



2045 Mills Road West

TEL: (250) 655-5800

Sidney, BC, Canada V8L5X2

TOLL-FREE: 1-888-373-0881

SGS AXYS Client No.: 4066

Client Address: Tetra Tech, Inc. - Pacific Guardian Ctr.
737 Bishop St., Suite 2340, Mauka Tower
Honolulu, HI, US, 96813-3201

The SGS AXYS contact for these data is Dale Robinson.

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"The sample(s) to which the findings recorded herein (the "Findings") relate was[were] drawn and [or] provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is[are] said to be extracted."

BATCH SUMMARY

Batch ID: WG78729	Date: 23-Nov-2021
Analysis Type: Per- and Polyfluoroalkyl Substances (PFAS)	Matrix Type: Effluent final
BATCH MAKEUP	
Contract: 4066 Samples: L35819-1 LIWWTP-EFFL - filtered L35819-2 KIWWTP-EFFL - filtered L35819-3 HLWWTP-EFFL - filtered L35819-4 KIWWTP-InfL - filtered L35819-5 HLWWTP-INFL - filtered L35819-6 LIWWTP-INFL - filtered L35819-7 PVTLF - filtered L35819-8 CMLF-IVA - filtered L35819-9 CMLF-IVB - filtered L35819-10 CMLF-VBE - filtered L35819-11 WHLF-LECH-R1 - filtered L35819-12 WHLF-LECH-R2 - filtered L35819-13 WHLF-LECH-R3 - filtered L35819-14 WHLF-LECH-R4 - filtered	Blank: WG78729-101 Reference or Spike: WG78729-102 Duplicate:
Comments: 1. Data are considered final. 2. For the on-going calibration verification solution injection (FC1L_483 S:21), the percent recovery for the surrogate compound d3-MeFOSAA (64.1%) was below the lower method criteria limit (70%). Other data was not considered to be affected. 3. For the laboratory procedural blank sample (SGS AXYS ID: WG78729-101), PFHxA was detected at a concentration above the SGS AXYS method criteria limit. Where the same compound was detected in a field sample at a concentration less than 10 times larger, the result was flagged with a 'B'. Data are not blank corrected and should be taken into consideration during data review and interpretation. 4. Blank data should be evaluated against specifications using the same blank sample size as the size of the client samples. 5. For the KIWWTP-InfL – filtered sample (SGS AXYS ID: L35819-4), the percent recovery for the surrogate compound 13C4-PFBA (8.71%) was below 10%. The result for the related target analyte PFBA was flagged with an 'H' and provided for information only. In all other cases, where the percent recovery for a surrogate compound did not the method criteria limit, the result was flagged with a 'V'. As the isotope dilution method of quantification produces data that is recovery corrected, these variances from method criteria were deemed to not affect the quantification of the target analytes.	

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February 2017



CHAIN OF CUSTODY

2045 Mills Road West TEL: (250) 655-5800 TOLL FREE 1-888-373-0881
 Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

SGS AXYS CLIENT #: 4066

REPORT TO:			INVOICE TO:			ANALYSIS REQUESTED							
Company <u>Hawaii DOH - HEER office</u>			Company <u>Tetrattech</u>			PFAS - MLA 110	TDP - MLA 111	TDF - CIC					
Address <u>2385 Waimano Home Rd #100</u>			Address <u>737 Bishop St Ste 2340</u>										
Contact <u>Diana Felton</u>			Contact <u>Eric Jensen</u>										
Phone <u>808-586-0963</u>			Phone <u>808-225-7084</u>										
E-mail <u>diana.felton@doh.hawaii.gov</u>			E-mail <u>eric.jensen@tetrattech.com</u>										
Project Name/Number: <u>HDOH-PFAS-MM/</u>			Sampler's Name:										
Signature:													
Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	SGS AXYS Lab Sample ID (Lab use only)								
					<u>UNFILTERED</u>	<u>FILTERED</u>							
<u>LIWWTPEFFL</u>	<u>wastewater</u>	<u>9/2/21</u>	<u>0800</u>	<u>4x500mL</u> <u>4x60mL</u>	<u>L35842-3</u>	<u>L35819-1</u>	<u>2</u>						
<u>PVTLF</u>	<u>leachate</u>	<u>9/30/21</u>	<u>0900</u>	<u>6x125mL</u> <u>6x60mL</u>	<u>-7</u>	<u>-7</u>	<u>2</u>	<u>1</u>					
<u>CMLF-IVA</u>	<u>leachate</u>	<u>10/4/21</u>	<u>0915</u>	<u>4x125mL</u> <u>4x60mL</u>	<u>-13</u>	<u>-8</u>	<u>2</u>						
<u>CMLF-IVB</u>	<u>leachate</u>	<u>10/4/21</u>	<u>0925</u>	<u>4x125mL</u> <u>4x60mL</u>	<u>-14</u>	<u>-9</u>	<u>2</u>						
<u>CMLF-VBE</u>	<u>leachate</u>	<u>10/4/21</u>	<u>0955</u>	<u>4x125mL</u> <u>4x60mL</u>	<u>-15</u>	<u>-10</u>	<u>2</u>	<u>1</u>					
<u>WHLF-LECH-R1</u>	<u>leachate</u>	<u>9/15/21</u>	<u>1500</u>	<u>4x125mL</u> <u>4x60mL</u>	<u>-16</u>	<u>-11</u>	<u>2</u>						
<u>WHLF-LECH-R2</u>	<u>leachate</u>	<u>9/15/21</u>	<u>1400</u>	<u>"</u>	<u>-17</u>	<u>-12</u>	<u>2</u>						
<u>WHLF-LECH-R3</u>	<u>leachate</u>	<u>9/15/21</u>	<u>1530</u>	<u>"</u>	<u>-18</u>	<u>-13</u>	<u>2</u>						
<u>WHLF-LECH-R4</u>	<u>leachate</u>	<u>9/15/21</u>	<u>1600</u>	<u>"</u>	<u>-19</u>	<u>-14</u>	<u>2</u>						
<u>WHLF-Blank</u>	<u>leachate</u>	<u>9/15/21</u>	<u>1330</u>	<u>2x60mL</u>	<u>L35842-1</u>		<u>1</u>						
Relinquished by (Signature) <u>Diana Felton</u>			Date <u>10/11/21</u> Time <u>0900</u>			Received by (Signature) <u>[Signature]</u>			Date <u>13-Oct-21</u> Time <u>1205</u>			Courier	Waybill No.
Relinquished by (Signature)			Date			Received by (Signature)			Date			Sample Receipt	
Remarks			Please do MLA 110 on filtered & unfiltered samples for all except equipment blank.									Temp °C	Cooler
												Custody Seal #	
												Seal Intact Y/N	
												Sample Tags	Y/N

cooler 1



CHAIN OF CUSTODY

2045 Mills Road West TEL: (250) 655-5800 TOLL FREE 1-888-373-0881
 Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

SGS AXYS CLIENT #: 4066

REPORT TO: Company <u>Hawaii DOH - HEER office</u> Address <u>2385 Waimano Home Rd #100 Pearl City, HI 96782</u> Contact <u>Diana Felton</u> Phone <u>808-586-0963</u> FAX E-mail <u>diana.felton@doh.hawaii.gov</u>			INVOICE TO: Company <u>Tetratech</u> Address <u>737 Bishop St Ste 2340 Honolulu HI 96813</u> Contact <u>Eric Jensen</u> Phone <u>808-225-7084</u> FAX E-mail <u>eric.jensen@tetratech.com</u>			ANALYSIS REQUESTED PFAS-MLA 110 TDP-MLA 111 TDF-CIC				
Project Name/Number: <u>HDOH-PFAS-MM/</u>			Sampler's Name: Signature:							
Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	SGS AXYS Lab Sample ID (Lab use only)					
KIWWTP-INFL	wastewater	9/29/21	730am	4x500mL 4x60mL	L35842-7	L35819-4	2			
KIWWTP-EFFL	wastewater	9/29/21	715am	4x500mL 4x60mL	-4	-2	2			
KIWWTP-EFFL-Blank	wastewater	9/28/21	845am	2x60mL	-2		1			
HLWWTP-EFFL	wastewater	9/13/21	0615	4x500mL 4x60mL	-5	-3	2			
HLWWTP-INFL	wastewater	9/13/21	0630	4x500mL 4x60mL	-8	-5	2			
HLWWTP-EFFL-EB	wastewater	9/10/21	0835	1x60mL	-6		1			
HLWWTP-INFL-EB	wastewater	9/10/21	0900	1x60mL	-3		1			
LIWWTP-INFL	wastewater	9/2/21	0730	4x500mL 4x60mL	-10	-6	2			
LIWWTP-INFL-EB	water	9/1/21	0700	2x60mL	-11		1			
Relinquished by (Signature) <u>Diana Felton</u> Date <u>10/11/21</u> Time <u>9:00</u>			Received by (Signature) <u>J. Foster</u> Date <u>13-Oct-21</u> Time <u>12:05</u>			Courier		Waybill No.		
Relinquished by (Signature) _____ Date _____ Time _____			Received by (Signature) _____ Date _____ Time _____			Sample Receipt				
Remarks <u>For infl & effl samples - please do MLA 110 on 1 filtered sample & 1 unfiltered sample.</u>						Cooler				
						Temp °C				
						Custody Seal #				
						Seal Intact Y/N				
						Sample Tags		Y/N		

Filtered & unfiltered

cooler 2

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LIWWTP-EFFL - filtered
Sample Collection:
02-Sep-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-1

Matrix: EFFLUENT FINAL

Sample Size: 0.474 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 17:55:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 27

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J	2.59	1.69 (Q)		1.006
PFPeA		11.3	0.844 (Q)		1.002
PFHxA	B	7.19	0.473 (S)	4.63	1.000
PFHpA	J	1.17	0.422 (Q)	1.97	1.000
PFOA	B	2.93	0.422 (Q)	2.09	
PFNA	J	0.637	0.422 (Q)	2.78	
PFDA	J	0.932	0.422 (Q)	3.01	1.000
PFUnA	U		0.422 (Q)		
PFDaA	U		0.422 (Q)		
PFTTrDA	U		0.422 (Q)		
PFTeDA	U		0.422 (Q)		
PFBS		2.25	0.422 (Q)	3.05	1.000
PFPeS	U		0.489 (S)		
PFHxS	J	0.545	0.422 (Q)	2.70	
PFHpS	U		0.422 (Q)		
PFOS		2.75	0.422 (Q)	2.72	
PFNS	U		0.422 (Q)		
PFDS	U		0.422 (Q)		
PFDoS	U		0.422 (Q)		
4:2 FTS	U		1.69 (Q)		
6:2 FTS	J	3.23	1.52 (Q)	0.41	1.000
8:2 FTS	U		1.69 (Q)		
PFOSA	U		0.422 (Q)		
N-MeFOSA	U		0.485 (Q)		
N-EtFOSA	U		1.06 (Q)		
MeFOSAA	U		0.422 (Q)		
EtFOSAA	U		0.422 (Q)		
N-MeFOSE	U		4.22 (Q)		
N-EtFOSE	U		3.16 (Q)		
HFPO-DA	U		1.60 (Q)		
ADONA	U		1.69 (Q)		
9Cl-PF3ONS	U		1.69 (Q)		
11Cl-PF3OUdS	U		1.69 (Q)		
3:3 FTCA	U		1.69 (Q)		
5:3 FTCA	U		10.6 (Q)		
7:3 FTCA	U		10.6 (Q)		
PFEESA	U		0.422 (Q)		
PFMPA	U		0.844 (Q)		
PFMBA	U		0.422 (Q)		

NFDHA

U

0.844 (Q)

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; B = analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

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SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LIWWTP-EFFL - filtered
Sample Collection:
02-Sep-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Lab Sample I.D.:

L35819-1

Contract No.: 4066
Matrix: EFFLUENT FINAL

Sample Size: 0.474 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 17:55:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 27

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	36.3	90.7		0.995
13C5-PFPeA		20.0	19.0	95.0		0.857
13C5-PFHxA		10.0	7.74	77.4	28.2	1.000
13C4-PFHpA		10.0	8.11	81.1		0.898
13C8-PFOA		10.0	7.79	77.9		1.000
13C9-PFNA		5.00	4.20	84.1		0.999
13C6-PFDA		5.00	4.93	98.6		0.999
13C7-PFUnA		5.00	4.72	94.4		1.050
13C2-PFDoA		5.00	4.19	83.9		1.084
13C2-PFTeDA		5.00	3.13	62.6		1.160
13C3-PFBS		10.0	8.94	89.1	2.70	0.801
13C3-PFHxS		10.0	8.86	88.4	2.34	0.999
13C8-PFOS		10.1	9.65	95.9	2.13	1.000
13C2-4:2 FTS		20.2	28.2	140	1.97	0.837
13C2-6:2 FTS		20.0	19.3	96.5	2.15	1.001
13C2-8:2 FTS		20.0	12.8	63.8	3.27	1.272
13C8-PFOSA		10.0	8.77	87.7		1.164
D3-N-MeFOSA		10.0	6.44	64.4		1.346
D5-N-EtFOSA		10.0	6.76	67.6		1.383
D3-MeFOSAA		20.0	11.1	55.4		1.322
D5-EtFOSAA		20.0	12.3	61.5		1.350
d7-NMe-FOSE		100	70.9	70.9		1.329
d9-NEt-FOSE		100	63.9	63.9		1.367
13C3-HFPO-DA		40.0	27.6	69.0	2.38	1.033

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-EFFL - filtered
Sample Collection:
29-Sep-2021 07:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-2

Matrix: EFFLUENT FINAL

Sample Size:

0.501 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:08:51

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 28

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J	3.65	1.60 (Q)		1.006
PFPeA		58.0	0.798 (Q)		1.002
PFHxA		50.3	0.399 (Q)	4.66	1.000
PFHpA		3.25	0.399 (Q)	2.24	1.000
PFOA		17.8	0.399 (Q)	1.97	
PFNA	J	0.738	0.399 (Q)	3.76	
PFDA		2.00	0.399 (Q)	2.91	1.000
PFUnA	U		0.399 (Q)		
PFDaA	U		0.399 (Q)		
PFTTrDA	U		0.399 (Q)		
PFTeDA	U		0.399 (Q)		
PFBS		5.27	0.399 (Q)	2.74	1.000
PFPeS	U		0.401 (Q)		
PFHxS	J	0.967	0.399 (Q)	3.18	
PFHpS	U		0.399 (Q)		
PFOS		2.36	0.399 (Q)	2.90	
PFNS	U		0.399 (Q)		
PFDS	U		0.399 (Q)		
PFDoS	U		0.399 (Q)		
4:2 FTS	U		1.60 (Q)		
6:2 FTS	U		1.44 (Q)		
8:2 FTS	U		1.60 (Q)		
PFOSA	U		0.399 (Q)		
N-MeFOSA	U		0.459 (Q)		
N-EtFOSA	U		0.998 (Q)		
MeFOSAA	U		0.399 (Q)		
EtFOSAA	U		0.399 (Q)		
N-MeFOSE	U		3.99 (Q)		
N-EtFOSE	U		2.99 (Q)		
HFPO-DA	U		1.52 (Q)		
ADONA	U		1.60 (Q)		
9Cl-PF3ONS	U		1.60 (Q)		
11Cl-PF3OUdS	U		1.60 (Q)		
3:3 FTCA	U		1.60 (Q)		
5:3 FTCA	U		9.98 (Q)		
7:3 FTCA	U		9.98 (Q)		
PFEESA	U		0.399 (Q)		
PFMPA	U		0.798 (Q)		
PFMBA	U		0.399 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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Signed: _____ Andrew Porat _____

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SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-EFFL - filtered
Sample Collection:
29-Sep-2021 07:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-2

Matrix: EFFLUENT FINAL

Sample Size:

0.501 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:08:51

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 28

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng absolute

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Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	12.6	31.4		0.995
13C5-PFPeA		20.0	18.9	94.4		0.857
13C5-PFHxA		10.0	9.06	90.6	20.9	1.000
13C4-PFHpA		10.0	9.05	90.5		0.898
13C8-PFOA		10.0	8.96	89.6		1.000
13C9-PFNA		5.00	4.88	97.6		1.000
13C6-PFDA		5.00	4.45	89.1		0.999
13C7-PFUnA		5.00	4.51	90.2		1.051
13C2-PFDoA		5.00	4.28	85.6		1.086
13C2-PFTeDA		5.00	3.22	64.4		1.161
13C3-PFBS		10.0	8.63	86.0	2.75	0.802
13C3-PFHxS		10.0	8.75	87.3	2.36	1.001
13C8-PFOS		10.1	10.3	102	2.24	1.000
13C2-4:2 FTS		20.2	24.9	123	2.17	0.837
13C2-6:2 FTS		20.0	18.3	91.4	2.11	1.001
13C2-8:2 FTS		20.0	14.3	71.3	3.50	1.272
13C8-PFOSA		10.0	9.64	96.4		1.163
D3-N-MeFOSA		10.0	7.40	74.0		1.346
D5-N-EtFOSA		10.0	6.66	66.6		1.383
D3-MeFOSAA		20.0	12.3	61.5		1.322
D5-EtFOSAA		20.0	12.9	64.3		1.350
d7-NMe-FOSE		100	67.5	67.5		1.329
d9-NEt-FOSE		100	62.8	62.8		1.367
13C3-HFPO-DA		40.0	39.6	99.0	3.09	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HLWWTP-EFFL - filtered
Sample Collection:
29-Sep-2021 06:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-3

Matrix: EFFLUENT FINAL

Sample Size: 0.476 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:21:48

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 29

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.68 (Q)		
PFPeA	J	2.51	0.840 (Q)		1.001
PFHxA	B	6.83	0.420 (Q)	4.12	1.000
PFHpA	J	0.610	0.420 (Q)	1.87	1.000
PFOA	B	2.06	0.420 (Q)	1.98	
PFNA	U		0.420 (Q)		
PFDA	R J	0.864	0.420 (Q)	4.68	1.001
PFUnA	U		0.420 (Q)		
PFDaA	U		0.420 (Q)		
PFTTrDA	U		0.420 (Q)		
PFTeDA	U		0.420 (Q)		
PFBS	J	0.707	0.420 (Q)	3.16	1.001
PFPeS	U		0.422 (Q)		
PFHxS	J	0.778	0.420 (Q)	2.18	
PFHpS	U		0.420 (Q)		
PFOS		2.89	0.420 (Q)	2.91	
PFNS	U		0.420 (Q)		
PFDS	U		0.420 (Q)		
PFDoS	U		0.420 (Q)		
4:2 FTS	U		1.68 (Q)		
6:2 FTS	U		1.51 (Q)		
8:2 FTS	U		1.68 (Q)		
PFOSA	U		0.420 (Q)		
N-MeFOSA	U		0.483 (Q)		
N-EtFOSA	U		1.05 (Q)		
MeFOSAA	J	0.556	0.420 (Q)	1.07	
EtFOSAA	U		0.420 (Q)		
N-MeFOSE	U		4.20 (Q)		
N-EtFOSE	U		3.14 (Q)		
HFPO-DA	U		1.60 (Q)		
ADONA	U		1.68 (Q)		
9Cl-PF3ONS	U		1.68 (Q)		
11Cl-PF3OUdS	U		1.68 (Q)		
3:3 FTCA	U		1.68 (Q)		
5:3 FTCA	J	14.5	10.5 (Q)	1.18	1.053
7:3 FTCA	U		10.5 (Q)		
PFEESA	U		0.420 (Q)		
PFMPA	U		0.840 (Q)		
PFMBA	U		0.420 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; B = analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-3_Form1A_FC1L_483S29_SJ2987112.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HLWWTP-EFFL - filtered
Sample Collection:
29-Sep-2021 06:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-3

Matrix: EFFLUENT FINAL

Sample Size: 0.476 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:21:48

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 29

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	24.1	60.3		0.995
13C5-PFPeA		20.0	17.1	85.6		0.857
13C5-PFHxA		10.0	8.08	80.8	25.8	1.000
13C4-PFHpA		10.0	8.06	80.6		0.898
13C8-PFOA		10.0	8.21	82.1		1.000
13C9-PFNA		5.00	4.24	84.8		0.999
13C6-PFDA		5.00	4.36	87.3		0.999
13C7-PFUnA		5.00	4.40	88.0		1.051
13C2-PFDoA		5.00	3.48	69.5		1.086
13C2-PFTeDA	V	5.00	1.73	34.7		1.161
13C3-PFBS		10.0	8.77	87.4	3.21	0.801
13C3-PFHxS		10.0	8.86	88.5	2.31	0.999
13C8-PFOS		10.1	9.61	95.5	2.19	0.999
13C2-4:2 FTS		20.2	23.2	115	1.79	0.837
13C2-6:2 FTS		20.0	18.3	91.7	2.19	1.000
13C2-8:2 FTS		20.0	12.1	60.5	3.29	1.270
13C8-PFOSA		10.0	9.57	95.7		1.163
D3-N-MeFOSA		10.0	5.75	57.5		1.345
D5-N-EtFOSA		10.0	5.17	51.7		1.382
D3-MeFOSAA		20.0	10.1	50.4		1.320
D5-EtFOSAA		20.0	11.4	57.1		1.349
d7-NMe-FOSE	V	100	22.2	22.2		1.328
d9-NEt-FOSE		100	49.3	49.3		1.366
13C3-HFPO-DA		40.0	32.5	81.2	2.60	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

KIWWTP-InfL - filtered

Sample Collection:

29-Sep-2021 07:30

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-4

Matrix: INFLUENT

Sample Size: 0.526 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:34:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 30

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J H	3.24	1.52 (Q)		1.011
PFPeA	J	2.48	0.761 (Q)		1.001
PFHxA	B	5.53	0.380 (Q)	3.13	1.001
PFHpA	U		26.5 (S)		
PFOA	B	3.32	0.380 (Q)	1.92	
PFNA	J	0.545	0.380 (Q)	2.97	
PFDA	J	0.633	0.380 (Q)	2.78	1.000
PFUnA	U		0.380 (Q)		
PFDaA	U		0.380 (Q)		
PFTTrDA	U		0.380 (Q)		
PFTeDA	U		0.380 (Q)		
PFBS	R	3.18	0.380 (Q)	3.98	1.001
PFPeS	U		0.382 (Q)		
PFHxS	J	0.937	0.380 (Q)	2.62	
PFHpS	U		0.380 (Q)		
PFOS		2.35	0.380 (Q)	2.02	
PFNS	U		0.380 (Q)		
PFDS	U		0.380 (Q)		
PFDoS	U		0.380 (Q)		
4:2 FTS	U		1.52 (Q)		
6:2 FTS	U		1.37 (Q)		
8:2 FTS	U		1.52 (Q)		
PFOSA	U		0.380 (Q)		
N-MeFOSA	U		0.438 (Q)		
N-EtFOSA	U		0.951 (Q)		
MeFOSAA	U		0.380 (Q)		
EtFOSAA	U		0.380 (Q)		
N-MeFOSE	U		3.80 (Q)		
N-EtFOSE	U		2.85 (Q)		
HFPO-DA	U		1.45 (Q)		
ADONA	U		1.52 (Q)		
9Cl-PF3ONS	U		1.53 (Q)		
11Cl-PF3OUdS	U		1.52 (Q)		
3:3 FTCA	U		1.52 (Q)		
5:3 FTCA	U		9.51 (Q)		
7:3 FTCA	U		9.51 (Q)		
PFEEA	U		0.380 (Q)		
PFMPA	U		0.761 (Q)		
PFMBA	U		0.380 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; B = analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank; J = concentration less than limit of quantification; H = concentration is estimated.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-4_Form1A_FC1L_483S30_SJ2987113.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

KIWWTP-InfL - filtered

Sample Collection:

29-Sep-2021 07:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-4

Matrix: INFLUENT

Sample Size: 0.526 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:34:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 30

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	3.48	8.71		0.995
13C5-PFPeA		20.0	23.6	118		0.855
13C5-PFHxA		10.0	9.04	90.4	23.5	1.000
13C4-PFHpA	V	10.0	1.97	19.7		0.897
13C8-PFOA		10.0	8.33	83.3		1.000
13C9-PFNA		5.00	4.25	85.1		1.000
13C6-PFDA		5.00	4.55	91.0		1.000
13C7-PFUnA		5.00	5.20	104		1.053
13C2-PFDoA		5.00	3.40	68.0		1.089
13C2-PFTeDA	V	5.00	1.71	34.2		1.166
13C3-PFBS		10.0	7.00	69.8	2.19	0.803
13C3-PFHxS		10.0	9.02	90.0	2.33	1.000
13C8-PFOS		10.1	10.2	101	2.14	1.000
13C2-4:2 FTS	V	20.2	8.97	44.5	1.74	0.839
13C2-6:2 FTS		20.0	19.1	95.4	2.17	1.001
13C2-8:2 FTS		20.0	16.9	84.2	3.26	1.271
13C8-PFOSA		10.0	11.5	115		1.170
D3-N-MeFOSA		10.0	7.07	70.7		1.354
D5-N-EtFOSA		10.0	6.52	65.2		1.390
D3-MeFOSAA	V	20.0	7.17	35.9		1.321
D5-EtFOSAA	V	20.0	6.34	31.7		1.346
d7-NMe-FOSE		100	72.2	72.2		1.336
d9-NEt-FOSE		100	58.3	58.3		1.374
13C3-HFPO-DA		40.0	34.8	87.1	2.85	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HLWWTP-INFL - filtered
Sample Collection:
13-Sep-2021 06:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-5

Matrix: INFLUENT

Sample Size: 0.454 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:47:44

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 31

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J	3.87	1.76 (Q)		1.011
PFPeA	J	1.84	0.882 (Q)		1.002
PFHxA	B	8.33	0.514 (S)	4.10	1.000
PFHpA	J	0.475	0.441 (Q)	1.69	0.999
PFOA	B	2.80	0.441 (Q)	2.00	
PFNA	U		0.441 (Q)		
PFDA	J	0.540	0.441 (Q)	4.55	1.000
PFUnA	U		0.441 (Q)		
PFDoA	U		0.441 (Q)		
PFTTrDA	U		0.441 (Q)		
PFTeDA	U		0.441 (Q)		
PFBS	U		0.441 (Q)		
PFPeS	U		0.591 (S)		
PFHxS	J	1.02	0.441 (Q)	2.35	
PFHpS	U		0.441 (Q)		
PFOS		2.82	0.441 (Q)	2.21	
PFNS	U		0.441 (Q)		
PFDS	U		0.441 (Q)		
PFDoS	U		0.441 (Q)		
4:2 FTS	U		1.76 (Q)		
6:2 FTS	J	1.64	1.59 (Q)	0.45	0.997
8:2 FTS	U		1.76 (Q)		
PFOSA	U		0.441 (Q)		
N-MeFOSA	U		0.507 (Q)		
N-EtFOSA	U		1.10 (Q)		
MeFOSAA	U		0.441 (Q)		
EtFOSAA	U		0.441 (Q)		
N-MeFOSE	U		4.41 (Q)		
N-EtFOSE	U		3.30 (Q)		
HFPO-DA	U		1.68 (Q)		
ADONA	U		1.76 (Q)		
9Cl-PF3ONS	U		1.77 (Q)		
11Cl-PF3OUdS	U		1.77 (Q)		
3:3 FTCA	U		1.76 (Q)		
5:3 FTCA	J	16.2	11.0 (Q)	1.01	1.053
7:3 FTCA	U		11.0 (Q)		
PFEESA	U		0.441 (Q)		
PFMPA	U		0.882 (Q)		
PFMBA	U		0.441 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; B = analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-5_Form1A_FC1L_483S31_SJ2987114.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HLWWTP-INFL - filtered
Sample Collection:
13-Sep-2021 06:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-5

Matrix: INFLUENT

Sample Size: 0.454 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 18:47:44

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 31

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	5.87	14.7		0.994
13C5-PFPeA		20.0	17.0	84.9		0.855
13C5-PFHxA		10.0	8.75	87.5	22.5	1.001
13C4-PFHpA		10.0	9.19	91.9		0.899
13C8-PFOA		10.0	8.89	88.9		1.000
13C9-PFNA		5.00	5.12	102		1.000
13C6-PFDA		5.00	4.49	89.9		0.999
13C7-PFUnA		5.00	4.63	92.6		1.053
13C2-PFDoA		5.00	3.92	78.3		1.088
13C2-PFTeDA	V	5.00	1.89	37.8		1.165
13C3-PFBS		10.0	8.31	82.8	2.87	0.802
13C3-PFHxS		10.0	8.67	86.6	2.41	1.000
13C8-PFOS		10.1	9.89	98.3	2.29	1.000
13C2-4:2 FTS		20.2	17.0	84.2	1.44	0.837
13C2-6:2 FTS		20.0	18.1	90.6	2.07	1.001
13C2-8:2 FTS		20.0	11.6	57.8	3.38	1.269
13C8-PFOSA		10.0	11.7	117		1.168
D3-N-MeFOSA		10.0	6.89	68.9		1.351
D5-N-EtFOSA		10.0	6.08	60.8		1.387
D3-MeFOSAA	V	20.0	5.02	25.1		1.319
D5-EtFOSAA	V	20.0	5.37	26.8		1.346
d7-NMe-FOSE		100	75.2	75.2		1.334
d9-NEt-FOSE		100	61.3	61.3		1.371
13C3-HFPO-DA		40.0	36.1	90.4	3.47	1.033

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LIWWTP-INFL - filtered
Sample Collection:
02-Sep-2021 07:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-6

Matrix: INFLUENT

Sample Size:

0.446 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:00:42

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 32

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J	3.33	1.79 (Q)		1.006
PFPeA	J	1.96	0.897 (Q)		1.000
PFHxA	B	15.7	0.461 (S)	3.81	0.999
PFHpA	J	0.717	0.449 (Q)	1.84	0.999
PFOA	B	5.84	0.449 (Q)	1.87	
PFNA	R J	0.676	0.449 (Q)	5.47	
PFDA	J	1.63	0.449 (Q)	2.91	1.001
PFUnA	U		0.449 (Q)		
PFDaA	R J	0.697	0.449 (Q)	11.6	0.999
PFTTrDA	U		0.449 (Q)		
PFTeDA	U		0.449 (Q)		
PFBS	U		0.449 (Q)		
PFPeS	U		0.451 (Q)		
PFHxS	J	0.605	0.449 (Q)	3.31	
PFHpS	U		0.449 (Q)		
PFOS	R	4.66	0.449 (Q)	3.89	
PFNS	U		0.449 (Q)		
PFDS	U		0.449 (Q)		
PFDoS	U		0.449 (Q)		
4:2 FTS	U		1.79 (Q)		
6:2 FTS	J	2.52	1.62 (Q)	0.39	1.000
8:2 FTS	U		1.79 (Q)		
PFOSA	U		0.449 (Q)		
N-MeFOSA	U		0.516 (Q)		
N-EtFOSA	U		1.12 (Q)		
MeFOSAA	U		0.449 (Q)		
EtFOSAA	U		0.449 (Q)		
N-MeFOSE	U		4.49 (Q)		
N-EtFOSE	U		3.36 (Q)		
HFPO-DA	U		1.71 (Q)		
ADONA	U		1.79 (Q)		
9Cl-PF3ONS	U		1.80 (Q)		
11Cl-PF3OUdS	U		1.80 (Q)		
3:3 FTCA	U		1.79 (Q)		
5:3 FTCA	J	28.1	11.2 (Q)	1.19	1.053
7:3 FTCA	U		11.2 (Q)		
PFEESA	U		0.449 (Q)		
PFMPA	U		0.897 (Q)		
PFMBA	U		0.449 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; B = analyte found in the associated blank and concentration in sample is less than 10X the concentration in the associated blank; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-6_Form1A_FC1L_483S32_SJ2987115.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

LIWWTP-INFL - filtered

Sample Collection:

02-Sep-2021 07:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-6

Matrix: INFLUENT

Sample Size: 0.446 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:00:42

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 32

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	6.92	17.3		1.000
13C5-PFPeA		20.0	12.5	62.7		0.856
13C5-PFHxA		10.0	7.79	77.9	23.6	1.000
13C4-PFHpA		10.0	7.69	76.9		0.899
13C8-PFOA		10.0	8.03	80.3		1.000
13C9-PFNA		5.00	4.22	84.4		1.000
13C6-PFDA		5.00	3.98	79.6		1.000
13C7-PFUnA		5.00	3.97	79.5		1.053
13C2-PFDoA		5.00	2.95	59.1		1.089
13C2-PFTeDA	V	5.00	1.07	21.5		1.166
13C3-PFBS		10.0	8.04	80.2	3.14	0.802
13C3-PFHxS		10.0	8.80	87.9	2.31	1.000
13C8-PFOS		10.1	9.26	92.0	2.25	1.000
13C2-4:2 FTS		20.2	12.8	63.4	1.66	0.838
13C2-6:2 FTS		20.0	17.4	87.1	2.15	1.001
13C2-8:2 FTS	V	20.0	8.28	41.3	3.31	1.269
13C8-PFOSA		10.0	9.85	98.5		1.169
D3-N-MeFOSA		10.0	5.20	52.0		1.352
D5-N-EtFOSA		10.0	4.47	44.7		1.389
D3-MeFOSAA	V	20.0	3.32	16.6		1.319
D5-EtFOSAA	V	20.0	2.34	11.7		1.345
d7-NMe-FOSE		100	50.1	50.1		1.335
d9-NEt-FOSE	V	100	28.4	28.4		1.373
13C3-HFPO-DA		40.0	27.0	67.5	3.59	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

PVTLF - filtered

Sample Collection:

30-Sep-2021 09:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-7

Matrix: LEACHATE

Sample Size:

0.0644 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:13:39

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 33

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		3280	62.2 (Q)		1.006
PFPeA		4630	31.1 (Q)		1.001
PFHxA		15100	15.6 (Q)	4.79	1.000
PFHpA		3500	15.6 (Q)	2.01	1.000
PFOA		2470	15.6 (Q)	1.85	
PFNA		131	15.6 (Q)	2.77	
PFDA		66.2	15.6 (Q)	3.27	1.000
PFUnA	U		15.6 (Q)		
PFDaA	U		15.6 (Q)		
PFTTrDA	U		15.6 (Q)		
PFTeDA	U		15.6 (Q)		
PFBS		9410	15.6 (Q)	2.39	1.000
PFPeS		11000	15.6 (Q)	2.07	0.890
PFHxS		42600	15.6 (Q)	2.59	
PFHpS		516	15.6 (Q)	2.11	0.916
PFOS		9900	15.6 (Q)	2.98	
PFNS	U		15.6 (Q)		
PFDS	U		15.6 (Q)		
PFDoS	U		15.6 (Q)		
4:2 FTS	J	95.9	62.2 (Q)	0.50	1.000
6:2 FTS		251	56.1 (Q)	0.41	1.000
8:2 FTS	U		62.2 (Q)		
PFOSA	U		15.6 (Q)		
N-MeFOSA	U		17.9 (Q)		
N-EtFOSA	U		38.9 (Q)		
MeFOSAA	U		15.6 (Q)		
EtFOSAA	U		15.6 (Q)		
N-MeFOSE	U		156 (Q)		
N-EtFOSE	U		116 (Q)		
HFPO-DA	U		59.1 (Q)		
ADONA	U		62.2 (Q)		
9Cl-PF3ONS	U		62.4 (Q)		
11Cl-PF3OUdS	U		62.3 (Q)		
3:3 FTCA	U		62.2 (Q)		
5:3 FTCA	U		389 (Q)		
7:3 FTCA	U		389 (Q)		
PFEESA	U		15.6 (Q)		
PFMPA	U		31.1 (Q)		
PFMBA	U		15.6 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-7_Form1A_FC1L_483S33_SJ2987116.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

PVTLF - filtered

Sample Collection:

30-Sep-2021 09:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-7

Matrix: LEACHATE

Sample Size: 0.0644 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:13:39

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 33

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		200	174	86.8		1.000
13C5-PFPeA		100	91.0	91.0		0.855
13C5-PFHxA		50.0	46.0	91.9	26.5	1.000
13C4-PFHpA		50.0	38.5	77.1		0.898
13C8-PFOA		50.0	41.8	83.6		1.000
13C9-PFNA		25.0	22.0	88.2		1.000
13C6-PFDA		25.0	20.3	81.2		1.000
13C7-PFUnA		25.0	19.3	77.3		1.052
13C2-PFDoA		25.0	19.1	76.6		1.086
13C2-PFTeDA		25.0	17.5	70.0		1.163
13C3-PFBS		50.2	40.9	81.6	3.03	0.801
13C3-PFHxS		50.1	42.0	83.9	2.21	1.000
13C8-PFOS		50.3	42.7	84.9	2.24	1.000
13C2-4:2 FTS		101	107	106	2.34	0.837
13C2-6:2 FTS		100	93.0	93.1	2.41	1.001
13C2-8:2 FTS		100	64.9	64.7	3.61	1.272
13C8-PFOSA		50.0	40.4	80.8		1.163
D3-N-MeFOSA		50.0	24.0	48.1		1.346
D5-N-EtFOSA		50.0	24.5	48.9		1.383
D3-MeFOSAA		100	52.8	52.8		1.322
D5-EtFOSAA		100	57.1	57.1		1.350
d7-NMe-FOSE		500	283	56.6		1.329
d9-NEt-FOSE		500	255	50.9		1.367
13C3-HFPO-DA		200	184	92.1	2.54	1.032

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

CMLF-IVA - filtered

Sample Collection:

04-Oct-2021 09:15

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-8

Matrix: LEACHATE

Sample Size:

0.0622 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:26:37

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 34

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		3580	12.9 (Q)		1.006
PFPeA		3790	31.6 (S)		1.003
PFHxA		9690	45.9 (S)	4.37	1.000
PFHpA		1550	3.21 (Q)	2.00	1.000
PFOA		4860	3.21 (Q)	1.96	
PFNA		231	3.21 (Q)	2.96	
PFDA		133	3.21 (Q)	2.88	1.000
PFUnA	U		3.21 (Q)		
PFDaA	U		3.21 (Q)		
PFTTrDA	U		3.21 (Q)		
PFTeDA	U		3.21 (Q)		
PFBS		2340	3.21 (Q)	2.63	1.002
PFPeS		110	3.28 (S)	2.32	0.888
PFHxS		766	3.21 (Q)	2.42	
PFHpS		33.5	3.21 (Q)	2.09	0.916
PFOS		1140	3.21 (Q)	2.91	
PFNS	U		3.21 (Q)		
PFDS	U		3.21 (Q)		
PFDoS	U		3.21 (Q)		
4:2 FTS	U		12.9 (Q)		
6:2 FTS		287	11.6 (Q)	0.42	1.000
8:2 FTS	J	33.7	12.9 (Q)	0.64	0.999
PFOSA	J	4.41	3.21 (Q)		
N-MeFOSA	U		3.70 (Q)		
N-EtFOSA	U		8.03 (Q)		
MeFOSAA		67.9	3.21 (Q)	1.84	
EtFOSAA	J	4.45	3.21 (Q)	1.00	
N-MeFOSE	U		32.1 (Q)		
N-EtFOSE	U		24.0 (Q)		
HFPO-DA	U		12.2 (Q)		
ADONA	U		12.9 (Q)		
9Cl-PF3ONS	U		12.9 (Q)		
11Cl-PF3OUdS	U		12.9 (Q)		
3:3 FTCA		990	20.4 (S)	1.85	0.817
5:3 FTCA		80900	80.3 (Q)	1.19	1.056
7:3 FTCA		11500	80.3 (Q)	0.68	1.352
PFEESA	U		3.21 (Q)		
PFMPA	U		6.43 (Q)		
PFMBA	U		3.21 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-8_Form1A_FC1L_483S34_SJ2987117.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.

CMLF-IVA - filtered

Sample Collection:

04-Oct-2021 09:15

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-8

Matrix: LEACHATE

Sample Size: 0.0622 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:26:37

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 34

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	8.26	20.6		1.000
13C5-PFPeA		20.0	14.1	70.7		0.852
13C5-PFHxA		10.0	7.14	71.4	24.8	1.000
13C4-PFHpA		10.0	7.70	77.0		0.897
13C8-PFOA		10.0	7.86	78.6		1.000
13C9-PFNA		5.00	3.55	71.0		1.000
13C6-PFDA		5.00	3.02	60.5		1.000
13C7-PFUnA		5.00	2.98	59.6		1.052
13C2-PFDoA		5.00	2.60	51.9		1.086
13C2-PFTeDA	V	5.00	1.66	33.2		1.163
13C3-PFBS		10.0	7.49	74.6	3.09	0.801
13C3-PFHxS		10.0	8.35	83.4	2.31	1.001
13C8-PFOS		10.1	6.90	68.5	2.10	1.000
13C2-4:2 FTS		20.2	16.1	79.7	1.90	0.836
13C2-6:2 FTS		20.0	18.2	91.2	2.06	1.001
13C2-8:2 FTS	V	20.0	6.72	33.5	3.42	1.273
13C8-PFOSA		10.0	6.76	67.6		1.163
D3-N-MeFOSA		10.0	4.55	45.5		1.346
D5-N-EtFOSA		10.0	4.26	42.6		1.383
D3-MeFOSAA	V	20.0	5.42	27.1		1.324
D5-EtFOSAA	V	20.0	6.63	33.2		1.352
d7-NMe-FOSE		100	46.5	46.5		1.329
d9-NEt-FOSE		100	41.0	41.0		1.367
13C3-HFPO-DA		40.0	32.6	81.5	2.45	1.033

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

CMLF-IVB - filtered

Sample Collection:

04-Oct-2021 09:25

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-9

Matrix: LEACHATE

Sample Size:

0.0619 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:39:34

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 35

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		2590	17.8 (Q)		1.006
PFPeA		1890	12.8 (S)		0.999
PFHxA		4320	10.7 (S)	4.57	1.000
PFHpA		706	4.44 (Q)	1.95	1.000
PFOA		1560	4.44 (Q)	1.85	
PFNA		233	4.44 (Q)	2.73	
PFDA		74.4	4.44 (Q)	3.30	1.000
PFUnA	J	5.14	4.44 (Q)	5.28	1.000
PFDaA	U		4.44 (Q)		
PFTTrDA	U		4.44 (Q)		
PFTeDA	U		4.44 (Q)		
PFBS		2380	5.88 (S)	3.25	1.000
PFPeS		40.5	4.47 (Q)	2.64	0.889
PFHxS		469	4.44 (Q)	2.35	
PFHpS	J	6.70	4.44 (Q)	1.96	0.916
PFOS		204	4.44 (Q)	3.14	
PFNS	U		4.44 (Q)		
PFDS	U		4.44 (Q)		
PFDoS	U		4.44 (Q)		
4:2 FTS	U		17.8 (Q)		
6:2 FTS		264	16.0 (Q)	0.45	1.000
8:2 FTS	U		17.8 (Q)		
PFOSA	J	4.58	4.44 (Q)		
N-MeFOSA	U		5.11 (Q)		
N-EtFOSA	U		11.1 (Q)		
MeFOSAA	R	56.3	6.28 (S)	2.98	
EtFOSAA	J	7.51	4.44 (Q)	1.44	
N-MeFOSE	U		44.4 (Q)		
N-EtFOSE	U		33.2 (Q)		
HFPO-DA	U		16.9 (Q)		
ADONA	U		17.8 (Q)		
9Cl-PF3ONS	U		17.8 (Q)		
11Cl-PF3OUdS	U		17.8 (Q)		
3:3 FTCA		752	17.9 (S)	1.92	0.817
5:3 FTCA		85900	111 (Q)	1.33	1.054
7:3 FTCA		6090	111 (Q)	0.70	1.352
PFEESA	U		4.44 (Q)		
PFMPA	U		8.89 (Q)		
PFMBA	U		4.44 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-9_Form1A_FC1L_483S35_SJ2987118.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.

CMLF-IVB - filtered

Sample Collection:

04-Oct-2021 09:25

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-9

Matrix: LEACHATE

Sample Size: 0.0619 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:39:34

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 35

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	12.4	31.0		1.000
13C5-PFPeA		20.0	15.4	77.0		0.854
13C5-PFHxA		10.0	9.23	92.3	21.0	1.000
13C4-PFHpA		10.0	8.13	81.3		0.897
13C8-PFOA		10.0	8.65	86.5		1.000
13C9-PFNA		5.00	3.59	71.8		0.999
13C6-PFDA		5.00	3.38	67.6		0.999
13C7-PFUnA		5.00	2.92	58.4		1.051
13C2-PFDoA		5.00	2.68	53.6		1.086
13C2-PFTeDA	V	5.00	1.95	39.0		1.161
13C3-PFBS		10.0	7.23	72.0	2.37	0.800
13C3-PFHxS		10.0	8.40	83.9	2.24	0.999
13C8-PFOS		10.1	7.60	75.5	2.20	0.999
13C2-4:2 FTS		20.2	18.4	91.3	1.56	0.835
13C2-6:2 FTS		20.0	18.9	94.3	2.19	1.001
13C2-8:2 FTS	V	20.0	7.28	36.3	3.60	1.272
13C8-PFOSA		10.0	6.93	69.3		1.162
D3-N-MeFOSA		10.0	4.81	48.1		1.345
D5-N-EtFOSA		10.0	4.47	44.7		1.381
D3-MeFOSAA	V	20.0	5.60	28.0		1.322
D5-EtFOSAA	V	20.0	6.89	34.4		1.350
d7-NMe-FOSE		100	48.7	48.7		1.328
d9-NEt-FOSE		100	43.5	43.5		1.366
13C3-HFPO-DA		40.0	32.3	80.6	2.61	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

CMLF-VBE - filtered

Sample Collection:

04-Oct-2021 09:55

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-10

Matrix: LEACHATE

Sample Size: 0.0605 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:52:31

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 36

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		6010	13.2 (Q)		1.006
PFPeA		18700	96.2 (S)		1.003
PFHxA		13900	10.1 (S)	4.17	1.000
PFHpA		4270	3.30 (Q)	1.74	1.002
PFOA		10600	3.30 (Q)	1.88	
PFNA		209	3.30 (Q)	2.92	
PFDA		502	3.30 (Q)	2.98	1.000
PFUnA	J	13.1	3.30 (Q)	4.60	1.000
PFDoA		27.8	3.30 (Q)	6.99	0.999
PFTTrDA	U		3.30 (Q)		
PFTeDA	U		3.30 (Q)		
PFBS		46.4	3.30 (Q)	2.81	1.001
PFPeS	U		3.32 (Q)		
PFHxS	J	8.49	3.30 (Q)	2.43	
PFHpS	U		3.30 (Q)		
PFOS	J	11.7	3.30 (Q)	2.80	
PFNS	U		3.30 (Q)		
PFDS	U		3.30 (Q)		
PFDoS	U		3.30 (Q)		
4:2 FTS	U		13.2 (Q)		
6:2 FTS	J	18.0	11.9 (Q)	0.33	1.000
8:2 FTS	U		13.2 (Q)		
PFOSA	U		3.30 (Q)		
N-MeFOSA	U		3.80 (Q)		
N-EtFOSA	U		8.26 (Q)		
MeFOSAA	U		3.30 (Q)		
EtFOSAA	U		3.30 (Q)		
N-MeFOSE	U		33.0 (Q)		
N-EtFOSE	U		24.7 (Q)		
HFPO-DA	U		12.6 (Q)		
ADONA	U		13.2 (Q)		
9Cl-PF3ONS	U		13.2 (Q)		
11Cl-PF3OUdS	U		13.2 (Q)		
3:3 FTCA		403	13.2 (Q)	1.96	0.826
5:3 FTCA		1550	82.6 (Q)	0.91	1.053
7:3 FTCA	J	135	82.6 (Q)	0.71	1.349
PFEESA	U		3.30 (Q)		
PFMPA	U		6.61 (Q)		
PFMBA	U		3.30 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-10_Form1A_FC1L_483S36_SJ2987119.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.

CMLF-VBE - filtered

Sample Collection:

04-Oct-2021 09:55

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-10

Matrix: LEACHATE

Sample Size: 0.0605 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 19:52:31

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 36

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	35.2	88.1		0.995
13C5-PFPeA		20.0	17.7	88.7		0.856
13C5-PFHxA		10.0	8.52	85.2	22.6	1.000
13C4-PFHpA		10.0	8.79	87.9		0.898
13C8-PFOA		10.0	7.94	79.4		1.000
13C9-PFNA		5.00	4.26	85.2		1.001
13C6-PFDA		5.00	3.80	76.0		1.000
13C7-PFUnA		5.00	3.51	70.2		1.052
13C2-PFDoA		5.00	3.33	66.5		1.087
13C2-PFTeDA		5.00	2.85	57.1		1.163
13C3-PFBS		10.0	8.35	83.2	2.34	0.801
13C3-PFHxS		10.0	9.10	90.9	2.33	1.000
13C8-PFOS		10.1	8.03	79.8	2.07	1.000
13C2-4:2 FTS		20.2	24.1	120	2.14	0.837
13C2-6:2 FTS		20.0	17.0	84.8	2.08	1.001
13C2-8:2 FTS		20.0	11.3	56.5	3.39	1.272
13C8-PFOSA		10.0	7.60	76.0		1.163
D3-N-MeFOSA		10.0	5.35	53.5		1.346
D5-N-EtFOSA		10.0	4.82	48.2		1.383
D3-MeFOSAA	V	20.0	8.34	41.7		1.322
D5-EtFOSAA	V	20.0	9.27	46.3		1.350
d7-NMe-FOSE		100	54.3	54.3		1.329
d9-NEt-FOSE		100	47.9	47.9		1.366
13C3-HFPO-DA		40.0	44.7	112	2.62	1.030

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R1 - filtered
 Sample Collection:
 15-Sep-2021 15:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-11

Matrix: LEACHATE

Sample Size:

0.0596 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:05:29

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 37

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		7120	26.9 (Q)		1.006
PFPeA		10500	13.8 (S)		1.001
PFHxA		10500	16.8 (S)	3.85	1.000
PFHpA		7230	6.72 (Q)	1.98	1.000
PFOA		11600	6.72 (Q)	1.84	
PFNA		737	6.72 (Q)	2.84	
PFDA		327	6.72 (Q)	2.91	1.000
PFUnA	J	22.0	6.72 (Q)	4.63	1.000
PFDaA	U		6.72 (Q)		
PFTTrDA	U		6.72 (Q)		
PFTeDA	U		6.72 (Q)		
PFBS		1250	6.72 (Q)	2.65	1.000
PFPeS		313	6.75 (Q)	2.37	0.891
PFHxS		1060	6.72 (Q)	2.46	
PFHpS		101	6.72 (Q)	1.95	0.916
PFOS		3610	6.72 (Q)	3.18	
PFNS	U		6.72 (Q)		
PFDS	U		6.72 (Q)		
PFDoS	U		6.72 (Q)		
4:2 FTS	J	34.0	26.9 (Q)	0.35	1.000
6:2 FTS		1120	24.2 (Q)	0.43	1.000
8:2 FTS		990	26.9 (Q)	0.53	1.000
PFOSA		64.9	6.72 (Q)		
N-MeFOSA	U		7.73 (Q)		
N-EtFOSA	U		16.8 (Q)		
MeFOSAA		63.3	6.72 (Q)	1.74	
EtFOSAA		671	6.72 (Q)	1.13	
N-MeFOSE	U		67.2 (Q)		
N-EtFOSE	U		50.3 (Q)		
HFPO-DA	U		25.5 (Q)		
ADONA	U		26.9 (Q)		
9Cl-PF3ONS	U		26.9 (Q)		
11Cl-PF3OUdS	U		26.9 (Q)		
3:3 FTCA		165	26.9 (Q)	1.16	0.813
5:3 FTCA		10400	168 (Q)	1.29	1.054
7:3 FTCA	J	232	168 (Q)	0.70	1.349
PFEESA	U		6.72 (Q)		
PFMPA	U		13.4 (Q)		
PFMBA	U		6.72 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-11_Form1A_FC1L_483S37_SJ2987120.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R1 - filtered
 Sample Collection:
 15-Sep-2021 15:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
 (TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-11

Matrix: LEACHATE

Sample Size: 0.0596 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:05:29

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 37

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	80.0	8.80	11.0		0.994
13C5-PFPeA		40.0	26.7	66.7		0.855
13C5-PFHxA		20.0	18.9	94.6	22.2	1.000
13C4-PFHpA		20.0	16.6	83.1		0.900
13C8-PFOA		20.0	16.5	82.5		1.000
13C9-PFNA		10.0	7.28	72.8		1.000
13C6-PFDA		10.0	6.46	64.6		1.000
13C7-PFUnA		10.0	6.16	61.6		1.052
13C2-PFDoA		10.0	5.54	55.4		1.086
13C2-PFTeDA	V	10.0	2.56	25.6		1.163
13C3-PFBS		20.1	16.4	81.9	3.13	0.802
13C3-PFHxS		20.0	15.4	77.0	2.34	1.000
13C8-PFOS		20.1	15.0	74.5	2.18	1.000
13C2-4:2 FTS		40.3	54.2	134	2.20	0.838
13C2-6:2 FTS		40.0	38.2	95.4	1.93	1.001
13C2-8:2 FTS	V	40.1	19.9	49.7	3.18	1.273
13C8-PFOSA		20.0	14.3	71.3		1.163
D3-N-MeFOSA		20.0	10.2	50.9		1.346
D5-N-EtFOSA		20.0	9.70	48.5		1.383
D3-MeFOSAA	V	40.0	16.2	40.5		1.324
D5-EtFOSAA	V	40.0	17.7	44.3		1.352
d7-NMe-FOSE		200	98.5	49.2		1.329
d9-NEt-FOSE		200	87.7	43.9		1.367
13C3-HFPO-DA		80.0	78.9	98.7	2.89	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R2 - filtered
 Sample Collection:
 15-Sep-2021 14:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-12

Matrix: LEACHATE

Sample Size:

0.0633 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:18:35

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 38

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		4330	14.8 (S)		1.006
PFPeA		6450	100 (S)		1.002
PFHxA		9200	17.0 (S)	5.46	1.000
PFHpA		3840	5.85 (S)	1.94	1.000
PFOA		4910	3.16 (Q)	1.96	
PFNA		283	3.16 (Q)	2.80	
PFDA		99.3	3.16 (Q)	2.87	1.000
PFUnA	J	11.9	3.16 (Q)	4.91	1.000
PFDaA	J	6.73	3.16 (Q)	6.69	1.000
PFTTrDA	U		3.16 (Q)		
PFTeDA	U		3.16 (Q)		
PFBS		1150	4.10 (S)	2.45	1.000
PFPeS		174	3.18 (Q)	2.03	0.888
PFHxS		760	3.16 (Q)	2.51	
PFHpS		30.4	3.16 (Q)	1.97	0.915
PFOS		970	3.16 (Q)	2.95	
PFNS	U		3.16 (Q)		
PFDS	U		3.16 (Q)		
PFDoS	U		3.16 (Q)		
4:2 FTS	J	40.0	12.6 (Q)	0.40	1.000
6:2 FTS		921	11.4 (Q)	0.43	1.000
8:2 FTS		942	12.6 (Q)	0.51	1.000
PFOSA		31.5	3.16 (Q)		
N-MeFOSA	U		3.64 (Q)		
N-EtFOSA	U		7.90 (Q)		
MeFOSAA		370	3.16 (Q)	1.96	
EtFOSAA		691	3.16 (Q)	1.17	
N-MeFOSE	U		31.6 (Q)		
N-EtFOSE	U		23.6 (Q)		
HFPO-DA	U		12.0 (Q)		
ADONA	U		12.6 (Q)		
9Cl-PF3ONS	U		12.7 (Q)		
11Cl-PF3OUdS	U		12.7 (Q)		
3:3 FTCA		334	14.1 (S)	1.74	0.820
5:3 FTCA		23100	79.0 (Q)	1.13	1.055
7:3 FTCA		837	79.0 (Q)	0.66	1.352
PFEESA	U		3.16 (Q)		
PFMPA	U		6.32 (Q)		
PFMBA	J	3.17	3.16 (Q)		1.073

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-12_Form1A_FC1L_483S38_SJ2987121.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R2 - filtered
 Sample Collection:
 15-Sep-2021 14:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No. HDOH - PFAS IN MULTIMEDIA
 (TO-17403)
 Lab Sample I.D.: L35819-12
 Sample Size: 0.0633 L
 Initial Calibration Date: 22-Feb-2021
 Instrument ID: LCMS/MS
 Column ID: C18
 Sample Data Filename: FC1L_483 S: 38
 Blank Data Filename: FC1L_483 S: 26
 Cal. Ver. Data Filename: FC1L_483 S: 21

Contract No.: 4066

Matrix: LEACHATE

Sample Receipt Date: 13-Oct-2021

Extraction Date: 12-Nov-2021

Analysis Date: 12-Nov-2021 Time: 20:18:35

Extract Volume (uL): 4000

Injection Volume (uL): 2

Dilution Factor: N/A

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	40.0	4.58	11.5		1.000
13C5-PFPeA		20.0	11.6	57.8		0.854
13C5-PFHxA		10.0	7.81	78.1	18.0	1.000
13C4-PFHpA		10.0	7.69	76.9		0.897
13C8-PFOA		10.0	7.92	79.2		1.000
13C9-PFNA		5.00	3.68	73.7		1.000
13C6-PFDA		5.00	3.43	68.7		1.000
13C7-PFUnA		5.00	2.92	58.5		1.052
13C2-PFDoA	V	5.00	2.07	41.3		1.086
13C2-PFTeDA	V	5.00	0.924	18.5		1.163
13C3-PFBS		10.0	7.79	77.7	3.12	0.801
13C3-PFHxS		10.0	8.52	85.1	2.41	1.000
13C8-PFOS		10.1	7.28	72.3	2.05	1.000
13C2-4:2 FTS		20.2	14.0	69.4	1.77	0.835
13C2-6:2 FTS		20.0	19.9	99.6	1.96	1.000
13C2-8:2 FTS	V	20.0	7.51	37.5	2.94	1.272
13C8-PFOSA		10.0	7.49	74.9		1.163
D3-N-MeFOSA		10.0	4.86	48.6		1.346
D5-N-EtFOSA		10.0	4.32	43.2		1.382
D3-MeFOSAA	V	20.0	5.62	28.1		1.322
D5-EtFOSAA	V	20.0	6.36	31.8		1.350
d7-NMe-FOSE		100	42.0	42.0		1.329
d9-NEt-FOSE		100	36.6	36.6		1.366
13C3-HFPO-DA		40.0	32.1	80.2	2.31	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R3 - filtered
 Sample Collection:
 15-Sep-2021 15:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-13

Matrix: LEACHATE

Sample Size:

0.0607 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:31:32

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 39

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		3630	26.3 (Q)		1.006
PFPeA		6080	113 (S)		1.002
PFHxA		21200	9.60 (S)	5.49	1.000
PFHpA		2550	6.59 (Q)	1.88	1.000
PFOA		6000	6.59 (Q)	1.97	
PFNA		185	6.59 (Q)	2.86	
PFDA		140	6.59 (Q)	3.02	1.000
PFUnA	J	9.26	6.59 (Q)	5.55	1.000
PFDaA	U		6.59 (Q)		
PFTTrDA	U		6.59 (Q)		
PFTeDA	U		6.59 (Q)		
PFBS		4110	6.59 (Q)	3.09	1.000
PFPeS	J	17.6	6.62 (Q)	1.85	0.888
PFHxS		84.0	6.59 (Q)	2.43	
PFHpS	U		6.59 (Q)		
PFOS		67.7	6.59 (Q)	2.76	
PFNS	U		6.59 (Q)		
PFDS	U		6.59 (Q)		
PFDoS	U		6.59 (Q)		
4:2 FTS	U		26.3 (Q)		
6:2 FTS		194	23.7 (Q)	0.44	1.000
8:2 FTS	U		26.3 (Q)		
PFOSA	U		6.59 (Q)		
N-MeFOSA	U		7.57 (Q)		
N-EtFOSA	U		16.5 (Q)		
MeFOSAA	U		6.59 (Q)		
EtFOSAA	R	43.1	6.59 (Q)	1.77	
N-MeFOSE	U		65.9 (Q)		
N-EtFOSE	U		49.3 (Q)		
HFPO-DA	U		25.0 (Q)		
ADONA	U		26.3 (Q)		
9Cl-PF3ONS	U		26.4 (Q)		
11Cl-PF3OUdS	U		26.4 (Q)		
3:3 FTCA		441	26.3 (Q)	1.76	0.818
5:3 FTCA		31000	165 (Q)	1.17	1.053
7:3 FTCA		2080	165 (Q)	0.70	1.351
PFEESA	U		6.59 (Q)		
PFMPA	U		13.2 (Q)		
PFMBA	U		6.59 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-13_Form1A_FC1L_483S39_SJ2987122.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R3 - filtered
 Sample Collection:
 15-Sep-2021 15:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.: 4066

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Lab Sample I.D.:

L35819-13

Matrix: LEACHATE

Sample Size:

0.0607 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:31:32

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 39

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	80.0	10.2	12.8		1.000
13C5-PFPeA		40.0	26.6	66.4		0.856
13C5-PFHxA		20.0	15.7	78.5	21.4	1.000
13C4-PFHpA		20.0	16.8	84.0		0.898
13C8-PFOA		20.0	15.9	79.5		0.999
13C9-PFNA		10.0	7.53	75.3		1.000
13C6-PFDA		10.0	6.91	69.1		1.000
13C7-PFUnA		10.0	6.76	67.6		1.053
13C2-PFDoA		10.0	6.01	60.1		1.087
13C2-PFTeDA	V	10.0	4.10	41.0		1.163
13C3-PFBS		20.1	14.6	72.9	2.54	0.801
13C3-PFHxS		20.0	17.3	86.4	2.41	1.000
13C8-PFOS		20.1	15.8	78.4	2.17	1.000
13C2-4:2 FTS		40.3	54.0	134	1.78	0.837
13C2-6:2 FTS		40.0	37.7	94.1	2.14	1.001
13C2-8:2 FTS		40.1	22.5	56.1	3.64	1.272
13C8-PFOSA		20.0	16.1	80.4		1.164
D3-N-MeFOSA		20.0	10.7	53.5		1.346
D5-N-EtFOSA		20.0	9.91	49.6		1.383
D3-MeFOSAA	V	40.0	18.5	46.3		1.322
D5-EtFOSAA	V	40.0	19.6	49.0		1.350
d7-NMe-FOSE		200	103	51.6		1.329
d9-NEt-FOSE		200	90.6	45.3		1.366
13C3-HFPO-DA		80.0	69.4	86.8	2.85	1.033

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R4 - filtered
 Sample Collection:
 15-Sep-2021 16:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-14

Matrix: LEACHATE

Sample Size:

0.0594 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:44:30

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 40

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		7410	67.3 (Q)		1.006
PFPeA		12400	81.2 (S)		1.000
PFHxA		56300	16.8 (Q)	4.06	1.000
PFHpA		3110	16.8 (Q)	2.12	1.000
PFOA		11100	16.8 (Q)	1.78	
PFNA		253	16.8 (Q)	2.85	
PFDA		358	16.8 (Q)	3.05	1.000
PFUnA	U		16.8 (Q)		
PFDaA	U		16.8 (Q)		
PFTTrDA	U		16.8 (Q)		
PFTeDA	U		25.2 (S)		
PFBS		4490	16.8 (Q)	3.12	1.000
PFPeS	U		16.9 (Q)		
PFHxS		92.9	16.8 (Q)	2.39	
PFHpS	U		16.8 (Q)		
PFOS		164	16.8 (Q)	2.75	
PFNS	U		16.8 (Q)		
PFDS	U		16.8 (Q)		
PFDoS	U		16.8 (Q)		
4:2 FTS	U		67.3 (Q)		
6:2 FTS	J	234	60.7 (Q)	0.49	1.001
8:2 FTS	U		67.3 (Q)		
PFOSA	U		16.8 (Q)		
N-MeFOSA	U		19.4 (Q)		
N-EtFOSA	U		42.1 (Q)		
MeFOSAA	R J	41.6	16.8 (Q)	4.24	
EtFOSAA	U		16.8 (Q)		
N-MeFOSE	U		168 (Q)		
N-EtFOSE	U		126 (Q)		
HFPO-DA	U		64.0 (Q)		
ADONA	U		67.3 (Q)		
9Cl-PF3ONS	U		67.5 (Q)		
11Cl-PF3OUdS	U		67.4 (Q)		
3:3 FTCA		1080	67.3 (Q)	1.52	0.815
5:3 FTCA		86000	421 (Q)	1.42	1.053
7:3 FTCA		1790	421 (Q)	0.67	1.348
PFEESA	U		16.8 (Q)		
PFMPA	U		33.7 (Q)		
PFMBA	U		16.8 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFC_FC_LC_PFAS_L35819-14_Form1A_FC1L_483S40_SJ2987123.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
 WHLF-LECH-R4 - filtered
 Sample Collection:
 15-Sep-2021 16:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
 V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35819-14

Matrix: LEACHATE

Sample Size: 0.0594 L

Sample Receipt Date: 13-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021 Time: 20:44:30

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC1L_483 S: 40

Injection Volume (uL): 2

Blank Data Filename: FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename: FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
 Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	200	39.1	19.5		0.994
13C5-PFPeA		100	88.0	88.0		0.856
13C5-PFHxA		50.0	40.1	80.3	24.4	1.000
13C4-PFHpA		50.0	48.8	97.5		0.896
13C8-PFOA		50.0	45.3	90.5		0.999
13C9-PFNA		25.0	19.7	78.7		1.000
13C6-PFDA		25.0	18.2	72.8		1.000
13C7-PFUnA		25.0	17.9	71.6		1.052
13C2-PFDoA		25.0	15.0	60.2		1.087
13C2-PFTeDA	V	25.0	5.93	23.7		1.163
13C3-PFBS		50.2	45.5	90.8	2.65	0.802
13C3-PFHxS		50.1	44.0	87.8	2.27	1.000
13C8-PFOS		50.3	40.6	80.7	2.21	1.000
13C2-4:2 FTS		101	96.8	96.0	1.76	0.838
13C2-6:2 FTS		100	91.0	91.0	2.19	1.001
13C2-8:2 FTS		100	59.9	59.8	3.80	1.272
13C8-PFOSA		50.0	37.4	74.8		1.163
D3-N-MeFOSA		50.0	29.0	58.0		1.346
D5-N-EtFOSA		50.0	26.2	52.4		1.382
D3-MeFOSAA	V	100	48.0	48.0		1.324
D5-EtFOSAA		100	55.1	55.1		1.352
d7-NMe-FOSE		500	280	55.9		1.329
d9-NEt-FOSE		500	229	45.8		1.366
13C3-HFPO-DA		200	195	97.3	2.72	1.032

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.: 4066

Project No.

N/A

Lab Sample I.D.:

WG78729-101

Matrix: AQUEOUS

Sample Size:

0.500 L

Sample Receipt Date: N/A

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 17:41:03

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 26

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.60 (Q)		
PFPeA	U		0.800 (Q)		
PFHxA	J	1.48	0.400 (Q)	4.23	1.000
PFHpA	U		0.400 (Q)		
PFOA	J	0.701	0.400 (Q)	1.79	
PFNA	U		0.400 (Q)		
PFDA	U		0.400 (Q)		
PFUnA	U		0.400 (Q)		
PFDoA	U		0.400 (Q)		
PFTTrDA	U		0.400 (Q)		
PFTeDA	U		0.400 (Q)		
PFBS	U		0.400 (Q)		
PFPeS	U		0.402 (Q)		
PFHxS	U		0.400 (Q)		
PFHpS	U		0.400 (Q)		
PFOS	U		0.400 (Q)		
PFNS	U		0.400 (Q)		
PFDS	U		0.400 (Q)		
PFDoS	U		0.400 (Q)		
4:2 FTS	U		1.60 (Q)		
6:2 FTS	U		1.44 (Q)		
8:2 FTS	U		1.60 (Q)		
PFOSA	U		0.400 (Q)		
N-MeFOSA	U		0.460 (Q)		
N-EtFOSA	U		1.00 (Q)		
MeFOSAA	U		0.400 (Q)		
EtFOSAA	U		0.400 (Q)		
N-MeFOSE	U		4.00 (Q)		
N-EtFOSE	U		2.99 (Q)		
HFPO-DA	U		1.52 (Q)		
ADONA	U		1.60 (Q)		
9CI-PF3ONS	U		1.60 (Q)		
11CI-PF3OUdS	U		1.60 (Q)		
3:3 FTCA	U		1.60 (Q)		
5:3 FTCA	U		10.0 (Q)		
7:3 FTCA	U		10.0 (Q)		
PFEESA	U		0.400 (Q)		
PFMPA	U		0.800 (Q)		
PFMBA	U		0.400 (Q)		
NFDHA	U		0.800 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29;
Report Filename: PFC_FC_LC_PFAS_WG78729-101_Form1A_FC1L_483S26_SJ2987107.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.: 4066

Project No.

N/A

Lab Sample I.D.:

WG78729-101

Matrix: AQUEOUS

Sample Size:

0.500 L

Sample Receipt Date: N/A

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Nov-2021

Instrument ID:

LCMS/MS

Analysis Date: 12-Nov-2021 Time: 17:41:03

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC1L_483 S: 26

Injection Volume (uL): 2

Blank Data Filename:

FC1L_483 S: 26

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC1L_483 S: 21

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	36.6	91.5		0.994
13C5-PFPeA		20.0	19.1	95.6		0.857
13C5-PFHxA		10.0	10.8	108	26.9	1.000
13C4-PFHpA		10.0	8.39	83.9		0.899
13C8-PFOA		10.0	8.30	83.0		1.000
13C9-PFNA		5.00	4.53	90.6		1.000
13C6-PFDA		5.00	5.05	101		0.999
13C7-PFUnA		5.00	5.06	101		1.051
13C2-PFDoA		5.00	4.82	96.4		1.086
13C2-PFTeDA		5.00	3.97	79.4		1.161
13C3-PFBS		10.0	9.14	91.1	2.77	0.801
13C3-PFHxS		10.0	9.55	95.3	2.46	1.000
13C8-PFOS		10.1	9.98	99.2	2.21	1.000
13C2-4:2 FTS		20.2	19.0	94.4	1.85	0.835
13C2-6:2 FTS		20.0	19.4	96.9	2.20	1.001
13C2-8:2 FTS		20.0	15.5	77.4	3.55	1.270
13C8-PFOA		10.0	9.13	91.3		1.162
D3-N-MeFOSA		10.0	6.06	60.6		1.345
D5-N-EtFOSA		10.0	5.73	57.3		1.382
D3-MeFOSAA		20.0	12.1	60.4		1.320
D5-EtFOSAA		20.0	13.3	66.7		1.349
d7-NMe-FOSE		100	72.7	72.7		1.328
d9-NEt-FOSE		100	65.4	65.4		1.366
13C3-HFPO-DA		40.0	33.0	82.6	2.03	1.032

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 8A

PERFLUORINATED ORGANICS ONGOING PRECISION AND RECOVERY (OPR)

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.:	4066	Lab Sample I.D.:	WG78729-102
Matrix:	AQUEOUS	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Nov-2021	Instrument ID:	LCMS/MS
Analysis Date:	12-Nov-2021 Time: 17:01:46	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC1L_483 S: 23
Injection Volume (uL):	2	Blank Data Filename:	FC1L_483 S: 26
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC1L_483 S: 21

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 1 mL EXTRACT VOLUME.

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
PFBA			20.0	19.9	99.6	1.006
PFPeA			10.0	9.34	93.4	0.998
PFHxA		4.21	5.00	4.52	90.5	1.000
PFHpA		2.07	5.00	4.94	98.7	1.000
PFOA		1.99	5.00	4.72	94.5	
PFNA		2.73	5.00	4.80	96.1	
PFDA		2.90	5.00	4.76	95.2	1.000
PFUnA		4.64	5.00	5.16	103	1.000
PFDoA		7.75	5.00	5.09	102	1.000
PFTTrDA		3.16	5.00	5.33	107	0.963
PFTeDA		2.45	5.00	5.12	102	1.000
PFBS		2.92	5.00	5.23	105	1.000
PFPeS		2.37	5.01	5.23	104	0.890
PFHxS		2.27	5.00	4.76	95.1	
PFHpS		2.22	5.01	4.80	95.7	0.916
PFOS		2.64	5.00	4.82	96.3	
PFNS		2.29	5.01	4.63	92.3	1.049
PFDS		2.24	5.00	4.82	96.5	1.082
PFDoS		2.30	5.01	4.30	85.9	1.167
4:2 FTS		0.35	20.0	19.0	95.2	1.000
6:2 FTS		0.40	18.0	16.2	89.8	1.000
8:2 FTS		0.56	20.0	21.9	109	1.000
PFOSA			5.00	5.33	107	
N-MeFOSA		0.51	5.75	5.62	97.7	
N-EtFOSA		0.52	12.5	12.4	98.8	
MeFOSAA		2.04	5.00	4.79	95.8	
EtFOSAA		1.32	5.00	5.34	107	
N-MeFOSE			50.0	50.6	101	
N-EtFOSE			37.5	42.6	114	
HFPO-DA		2.88	19.0	18.7	98.2	1.001
ADONA		1.07	20.1	20.1	100	1.096
9CI-PF3ONS		3.02	20.0	18.4	91.7	0.966
11CI-PF3OUdS		3.12	20.0	18.2	90.9	1.031
3:3 FTCA		1.89	20.0	18.7	93.4	0.825
5:3 FTCA		1.19	125	114	91.1	1.053

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
7:3 FTCA		0.75	125	122	97.9	1.350
PFEESA		10.5	5.00	4.55	91.0	1.033
PFMPA			10.0	9.67	96.7	0.584
PFMBA			5.00	4.29	85.8	1.068
NFDHA	R	2.44	10.0	8.87	88.7	0.989

(1) Where applicable, custom lab flags have been used on this report; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

These pages are part of a larger report that may contain information necessary for full data evaluation. Results reported relate only to the sample tested.

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SGS AXYS METHOD MLA-110 Rev 02

Form 8B

PERFLUORINATED ORGANICS ONGOING PRECISION AND RECOVERY (OPR)

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.:	4066	Lab Sample I.D.:	WG78729-102
Matrix:	AQUEOUS	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Nov-2021	Instrument ID:	LCMS/MS
Analysis Date:	12-Nov-2021 Time: 17:01:46	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC1L_483 S: 23
Injection Volume (uL):	2	Blank Data Filename:	FC1L_483 S: 26
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC1L_483 S: 21

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 1 mL EXTRACT VOLUME.

LABELLED COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
13C4-PFBA			40.0	36.9	92.1	0.995
13C5-PFPeA			20.0	21.5	108	0.859
13C5-PFHxA		26.7	10.0	11.2	112	1.000
13C4-PFHpA			10.0	8.34	83.4	0.899
13C8-PFOA			10.0	8.41	84.1	1.000
13C9-PFNA			5.00	4.49	89.8	1.000
13C6-PFDA			5.00	4.64	92.8	1.000
13C7-PFUnA			5.00	4.55	90.9	1.052
13C2-PFDoA			5.00	4.22	84.4	1.086
13C2-PFTeDA			5.00	3.61	72.2	1.161
13C3-PFBS		2.81	10.0	8.85	88.2	0.801
13C3-PFHxS		2.28	10.0	8.87	88.6	1.000
13C8-PFOS		2.17	10.1	9.82	97.6	1.000
13C2-4:2 FTS		1.78	20.2	18.2	90.3	0.837
13C2-6:2 FTS		2.00	20.0	20.0	100	1.001
13C2-8:2 FTS		3.20	20.0	15.8	79.1	1.272
13C8-PFOSA			10.0	9.28	92.8	1.163
D3-N-MeFOSA			10.0	6.58	65.8	1.346
D5-N-EtFOSA			10.0	6.11	61.1	1.383
D3-MeFOSAA			20.0	13.6	67.9	1.322
D5-EtFOSAA			20.0	14.0	70.2	1.350
d7-NMe-FOSE			100	74.0	74.0	1.329
d9-NEt-FOSE			100	67.8	67.8	1.367
13C3-HFPO-DA		2.97	40.0	46.2	116	1.032

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

These pages are part of a larger report that may contain information necessary for full data evaluation. Results reported relate only to the sample tested.

SGS AXYS METHOD MLA-110 Rev 02

Form 3A

INITIAL CALIBRATION RELATIVE RESPONSES

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
PFBA		1.06	1.05	1.05	1.00	1.01	0.98	0.99	0.96	0.94	1.00	4.20
PFPeA		1.37	1.29	1.24	1.19	1.21	1.17	1.20	1.15	1.12	1.21	6.24
PFHxA		1.16	1.28	1.12	1.05	1.03	0.97	1.04	0.97	0.94	1.06	10.2
PFHpA		1.19	1.14	1.09	1.14	1.10	1.11	1.08	1.05	0.96	1.10	5.97
PFOA		1.57	1.71	1.56	1.40	1.43	1.41	1.37	1.39	1.32	1.46	8.45
PFNA		0.99	1.13	1.10	1.01	0.99	1.02	1.06	0.97	0.99	1.03	5.34
PFDA		0.89	0.87	0.91	0.82	0.83	0.83	0.84	0.83	0.72	0.84	6.35
PFUnA		0.76	0.78	0.88	0.69	0.76	0.74	0.75	0.75		0.76	7.31
PFDaA		1.02	1.34	1.15	1.05	1.09	1.04	1.08	0.99	0.86	1.07	12.1
PFTrDA		0.97	0.93	0.92	0.86	0.83	0.81	0.82	0.61		0.84	13.1
PFTeDA		0.86	0.77	0.79	0.73	0.76	0.72	0.72	0.62		0.74	9.15
PFBS		1.24	1.18	1.13	1.14	1.21	1.14	1.16	1.11	1.10	1.16	4.01
PFPeS		0.96	1.07	1.12	1.04	1.03	1.02	1.01	0.88	0.77	0.99	10.8
PFHxS		1.26	1.23	1.21	1.20	1.14	1.15	1.15	1.08	1.14	1.17	4.74
PFHpS		1.11	1.07	1.14	1.10	1.09	1.12	1.05	1.05	1.10	1.09	2.81
PFOS		1.25	1.39	1.30	1.17	1.28	1.24	1.20	1.16	1.26	1.25	5.50
PFNS		1.31	1.22	1.18	1.17	1.25	1.18	1.18	1.10	1.10	1.19	5.56
PFDS		1.10	1.23	1.17	1.14	1.16	1.16	1.12	1.04	1.08	1.13	5.03
PFDoS		0.95	0.93	0.96	0.88	0.93	0.93	0.90	0.91	1.00	0.93	3.65
4:2 FTS		0.43	0.50	0.50	0.51	0.52	0.47	0.45	0.42		0.48	8.19
6:2 FTS		0.63	0.54	0.58	0.50	0.52	0.49	0.47	0.40		0.52	13.6
8:2 FTS		0.30	0.27	0.26	0.27	0.25	0.28	0.27	0.23		0.27	7.98
PFOSA		1.04	1.05	1.02	0.99	0.98	0.99	0.97	0.94		1.00	3.72
N-MeFOSA		1.09	1.26	1.14	1.11	1.12	1.09	1.10	0.98		1.11	6.86
N-EtFOSA		1.20	1.27	1.24	1.19	1.18	1.19	1.23	1.15	1.16	1.20	3.34
MeFOSAA		0.86	0.81	0.86	0.84	0.91	0.89	0.86	0.81	0.81	0.85	4.20
EtFOSAA		0.78	0.63	0.92	0.72	0.73	0.74	0.78	0.68		0.75	11.3
N-MeFOSE		1.14	1.16	1.16	1.11	1.12	1.10	1.09	1.03	0.98	1.10	5.47
N-EtFOSE		1.25	1.25	1.27	1.21	1.21	1.18	1.20	1.10	1.04	1.19	6.47
HFPO-DA		1.16	1.24	1.13	1.10	1.08	1.02	1.05	0.96		1.09	7.93
ADONA		7.27	7.33	6.94	6.75	7.00	6.76	7.15	6.93		7.02	3.07
9CI-PF3ONS		2.07	2.11	2.07	2.00	1.93	1.86	1.98	1.90		1.99	4.46
11CI-PF3OUdS		1.05	1.11	1.06	1.04	1.02	1.06	1.12	1.14		1.07	3.83
3:3 FTCA		0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.10		0.08	9.63
5:3 FTCA		0.19	0.18	0.17	0.17	0.16	0.16	0.17	0.17		0.17	6.49
7:3 FTCA		0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.11		0.10	4.46
PFEESA		3.72	3.25	3.11	3.23	3.09	2.95	3.20	2.99	2.87	3.16	7.86
PFMPA		1.78	1.77	1.75	1.69	1.72	1.72	1.78	1.94	2.27	1.82	10.1

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)									MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8		
PFMBA		2.48	2.43	2.35	2.30	2.32	2.33	2.26	2.60	2.81	2.43	7.22
NFDHA		0.05	0.04	0.04	0.04	0.05	0.05	0.04			0.04	17.6

(1) Where applicable, custom lab flags have been used on this report.

(2) For contract CV specifications, see SGS AXYS METHOD MLA-110 Rev 02

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

For Axys Internal Use Only [XSL Template: FC2-Form3A.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFOA_FC_LC_22-Feb-2021_FC1L_Form3A_GS95040.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 3B

INITIAL CALIBRATION RELATIVE RESPONSES

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

RELATIVE RESPONSE (RR)

LABELED COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C4-PFBA		1.17	1.16	1.14	1.16	1.13	1.13	1.13	1.13	1.11	1.14	1.73
13C5-PFPeA		0.83	0.85	0.85	0.88	0.87	0.84	0.81	0.79	0.69	0.82	7.00
13C5-PFHxA		0.67	0.69	0.72	0.70	0.74	0.73	0.68	0.70	0.66	0.70	3.78
13C4-PFHpA		3.63	3.49	3.60	3.42	3.44	3.25	3.33	2.97	2.73	3.32	8.93
13C8-PFOA		3.82	3.60	3.79	3.80	3.79	3.66	3.71	3.61	3.76	3.73	2.31
13C9-PFNA		1.16	1.15	1.14	1.17	1.16	1.13	1.10	1.17	1.15	1.15	2.03
13C6-PFDA		1.13	1.06	0.97	1.06	0.99	0.99	0.92	1.02	0.90	1.01	7.22
13C7-PFUnA		1.23	1.22	1.07	1.22	1.08	1.08	0.99	0.84		1.09	12.2
13C2-PFDoA		1.04	0.95	0.90	0.92	0.94	0.93	0.89	0.98	0.91	0.94	5.00
13C2-PFTeDA		0.86	0.85	0.81	0.83	0.80	0.77	0.74	0.94	1.11	0.86	13.0
13C3-PFBS		1.33	1.36	1.31	1.41	1.25	1.29	1.31	1.00	0.99	1.25	12.1
13C3-PFHxS		1.20	1.16	1.10	1.15	1.12	1.15	1.17	1.16	1.05	1.14	3.86
13C8-PFOS		0.96	0.91	0.93	0.94	0.92	0.87	0.93	0.94	0.90	0.92	3.08
13C2-4:2 FTS		1.25	1.08	1.11	1.04	1.05	1.03	1.06	1.14	1.47	1.14	12.5
13C2-6:2 FTS		0.98	0.88	0.86	0.84	0.90	0.84	0.91	1.06		0.91	8.52
13C2-8:2 FTS		1.50	1.37	1.48	1.38	1.53	1.32	1.40	1.52		1.44	5.42
13C8-PFOA		1.84	1.83	1.86	1.78	1.80	1.74	1.82	2.08		1.84	5.54
D3-N-MeFOA		0.29	0.28	0.28	0.27	0.28	0.27	0.27	0.32		0.28	6.63
D5-N-EtFOA		0.28	0.28	0.28	0.27	0.28	0.26	0.27	0.30	0.33	0.28	6.96
D3-MeFOA		0.96	0.84	0.87	0.86	0.91	0.83	0.97	1.12	1.21	0.95	13.9
D5-EtFOA		0.82	0.76	0.72	0.74	0.77	0.70	0.77	1.00		0.78	12.0
d7-NMe-FOSE		1.93	1.87	1.80	1.81	1.86	1.76	1.81	1.95	2.09	1.88	5.39
d9-NEt-FOSE		2.46	2.39	2.35	2.36	2.44	2.27	2.30	2.52	2.79	2.43	6.37
13C3-HFPO-DA		0.33	0.33	0.34	0.34	0.36	0.33	0.31	0.27		0.33	8.42

(1) Where applicable, custom lab flags have been used on this report.

(2) For contract CV specifications, see SGS AXYS METHOD MLA-110 Rev 02.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

Form 3C
LC MS/MS INITIAL CALIBRATION RATIOS

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA		4.58	5.38	6.09	4.84	4.81	4.94	4.81	4.64	4.80
PFHpA		2.19	2.08	2.00	2.16	2.04	1.97	2.06	2.06	2.02
PFOA		1.85	2.15	2.04	1.95	2.03	2.00	1.96	2.06	2.02
PFNA		2.97	2.96	2.87	2.85	2.95	2.94	2.87	2.87	2.86
PFDA		3.23	3.02	3.02	3.06	3.07	3.16	2.96	3.21	3.03
PFUnA		4.29	4.50	4.89	4.31	4.74	4.28	4.73	4.49	
PFDoA		5.72	8.83	6.70	7.41	7.85	7.83	7.95	7.48	7.67
PFTTrDA		3.32	3.58	2.95	3.08	3.04	3.14	3.22	3.02	
PFTeDA		2.75	2.65	2.75	2.82	2.80	2.68	2.71	2.70	
PFBS		2.27	2.65	2.32	2.59	2.71	2.59	2.67	2.60	2.59
PFPeS		1.83	2.06	2.39	2.25	2.35	2.31	2.27	2.26	2.33
PFHxS		2.64	2.36	2.44	2.39	2.28	2.34	2.44	2.32	2.38
PFHpS		2.08	1.90	2.00	2.12	2.08	2.20	2.08	2.10	2.08
PFOS		2.29	2.51	2.55	2.58	2.67	2.70	2.60	2.59	2.66
PFNS		2.07	2.08	2.27	2.36	2.41	2.26	2.32	2.18	2.30
PFDS		2.08	2.80	2.21	2.35	2.38	2.17	2.36	2.18	2.30
PFDoS		2.31	2.11	2.33	2.23	2.18	2.26	2.25	2.27	2.28
4:2 FTS		0.38	0.41	0.44	0.43	0.45	0.46	0.43	0.45	
6:2 FTS		0.51	0.43	0.47	0.44	0.43	0.47	0.45	0.44	
8:2 FTS		0.58	0.48	0.55	0.57	0.53	0.57	0.54	0.54	
PFOSA										
N-MeFOSA		0.52	0.55	0.50	0.54	0.53	0.53	0.53	0.53	
N-EtFOSA		0.52	0.56	0.54	0.53	0.53	0.53	0.53	0.53	0.54
MeFOSAA		1.88	2.07	2.11	1.85	1.98	2.02	1.98	1.94	1.94
EtFOSAA		1.85	1.56	1.58	1.09	1.16	1.10	1.15	1.10	
N-MeFOSE										
N-EtFOSE										
HFPO-DA		2.58	3.07	2.82	2.87	2.67	2.50	2.63	2.75	
ADONA		1.15	1.12	1.08	1.08	1.20	1.11	1.13	1.06	
9CI-PF3ONS		3.24	3.13	3.02	3.20	3.02	3.04	3.13	3.07	
11CI-PF3OUdS		2.63	3.01	3.14	3.13	3.06	3.19	3.14	3.05	
3:3 FTCA		1.69	1.51	1.64	1.78	1.89	1.91	1.92	1.96	
5:3 FTCA		0.85	1.08	1.14	1.21	1.22	1.24	1.26	1.31	

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
7:3 FTCA		0.69	0.69	0.70	0.71	0.69	0.68	0.71	0.68	
PFEESA		8.11	7.52	8.32	9.28	8.69	8.99	9.71	9.18	9.28
PFMPA										
PFMBA										
NFDHA		0.83	1.08	1.12	0.95	1.69	1.32	1.19		

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

For Axys Internal Use Only [XSL Template: FC2-Form3C.xsl; Created: 23-Nov-2021 13:23:36; Application: XMLTransformer-1.18.29; Report Filename: PFOA_FC_LC_22-Feb-2021_FC1L_Form3C_GS95040.html; Workgroup: WG78729; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 3D
LC MS/MS INITIAL CALIBRATION RATIOS

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA		24.2	23.3	27.8	23.3	25.6	26.9	25.6	24.5	26.7
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS		2.57	2.71	2.73	2.73	2.72	2.72	2.79	2.69	2.85
13C3-PFHxS		2.40	2.29	2.34	2.38	2.29	2.40	2.49	2.36	2.28
13C8-PFOS		2.08	2.05	2.09	2.33	2.09	2.15	2.22	2.37	2.14
13C2-4:2 FTS		1.84	1.90	1.74	1.62	1.51	1.55	1.25	0.54	0.24
13C2-6:2 FTS		1.93	2.03	1.87	1.87	1.80	1.74	1.44	0.71	
13C2-8:2 FTS		3.89	3.55	3.84	3.75	3.20	3.03	2.50	1.10	
13C8-PFOA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										
13C3-HFPO-DA		2.67	2.74	2.54	2.64	2.57	2.89	2.76	2.91	

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

SGS AXYS METHOD MLA-110 Rev 02

Form 4A

LC MS/MS CALIBRATION VERIFICATION

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

VER Data Filename: FC1L_483 S: 21

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021

LC Column ID: C18

Analysis Time: 16:35:35

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.000	213 > 169		20.0	19.5	97.3
PFPeA		1.001	263 > 219		10.0	9.36	93.6
PFHxA		0.999	313 > 269	4.29	5.00	4.85	96.9
PFHpA		1.000	363 > 319	2.11	5.00	5.00	99.9
PFOA		1.000	413 > 369	2.12	5.00	4.99	99.8
PFNA		1.000	463 > 419	2.85	5.00	4.85	96.9
PFDA		1.000	513 > 469	2.88	5.00	4.57	91.5
PFUnA		1.000	563 > 519	4.35	5.00	5.37	107
PFDoA		1.000	613 > 569	7.22	5.00	4.91	98.3
PFTTrDA		0.963	663 > 619	2.92	5.00	4.96	99.2
PFTTeDA		1.000	713 > 669	2.34	5.00	4.60	92.0
PFBS		0.999	299 > 80	2.49	5.00	5.14	103
PFPeS		0.890	349 > 80	2.29	5.01	4.98	99.2
PFHxS		1.000	399 > 80	2.28	5.00	4.46	89.1
PFHpS		0.917	449 > 80	2.03	5.01	4.74	94.7
PFOS		1.000	499 > 80	2.64	5.00	4.55	91.0
PFNS		1.050	549 > 80	2.33	5.01	4.52	90.3
PFDS		1.083	599 > 80	2.24	5.00	4.84	96.7
PFDoS		1.169	699 > 80	2.26	5.01	4.60	91.8
4:2 FTS		1.000	327 > 307	0.40	20.0	15.6	77.8
6:2 FTS		1.000	427 > 407	0.40	18.0	14.2	78.6
8:2 FTS		1.000	527 > 507	0.54	20.0	21.8	109
PFOSA		1.000	498 > 78		5.00	4.78	95.6
N-MeFOSA		1.000	512 > 219	0.52	5.75	5.71	99.3
N-EtFOSA		1.002	526 > 219	0.51	12.5	11.9	95.4
MeFOSAA		1.000	570 > 419	1.81	5.00	4.98	99.6
EtFOSAA		1.000	584 > 419	1.23	5.00	4.84	96.7
N-MeFOSE		1.002	616 > 59		50.0	51.1	102
N-EtFOSE		1.002	630 > 59		37.5	37.1	99.0
HFPO-DA		1.001	285 > 169	2.88	19.0	23.8	125
ADONA		1.096	377 > 251	0.97	20.0	22.8	114
9CI-PF3ONS		0.965	531 > 351	2.97	20.0	23.1	115
11CI-PF3OUdS		1.032	631 > 451	3.13	20.0	23.2	116
3:3 FTCA		0.834	241 > 177	1.77	20.0	16.1	80.6
5:3 FTCA		1.053	341 > 237	1.21	125	113	90.4
7:3 FTCA		1.350	441 > 317	0.70	125	117	93.6
PFEESA		1.033	315 > 135	8.75	5.00	4.50	90.0
PFMPA		0.595	229 > 85		10.0	9.85	98.5
PFMBA		1.069	279 > 85		5.00	4.92	98.3
NFDHA		0.989	295 > 201	0.78	10.0	7.41	74.1

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

SGS AXYS METHOD MLA-110 Rev 02

Form 4B

LC MS/MS CALIBRATION VERIFICATION

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 22-Feb-2021

VER Data Filename: FC1L_483 S: 21

Instrument ID: LCMS/MS

Analysis Date: 12-Nov-2021

LC Column ID: C18

Analysis Time: 16:35:35

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	41.7	104
13C5-PFPeA		0.859	268 > 223		20.0	23.2	116
13C5-PFHxA		1.001	318 > 273	23.2	10.0	11.6	116
13C4-PFHpA		0.899	367 > 322		10.0	10.1	101
13C8-PFOA		1.000	421 > 376		10.0	9.70	97.0
13C9-PFNA		1.001	472 > 427		5.00	5.17	103
13C6-PFDA		1.000	519 > 474		5.00	5.33	107
13C7-PFUnA		1.053	570 > 525		5.00	4.82	96.5
13C2-PFDoA		1.087	615 > 570		5.00	4.94	98.7
13C2-PFTeDA		1.164	715 > 670		5.00	4.49	89.7
13C3-PFBS		0.802	302 > 80	2.39	10.0	8.95	89.2
13C3-PFHxS		1.000	402 > 80	2.30	10.0	10.2	102
13C8-PFOS		1.000	507 > 80	2.21	10.1	11.1	110
13C2-4:2 FTS		0.837	329 > 81	1.97	20.2	24.1	120
13C2-6:2 FTS		1.001	429 > 81	2.23	20.0	21.5	108
13C2-8:2 FTS		1.272	529 > 81	3.38	20.0	15.1	75.3
13C8-PFOSA		1.165	506 > 78		10.0	10.0	100
D3-N-MeFOSA		1.345	515 > 219		10.0	7.98	79.8
D5-N-EtFOSA		1.381	531 > 219		10.0	7.87	78.7
D3-MeFOSAA		1.322	573 > 419		22.5	14.4	64.1
D5-EtFOSAA		1.350	589 > 419		20.0	14.2	71.0
d7-NMe-FOSE		1.328	623 > 59		100	79.0	79.0
d9-NEt-FOSE		1.366	639 > 59		100	75.8	75.8
13C3-HFPO-DA		1.032	287 > 169	2.47	40.0	41.0	103

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Andrew Porat _____

Accreditation Scope
 SGS AXYS Analytical Services Ltd.
 file ref.: ACC-103 Rev. 60

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum										Tissue and Tissue Flora					Urine	Water	Water, Non-Potable																	
				CALA	Alaska DEC	ANAB DoD **	ANAB ISO 17025	CALA	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	ANAB DoD **	ANAB ISO 17025	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	CALA	CALA	Alaska DEC	ANAB DoD **	ANAB ISO 17025	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH	Pennsylvania DEP	Virginia DGS	Washington DE *	ANAB DoD **
PCB 116 2,3,4,5,6-Pentachlorobiphenyl	SGS AXYS MLA-908	MLA-908																																				
	EPA 1668	MLA-010																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
	SGS AXYS MLA-908	MLA-908																																				
	PCB 117 2,3,4',5,6-Pentachlorobiphenyl	EPA 1668	MLA-010																																			
		SGS AXYS MLA-010	MLA-010	Y																																		
		SGS AXYS MLA-210	MLA-210																																			
		SGS AXYS MLA-908	MLA-908																																			
	PCB 118 2,3',4,4',5-Pentachlorobiphenyl	EPA 1668	MLA-010																																			
		SGS AXYS MLA-010	MLA-010	Y																																		
		SGS AXYS MLA-210	MLA-210																																			
		SGS AXYS MLA-908	MLA-908																																			
	PCB 118/106	EPA 8270	MLA-007																																			
		SGS AXYS MLA-007	MLA-007																																			
		EPA 1668	MLA-010																																			
		SGS AXYS MLA-010	MLA-010	Y																																		
	PCB 119 2,3',4,4',6-Pentachlorobiphenyl	EPA 1668	MLA-010																																			
		EPA 8270	MLA-007																																			
		SGS AXYS MLA-010	MLA-010	Y																																		
SGS AXYS MLA-210		MLA-210																																				
PCB 12 3,4-Dichlorobiphenyl	EPA 1668	MLA-010																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
	SGS AXYS MLA-908	MLA-908																																				
PCB 120 2,3',4,5,5'-Pentachlorobiphenyl	EPA 8270	MLA-007																																				
	EPA 1668	MLA-010																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
PCB 121 2,3',4,5',6-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
	SGS AXYS MLA-908	MLA-908																																				
PCB 122 2,3,3',4',5'-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	EPA 8270	MLA-007																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
PCB 123 2,3',4,4',5'-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	EPA 8270	MLA-007																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
PCB 124 2,3',4',5,5'-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	EPA 8270	MLA-007																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
PCB 125 2,3',4',5',6-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	EPA 8270	MLA-007																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-210	MLA-210																																				
PCB 126 3,3',4,4',5-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	EPA 8270	MLA-007																																				
	SGS AXYS MLA-010	MLA-010	Y																																			
	SGS AXYS MLA-007	MLA-007																																				
PCB 127 3,3',4,5,5'-Pentachlorobiphenyl	EPA 1668	MLA-010																																				
	SGS AXYS MLA-010	MLA-010	Y																																			

Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 60

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	Alaska DEC	ANAB DoD **	ANAB ISO 17025	CALA	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	ANAB DoD **	ANAB ISO 17025	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	CALA	CALA	Alaska DEC	ANAB DoD **	ANAB ISO 17025	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH	Pennsylvania DEP	Virginia DGS	Washington DE *	ANAB DoD **	AFFF	ANAB ISO 17025
Virginia DGS	Virginia Department of General Services, Division of Consolidated Laboratory Services, Lab ID 460224, (NELAC Standard)																																							
Alaska DEC	Alaska Department of Environmental Conservation, Contaminated Sites Laboratory Approval 17-014																																							
Maine DOH	Maine Center for Disease Control and Prevention, Department of Health and Human Services, Lab ID CN00003																																							

ANAB DoD ANSI National Accreditation Board, certificate ADE-1861, (US DoD QSM 5.3 Standard)



CALA Canadian Association for Laboratory Accreditation Inc., Lab ID A2637, (ISO/IEC 17025:2017 Standard)

