1	30
Perfluorooctanoic acid	25.6	19.83	25.6	18.73	77	73	67-139	6	30
Perfluoropentanesulfonate	24	18.42	24	17.63	77	73	73-134	4	30
Perfluoropentanoic acid	25.6	18.89	25.6	18.67	74	73	73-135	1	30
Perfluorotetradecanoic acid	25.6	15.91	25.6	16.8	62*	66*	69-141	5	30
Perfluorotridecanoic acid	25.6	16.91	25.6	15.27	56	60*	66-146	10	30
Perfluoroundecanoic acid	25.6	15.76	25.6	17.15	62*	67	66-140	8	30

*- Outside of specification

**This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection</u> <u>Date/Time</u>	<u>ELLE#</u>
1465298 MW-19-02 Groundwater	11/05/2019	1199376
1465303 MS-MW19-02 Groundwater	11/05/2019	1199377
1465304 MSD-MW19-02 Groundwater	11/05/2019	1199378
1465299 MW19-03 Groundwater	11/05/2019	1199379
1465300 SW19-01 Groundwater	11/01/2019	1199380
1465301 DUP1-GW Groundwater	11/05/2019	1199381
1465302 DUP1-SW Groundwater	11/01/2019	1199382
1465305 Equ2-WLT Groundwater	11/04/2019	1199383
1465306 Equ1-Drill Rod Rinsate Groundwater	10/30/2019	1199384
1465307 -IDW-GW Groundwater	11/01/2019	1199385
1465308 Trip Blank Water	11/01/2019	1199386

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



SAMPLE INFORMATION

<u>Client Sample Description</u>	<u>Sample Collection</u> <u>Date/Time</u>	<u>ELLE#</u>
1465311 IDW-Soil Soil	11/01/2019	1199388
1465311 IDW-Soil Soil	11/01/2019	1199389

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

**SAMPLE INFORMATION**

<u>Client Sample Description</u>	<u>Sample Collection</u> <u>Date/Time</u>	<u>ELLE#</u>
1465313-SW19-02 Grab Surface Water	11/01/2019	1205260
1465314-SW19-03 Grab Surface Water	11/01/2019	1205261
1465315-PFAS Free Water Container Water Sample	11/05/2019	1205262

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
C	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
CP Units	cobalt-chloroplatinate units	ng	nanogram(s)
F	degrees Fahrenheit	NTU	nephelometric turbidity units
g	gram(s)	pg/L	picogram/liter
IU	International Units	RL	Reporting Limit
kg	kilogram(s)	TNTC	Too Numerous To Count
L	liter(s)	µg	microgram(s)
lb.	pound(s)	µL	microliter(s)
m3	cubic meter(s)	umhos/cm	micromhos/cm
meq	milliequivalents	MCL	Maximum Contamination Limit
mg	milligram(s)		
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
P^	Concentration difference between the primary and confirmation column $> 40\%$. The higher result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Sample Administration
Receipt Documentation Log

Doc Log ID: 265830



Group Number(s): 2074059

Client: EUROFINS OTTAWA

Delivery and Receipt Information

Delivery Method:	<u>UPS</u>	Arrival Date:	<u>11/08/2019</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>3</u>

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	UNP
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Julissa Rivera-Santa

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192050133	2.5	IR	Wet	Y	Bagged	N

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
1465307- IDW-GW	10/31/2019 --	



Client: EUROFINS OTTAWA

Delivery and Receipt Information

Delivery Method:	<u>UPS</u>	Arrival Date:	<u>11/08/2019</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>3</u>

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Julissa Rivera-Santa

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	192050133	2.5	IR	Wet	Y	Bagged	N

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
1465311 IDW-SOIL	10/31/2019 --	



Lancaster Laboratories
Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 266887



Group Number(s): 252318

Client: EUROFINS OTTAWA

Delivery and Receipt Information

Delivery Method: UPS Arrival Date: 11/19/2019
Number of Packages: 1 Number of Projects: 2

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	No	Sample Date/Times match COC:	Yes
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by *Jessenia Colon Martinez*

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?	Samples Collected Same Day as Receipt?
1	192050133	8.3	IR	Wet	Y	Bagged	Y	N

Elevated Temperature Details

All Temperatures in °C

Cooler #	Thermometer ID	Top Left Temp	Top Right Temp	Bottom Left Temp	Bottom Right Temp	Center Temp	Factors Contributing to Elevated Temp	Comments
1	192050133	8.0	10.9	10.0	11.4	9.5		



STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 • Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #:

CLIENT INFORMATION		INVOICE INFORMATION (SAME AS CLIENT INFORMATION) YES ☐ NO ☐	
Company:	Eurofins Ottawa	Company:	
Contact:	Rebecca Koshy	Contact:	
Address:	146-8 Colonnade Rd., Ottawa, ON K2E 7Y1	Address:	
Telephone:	613-727-5692	Telephone:	
Email:	Ottawa subcontract@eurofins.com	Email:	
Email:		Email:	
Project:	1920595	PO #:	OTT-1911-11
REGULATION/GUIDELINE REQUIRED		TURN-AROUND TIME	
Sanitary Sewer, City:		☐ 1 Day* (100%)	☐ 2 Day** (50%)
Storm Sewer, City:		☐ 3-5 Days (25%)	☒ 5-7 Days (Standard)
O. Reg 153, Table:	Type:	Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service.	
Excav Sol. Table:	Type:	*If the results are reported the day after the rush due date, the following surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.	
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).		**If the results are reported the day after the rush due date, the following surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.	
Sample ID	Date/Time Collected	Sample Analysis Required	Field Parameters
1465298 MW-19-02	5/11/2019	GW	
1465299 MW19-03	5/11/2019	GW	
1465300 SW19-01	1/11/2019	GW	
1465301 DUP1-GW	5/11/2019	GW	
1465302 DUP1-SW	1/11/2019	GW	
1465303 MS-MW19-02	5/11/2019	GW	
1465304 MSD-MW19-02	5/11/2019	GW	
1465305 Equ2-WLT	4/11/2019	GW	
1465306 Equ1-Drill Rod Rinstate	30/10/2019	GW	
1465307 -IDW-GW	1/11/2019	GW	
PRINT		COMMENTS:	
Sampled By:	Kiran		
Relinquished By:	Wendy Miller		
Received By:			
CUSTODY SEAL: YES ☐ NO ☐			



STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #:

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION) YES ☐ NO ☐							
Company:	Eurofins Ottawa			Company:							
Contact:	Rebecca Koshy			Contact:							
Address:	146-8 Colonnade Rd., Ottawa, ON K2E 7Y1			Address:							
Telephone:	613-727-5692			Telephone:							
Email:	Ottawa.subcontract@eurofins.com			Email:							
Email:				Email:							
Project:	1920585			PO #:	OTT-1911-11						
REGULATION/SUBLINE REQUIRED				TURN-AROUND TIME							
Sanitary Sewer, City:				☐ 1 Day* (100%)	☐ 2 Day** (50%)	☐ 3-5 Days (25%)	☒ 5-7 Days (Standard)				
Storm Sewer, City:				Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service.							
O. Reg 153, Table:	Type:			*If the results are reported the day after the rush due date, the following surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.							
Excess Soil, Table:	Type:			**If the results are reported the day after the rush due date, the following surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.							
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Analysis Required							
Sample ID	Date/Time Collected	Field Filtered ->	Sample Matrix	Y = Yes N = No	# of Containers	Metals and Inorganics	Metals (ex. Hg, B, CrVI)	BTEX	VOC	PFAS-32	RN# (Lab Use Only)
1465308 Trip Blank	1/11/2019		GW	2							
COMMENTS:											
PRINT SIGN DATE/TIME TEMP (°C)											
Sampled By:	Kiran			7/11/19 15:00							
Relinquished By:	Wadey Miller			11/11/19 11:20							
Received By:											
CUSTODY SEAL: YES ☐ NO ☐											

[illegible]

43091 2675318 12052600-2 STANDARD C

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION) YES ☒ NO ☐			
Company:	Eurofins Environment Testing Canada			Company:	Eurofins Environment Testing Canada		
Contact:	Rita Efendyova			Contact:			
Address:	Unit 8-146 Colonnade Road / Ottawa, ON K2E 7Y1			Address:			
Telephone:	613-727-5092 ext 316 Cell: 613-805-4576			Telephone:			
Email:	rita.efendyova@eurofins.com						
	#2 Ottawa.Subcontract@Eurofins.com						
Project:	1920600 - Iqaluit Airport PFAS Investigation			Quote #:			
TURN AROUND TIME (BUSINESS DAYS)							
☐ 1 Day* (100%)	☐ 2 Day** (50%)	☐ 3-5 Days (25%)	☒ 5-7 Days (Standard)				
*For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 100%. **For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.							
The optimal temperature conditions during transport should be less than 10°C. Samples cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Please contact Lab in advance to determine rush availability.			
Sample ID				Date/Time Collected			
1486919-SW19-02				2019-11-01			
1486314-MW19-03				2019-11-01			
1486919-PFA9 Free Water Concentration Field Report				2019-11-06			
Sample Matrix BW 2 SW 2 SW 1				O.Reg. 153 parameters PHCFL-TX VOCs PAHs PCBs Metals + Inorganics Metals only			
				Field Filtered → Field Filtered →			
Sample Analysis Required ☐ Sanitary Sewer, City: ☐ Storm Sewer, City: ☐ ODWSOG ☐ PWQO ☐ O. Reg 347/558 ☐ Other: ☐ None				REGULATION/SUBURBINE REQUIRED ☐ O. Reg 153 Table # _____ Course / Finn, Surface / subsurface. Type: Com-lnd / Res-Park / Agri / GW / All Other / Sediment ☐ Excess Soil, Tablet: _____ Type: _____ The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 ☐ Yes ☒ No			
Sampled By: Rita Efendyova Analyzed By: Nicole Reith Received By:				COMMENTS: Isotope dilution method for 32 PFAS analysis in Groundwater and soil (EPA Method 537-Modified) CUSTOMER SEAL: ☐ YES ☒ NO ☒ Ice packs submitted: ☐ Yes ☒ No			

Data Qualifying Codes

Two types of data qualifying codes or flags are applied in the course of the data review. The data validation flags indicate data that are not usable for decision-making, more than normally biased and/or variable, or not representative of field conditions. These codes and their definitions are presented below in the hierarchy stipulated in the USEPA Contract Laboratory Program National Functional Guidelines for Organic (January 2017) Data Review.

Data Validation Flags

Flag	Interpretation
R	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but not detected at a level greater than or equal to the level of the adjusted Detection Limit (DL) for sample and method.
J+	Reported value may not be accurate or precise, but the result may be biased high.
J-	Reported value may not be accurate or precise, but the result may be biased low.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the Limit of Detection (LOD)).
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
UJ	The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.
C	This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by gas Chromatograph/Mass Spectrometer (GC/MS)
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

The other type of code used by AECOM is a “Reason Code”. The reason code indicates the type of quality control failure that led to the application of the data validation flag.

Reason Codes

Code	Description	Code	Description
a	Tracer recovery (radiochemical data only)	ld	Laboratory duplicate RPDs (matrix duplicate, MSD, LCSD)
be	Equipment blank contamination	lp	Laboratory control sample/laboratory control sample duplicate RPDs
bf	Field blank contamination	m	Matrix spike recovery
bi	Bias indeterminate	md	Matrix spike/matrix spike duplicate RPD
bl	Laboratory blank contamination	nb	Negative laboratory blank contamination
bm	Missing Blank Information	p	Chemical preservation issue
bt	Trip Blank	pe	Post Extraction Spike
c	Calibration issue	ps	Performance Evaluation Sample
cl	Clean-up standard recovery	q	Quantitation issue
cp	Insufficient in growth (radiochemical data only)	r	Dual column RPD
cr	Chromatographic resolution	rp	Re-extraction precision issue [PAHs only]
d	Reporting limit raised due to chromatographic interference	rt	SIM ions not within + 2 seconds
dt	Dissolved result > total over limit	s	Surrogate recovery
e	Ether interference	sc	Sample collection issues
fd	Field duplicate RPDs	sp	Sample preparation issue
g	Chromatographic pattern match issue	su	Evidence of ion suppression
h	Holding times	t	Temperature Preservation Issue
i	Internal standard areas	u	High combined sample result uncertainty (radiochemical data only)
ii	Injection internal standard area or retention time exceedance	v	Compound identification issue
k	Estimated Maximum Possible Concentrations	x	Low % solids
l	LCS recoveries	y	Serial dilution results
lc	Labeled compound recovery	z	ICS results

