



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.

"This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."

"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: WG86419	Date: 17-Oct-2023
Analysis Type: Perfluorinated Organic (Post)	Matrix Type: Solid
BATCH MAKEUP	
Contract: 4066 Samples: L38863-1 DU-4A_FC1128-1 L38863-2 DU-4B_FC1128-2 L38863-3 DU-2_FC1128-3 L38863-4 DU-3_FC1302-1	Blank: WG86419-101
	Reference or Spike: WG86419-102
	Duplicate: WG86419-103 WG86419-104
Comments: <ol style="list-style-type: none"> 1. Data are considered final. 2. Data are not blank corrected. Blank data should be taken into consideration when evaluating sample data. 3. Blank data should be evaluated against specifications using the same blank sample size as the size of the client samples. 4. Percent recovery of several labeled compounds in the Lab Blank and several client samples were below the method nominal limit and were flagged with a 'V'. As the isotope dilution method of quantification produces data that are recovery corrected, the variances from the method acceptance criteria are deemed not to affect the quantification of the analytes. Percent labeled compound recoveries are used as a general method performance indicator only. 5. The reported concentration values represent the acid forms of the compounds. 6. Soil samples were MIS-prepped by SGS Orlando prior to being shipped to SGS AXYS for TOP analysis. 	

TO: SGS-AXYS
 4105 VINELAND RD, C15
 ORLANDO, FL 32811

Chain of Custody Record

FC1128

Regulatory Program: DW NPDES RCRA Other:

Client Contact Hawa'i Dept. of Health, HEER 2385 Waimano Home Road #100 Pearl City, HI 96782 Phone: (808) 586-4249 Fax: (808) 586-7537 Project Name: Red Hill AFFF Site: P O #		Project Manager: Roger Brewer Tel/Fax: 1-808-586-4249		Site Contact: Lab Contact:		Date: 12/22 Carrier:		COC No: 1 of X COCs Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Identification		Sample Date	Sample Time	Sample Type (M=Multi Increment, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:
① DU-4A		12/2/22	11:00am	MI	soil	1		L-38863-1	
② DU-4B		"	11:30am	MI	"	1		-2	
③ DU-2		"	1:00pm	MI	"	1		-3	
④ DU-5		"	2:55p	MI	soil	1			
<p>NOTE: DU-5 received from Annae Skoude @ 8:15PM 12/2/22 Sampler DU-5 procured from Nady/AECOM by POM observing IAW sample collection</p>									
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown					<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months				
Special Instructions/QC Requirements & Comments: * Multi Increment sample processing required * Test 10-gram subsample required					* CALL ROGER BREWER UPON RECEIPT TO CONFIRM ANALYSIS *				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cus'ody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Cor'd: _____		Therm ID No.:			
Relinquished by: Roger Brewer		Company: HDOH		Date/Time: 12/2/22		Received by: [Signature]		Company: Tetra Tech	
Relinquished by: [Signature]		Company: Tetra Tech		Date/Time: 12/8/22		Received by: [Signature]		Company: SGS	
Relinquished by: [Signature]		Company: FedEx		Date/Time: 12/8/22		Received in Laboratory by: [Signature]		Company: SGS	

PFAS 537 Medical (Tablet)
 QS M 5.4 BIC
 Comp H 424

INITIAL ASSESSMENT: **[Signature]**

LABEL VERIFICATION: **[Signature]**

510CTM

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-4A_FC1128-1

Sample Collection:

02-Dec-2022 11:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-1

Matrix: SOLID

Sample Size:

4.80 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:30:10

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 21

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture:

4.73

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		30.2	0.845 (Q)		1.004
PFPeA		47.4	0.422 (Q)		1.001
PFHxA	B	22.0	0.211 (Q)	4.43	1.000
PFHpA	B	4.16	0.211 (Q)	1.95	1.000
PFOA		1.12	0.244 (S)	2.22	
PFNA	J	0.328	0.211 (Q)	3.05	
PFDA	J	0.454	0.211 (Q)	3.23	1.001
PFUnA	J	0.302	0.211 (Q)	2.94	1.001
PFDoA	J	0.296	0.169 (Q)	8.34	1.000
PFTrDA	R J	0.308	0.211 (Q)	5.90	0.963
PFTeDA	U		0.231 (S)		
PFBS	U		0.211 (Q)		
PFPeS	U		0.212 (Q)		
PFHxS	U		0.211 (Q)		
PFHpS	U		0.211 (Q)		
PFOS		7.36	0.211 (Q)	2.30	
PFNS	U		0.211 (Q)		
PFDS	U		0.211 (Q)		
PFDoS	U		0.211 (Q)		
4:2 FTS	U		0.845 (Q)		
6:2 FTS	U		0.761 (Q)		
8:2 FTS	U		0.718 (Q)		
PFOSA	U		0.211 (Q)		
N-MeFOSA	U		0.211 (Q)		
N-EtFOSA	U		0.591 (Q)		
MeFOSAA	U		0.211 (Q)		
EtFOSAA	U		0.211 (Q)		
N-MeFOSE	U		2.11 (Q)		
N-EtFOSE	U		2.11 (Q)		
3:3 FTCA	U		0.845 (Q)		
5:3 FTCA	U		5.28 (Q)		
7:3 FTCA	U		5.28 (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: _____ Bryan Alonzo _____

For Alys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 17-Oct-2023 11:03:22; Application: XMLTransformer-1.18.44;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_L38863-1_Form1A_FC3G_205S21_SJ3294225.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-4A_FC1128-1

Sample Collection:

02-Dec-2022 11:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-1

Matrix: SOLID

Sample Size:

4.80 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:30:10

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 21

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

4.73

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LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	V	200	38.5	19.3		0.997
13C5-PFPeA	V	100	31.7	31.7		0.872
13C5-PFHxA	V	50.0	13.6	27.2	16.2	1.000
13C4-PFHpA	V	50.0	13.9	27.7		0.895
13C8-PFOA	V	50.0	16.3	32.7		1.000
13C9-PFNA	V	25.0	7.98	31.9		1.000
13C6-PFDA	V	25.0	7.67	30.7		0.999
13C7-PFUnA	V	25.0	8.72	34.9		1.048
13C2-PFDoA	V	25.0	8.08	32.3		1.082
13C2-PFTeDA	V	25.0	9.04	36.2		1.162
13C3-PFBS		50.1	35.3	70.5	2.51	0.802
13C3-PFHxS		50.1	38.3	76.4	2.26	1.000
13C8-PFOS		50.3	38.6	76.7	2.01	1.000
13C2-4:2 FTS		20.2	17.3	85.6	1.80	0.839
13C2-6:2 FTS		20.0	19.3	96.5	2.06	1.002
13C2-8:2 FTS		20.0	16.8	83.6	3.17	1.265
13C8-PFOA		10.0	10.9	109		1.139
D3-N-MeFOSA		10.0	11.5	115		1.334
D5-N-EtFOSA		10.0	11.4	114		1.371
D3-MeFOSAA		20.0	14.0	69.9		1.312
D5-EtFOSAA		20.0	14.6	72.8		1.338
d7-NMe-FOSE		100	130	130		1.316
d9-NEt-FOSE		100	142	142		1.355

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-4B_FC1128-2
Sample Collection:
02-Dec-2022 11:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-2

Matrix: SOLID

Sample Size:

4.69 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:43:07

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 22

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture:

6.29

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COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		204	0.855 (Q)		1.003
PFPeA		298	0.428 (Q)		1.001
PFHxA		118	0.214 (Q)	4.47	1.000
PFHpA		15.0	0.214 (Q)	1.95	1.000
PFOA		1.03	0.303 (S)	2.29	
PFNA	J	0.387	0.214 (Q)	3.29	
PFDA	J	0.361	0.214 (Q)	2.71	1.000
PFUnA	J	0.362	0.214 (Q)	4.32	1.001
PFDaA	R J	0.383	0.171 (Q)	17.8	0.999
PFTTrDA	J	0.237	0.214 (Q)	3.45	0.960
PFTTeDA	U		0.214 (Q)		
PFBS	U		0.214 (Q)		
PFPeS	U		0.215 (Q)		
PFHxS	U		0.214 (Q)		
PFHpS	U		0.214 (Q)		
PFOS		5.27	0.214 (Q)	2.37	
PFNS	U		0.214 (Q)		
PFDS	U		0.214 (Q)		
PFDoS	U		0.214 (Q)		
4:2 FTS	U		0.855 (Q)		
6:2 FTS	U		0.771 (Q)		
8:2 FTS	U		0.727 (Q)		
PFOSA	U		0.214 (Q)		
N-MeFOSA	U		0.214 (Q)		
N-EtFOSA	U		0.599 (Q)		
MeFOSAA	U		0.214 (Q)		
EtFOSAA	U		0.214 (Q)		
N-MeFOSE	U		2.14 (Q)		
N-EtFOSE	U		2.14 (Q)		
3:3 FTCA	U		0.855 (Q)		
5:3 FTCA	U		5.35 (Q)		
7:3 FTCA	U		5.35 (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: _____ Bryan Alonzo _____

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Report Filename: PFC_FC_LC_PFAS_POSTTOP_L38863-2_Form1A_FC3G_205S22_SJ3294226.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-4B_FC1128-2

Sample Collection:

02-Dec-2022 11:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-2

Matrix: SOLID

Sample Size:

4.69 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:43:07

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 22

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

6.29

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. 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	32.2	16.1		1.000
13C5-PFPeA	V	100	29.2	29.2		0.872
13C5-PFHxA	V	50.0	13.2	26.4	15.5	1.000
13C4-PFHpA	V	50.0	14.3	28.7		0.895
13C8-PFOA	V	50.0	18.4	36.8		1.000
13C9-PFNA	V	25.0	9.59	38.3		1.001
13C6-PFDA	V	25.0	10.3	41.3		1.000
13C7-PFUnA	V	25.0	10.2	40.9		1.047
13C2-PFDoA	V	25.0	9.44	37.7		1.082
13C2-PFTeDA	V	25.0	10.1	40.5		1.162
13C3-PFBS		50.1	40.3	80.3	2.56	0.803
13C3-PFHxS		50.1	43.9	87.7	2.35	1.000
13C8-PFOS		50.3	44.0	87.4	2.07	0.999
13C2-4:2 FTS		20.2	17.5	86.9	1.93	0.841
13C2-6:2 FTS		20.0	19.1	95.7	2.05	1.002
13C2-8:2 FTS		20.0	16.6	82.8	3.22	1.268
13C8-PFOA		10.0	10.9	109		1.137
D3-N-MeFOSA		10.0	11.4	114		1.332
D5-N-EtFOSA		10.0	10.9	109		1.369
D3-MeFOSAA		20.0	14.1	70.6		1.313
D5-EtFOSAA		20.0	14.5	72.7		1.339
d7-NMe-FOSE		100	129	129		1.314
d9-NEt-FOSE		100	143	143		1.353

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-2_FC1128-3

Sample Collection:

02-Dec-2022 14:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-3

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:56:05

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 23

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture:

3.86

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COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	E				
PFPeA	E				
PFHxA	E				
PFHpA	E				
PFOA		1.87	0.208 (Q)	2.19	
PFNA	J	0.433	0.208 (Q)	3.32	
PFDA	J	0.419	0.208 (Q)	3.46	1.001
PFUnA	J	0.214	0.208 (Q)	4.57	1.000
PFDoA	U		0.167 (Q)		
PFTTrDA	U		0.208 (Q)		
PFTeDA	U		0.208 (Q)		
PFBS	U		0.208 (Q)		
PFPeS	U		0.209 (Q)		
PFHxS	U		0.208 (Q)		
PFHpS	U		0.208 (Q)		
PFOS	B	1.03	0.208 (Q)	2.60	
PFNS	U		0.208 (Q)		
PFDS	U		0.208 (Q)		
PFDoS	U		0.208 (Q)		
4:2 FTS	U		0.833 (Q)		
6:2 FTS	B J	2.37	0.750 (Q)	0.41	0.999
8:2 FTS	U		0.708 (Q)		
PFOSA	U		0.208 (Q)		
N-MeFOSA	U		0.208 (Q)		
N-EtFOSA	U		0.583 (Q)		
MeFOSAA	U		0.208 (Q)		
EtFOSAA	U		0.208 (Q)		
N-MeFOSE	U		2.08 (Q)		
N-EtFOSE	U		2.08 (Q)		
3:3 FTCA	U		0.833 (Q)		
5:3 FTCA	U		5.20 (Q)		
7:3 FTCA	U		5.20 (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; E = exceeds calibrated linear range, see dilution data.

(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: _____ Bryan Alonzo _____

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Report Filename: PFC_FC_LC_PFAS_POSTTOP_L38863-3_Form1A_FC3G_205S23_SJ3294227.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-2_FC1128-3

Sample Collection:

02-Dec-2022 14:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-3

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:56:05

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 23

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

3.86

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	X					
13C5-PFPeA		100	63.3	63.3		0.871
13C5-PFHxA		50.0	29.2	58.3	12.9	1.000
13C4-PFHpA	X					
13C8-PFOA		50.0	38.1	76.2		0.999
13C9-PFNA		25.0	18.9	75.6		1.001
13C6-PFDA		25.0	16.1	64.5		1.000
13C7-PFUnA		25.0	14.4	57.6		1.048
13C2-PFDoA	V	25.0	12.4	49.5		1.082
13C2-PFTeDA		25.0	12.5	50.0		1.162
13C3-PFBS		50.1	39.3	78.3	2.51	0.802
13C3-PFHxS		50.1	42.4	84.7	2.28	1.000
13C8-PFOS		50.3	39.5	78.6	2.19	1.000
13C2-4:2 FTS		20.2	17.4	86.2	1.81	0.839
13C2-6:2 FTS		20.0	18.8	93.9	2.06	1.002
13C2-8:2 FTS		20.0	15.7	78.6	3.02	1.266
13C8-PFOA		10.0	11.3	113		1.138
D3-N-MeFOSA		10.0	11.6	116		1.332
D5-N-EtFOSA		10.0	11.5	115		1.370
D3-MeFOSAA		20.0	14.7	73.7		1.312
D5-EtFOSAA		20.0	15.2	75.8		1.337
d7-NMe-FOSE		100	133	133		1.314
d9-NEt-FOSE		100	149	149		1.354

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

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-2_FC1128-3
Sample Collection:
02-Dec-2022 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.

RED HILL AFFF

Contract No.: 4066

Lab Sample I.D.:

L38863-3 N

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 17:23:53

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 48

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

3.86

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	D	6410	12.5 (Q)		1.003
PFPeA	D	11800	6.25 (Q)		1.000
PFHxA	D	4980	3.12 (Q)	4.72	1.000
PFHpA	D	643	3.12 (Q)	2.17	1.000
PFOA	X				
PFNA	X				
PFDA	X				
PFUnA	X				
PFDaA	X				
PFTTrDA	X				
PFTeDA	X				
PFBS	X				
PFPeS	X				
PFHxS	X				
PFHpS	X				
PFOS	X				
PFNS	X				
PFDS	X				
PFDoS	X				
4:2 FTS	X				
6:2 FTS	X				
8:2 FTS	X				
PFOSA	X				
N-MeFOSA	X				
N-EtFOSA	X				
MeFOSAA	X				
EtFOSAA	X				
N-MeFOSE	X				
N-EtFOSE	X				
3:3 FTCA	X				
5:3 FTCA	X				
7:3 FTCA	X				

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

DU-2_FC1128-3

Sample Collection:

02-Dec-2022 14:00

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-3 N

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 17:23:53

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 48

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng absolute

% Moisture:

3.86

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	D	200	144	72.1		0.997
13C5-PFPeA	D	100	58.4	58.4		0.877
13C5-PFHxA	D	50.0	29.1	58.1	20.6	1.000
13C4-PFHpA	D	50.0	35.7	71.3		0.869
13C8-PFOA	X					
13C9-PFNA	X					
13C6-PFDA	X					
13C7-PFUnA	X					
13C2-PFDoA	X					
13C2-PFTeDA	X					
13C3-PFBS	X					
13C3-PFHxS	X					
13C8-PFOS	X					
13C2-4:2 FTS	X					
13C2-6:2 FTS	X					
13C2-8:2 FTS	X					
13C8-PFOSA	X					
D3-N-MeFOSA	X					
D5-N-EtFOSA	X					
D3-MeFOSAA	X					
D5-EtFOSAA	X					
d7-NMe-FOSE	X					
d9-NEt-FOSE	X					

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1
Sample Collection:
07-Dec-2022 14:30

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811
Contract No.: 4066Project No. RED HILL AFFF
Lab Sample I.D.: L38863-4 (A)

Matrix: SOLID

Sample Size: 4.91 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date: 19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID: LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:09:02

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC3G_205 S: 24

Injection Volume (uL): 2

Blank Data Filename: FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename: FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture: 3.04

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	E				
PFPeA	E				
PFHxA	E				
PFFHpA	E				
PFOA		1.74	0.204 (Q)	2.05	
PFNA	J	0.315	0.204 (Q)	2.55	
PFDA	R J	0.432	0.204 (Q)	4.23	1.000
PFUnA	U		0.204 (Q)		
PFDoA	U		0.163 (Q)		
PFFTrDA	U		0.204 (Q)		
PFFTeDA	U		0.204 (Q)		
PFBS	U		0.204 (Q)		
PFPeS	U		0.205 (Q)		
PFHxS	U		0.204 (Q)		
PFFHpS	U		0.204 (Q)		
PFOS	B J	0.491	0.204 (Q)	2.05	
PFNS	U		0.204 (Q)		
PFDS	U		0.204 (Q)		
PFDoS	U		0.204 (Q)		
4:2 FTS	U		0.815 (Q)		
6:2 FTS	B	5.11	0.734 (Q)	0.42	1.000
8:2 FTS	U		0.693 (Q)		
PFOSA	U		0.204 (Q)		
N-MeFOSA	U		0.204 (Q)		
N-EtFOSA	U		0.570 (Q)		
MeFOSAA	U		0.204 (Q)		
EtFOSAA	U		0.204 (Q)		
N-MeFOSE	U		2.04 (Q)		
N-EtFOSE	U		2.04 (Q)		
3:3 FTCA	U		0.815 (Q)		
5:3 FTCA	U		5.09 (Q)		
7:3 FTCA	U		5.09 (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; E = exceeds calibrated linear range, see dilution data.

(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: _____ Bryan Alonzo _____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 17-Oct-2023 11:03:22; Application: XMLTransformer-1.18.44;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_L38863-4_Form1A_FC3G_205S24_SJ3294228.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-4 (A)

Matrix: SOLID

Sample Size:

4.91 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:09:02

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 24

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

3.04

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	X					
13C5-PFPeA		100	60.5	60.5		0.872
13C5-PFHxA		50.0	27.2	54.5	12.7	1.000
13C4-PFHpA	X					
13C8-PFOA		50.0	38.2	76.4		0.999
13C9-PFNA		25.0	17.9	71.4		1.000
13C6-PFDA		25.0	17.0	68.0		1.000
13C7-PFUnA		25.0	15.2	61.0		1.047
13C2-PFDoA		25.0	12.9	51.5		1.082
13C2-PFTeDA		25.0	13.7	54.9		1.162
13C3-PFBS		50.1	39.5	78.9	2.52	0.800
13C3-PFHxS		50.1	43.0	85.9	2.29	0.999
13C8-PFOS		50.3	40.9	81.2	2.10	1.000
13C2-4:2 FTS		20.2	16.7	82.7	1.84	0.838
13C2-6:2 FTS		20.0	18.2	91.2	1.95	1.001
13C2-8:2 FTS		20.0	16.4	81.9	3.12	1.264
13C8-PFOA		10.0	11.1	111		1.138
D3-N-MeFOSA		10.0	11.3	113		1.332
D5-N-EtFOSA		10.0	11.5	115		1.370
D3-MeFOSAA		20.0	15.1	75.3		1.310
D5-EtFOSAA		20.0	14.8	73.9		1.336
d7-NMe-FOSE		100	130	130		1.315
d9-NEt-FOSE		100	144	144		1.354

(1) Where applicable, custom lab flags have been used on this report; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-4 N (A)

Matrix: SOLID

Sample Size:

4.91 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 17:10:16

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 47

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

3.04

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	D	6690	12.2 (Q)		1.006
PFPeA	D	12100	6.11 (Q)		1.001
PFHxA	D	5770	3.06 (Q)	4.68	1.000
PFHpA	D	757	3.06 (Q)	2.12	1.000
PFOA	X				
PFNA	X				
PFDA	X				
PFUnA	X				
PFDoA	X				
PFTTrDA	X				
PFTeDA	X				
PFBS	X				
PFPeS	X				
PFHxS	X				
PFHpS	X				
PFOS	X				
PFNS	X				
PFDS	X				
PFDoS	X				
4:2 FTS	X				
6:2 FTS	X				
8:2 FTS	X				
PFOSA	X				
N-MeFOSA	X				
N-EtFOSA	X				
MeFOSAA	X				
EtFOSAA	X				
N-MeFOSE	X				
N-EtFOSE	X				
3:3 FTCA	X				
5:3 FTCA	X				
7:3 FTCA	X				

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

L38863-4 N (A)

Matrix: SOLID

Sample Size:

4.91 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 17:10:16

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 47

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng absolute

% Moisture:

3.04

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	D	200	140	69.9		0.997
13C5-PFPeA	D	100	53.1	53.1		0.876
13C5-PFHxA	D V	50.0	24.9	49.8	10.6	1.000
13C4-PFHpA	D	50.0	34.7	69.4		0.870
13C8-PFOA	X					
13C9-PFNA	X					
13C6-PFDA	X					
13C7-PFUnA	X					
13C2-PFDoA	X					
13C2-PFTeDA	X					
13C3-PFBS	X					
13C3-PFHxS	X					
13C8-PFOS	X					
13C2-4:2 FTS	X					
13C2-6:2 FTS	X					
13C2-8:2 FTS	X					
13C8-PFOSA	X					
D3-N-MeFOSA	X					
D5-N-EtFOSA	X					
D3-MeFOSAA	X					
D5-EtFOSAA	X					
d7-NMe-FOSE	X					
d9-NEt-FOSE	X					

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

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate2)
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

WG86419-104 (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.95 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:34:56

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 26

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture:

2.59

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	E				
PFPeA	E				
PFHxA	E				
PFHpA	E				
PFOA		1.65	0.202 (Q)	2.14	
PFNA	J	0.285	0.202 (Q)	2.54	
PFDA	J	0.262	0.202 (Q)	2.46	1.001
PFUnA	U		0.202 (Q)		
PFDoA	U		0.161 (Q)		
PFTTrDA	U		0.202 (Q)		
PFTeDA	U		0.202 (Q)		
PFBS	U		0.202 (Q)		
PFPeS	U		0.203 (Q)		
PFHxS	U		0.202 (Q)		
PFHpS	U		0.202 (Q)		
PFOS	B J	0.271	0.202 (Q)	1.51	
PFNS	U		0.202 (Q)		
PFDS	U		0.202 (Q)		
PFDoS	U		0.202 (Q)		
4:2 FTS	U		0.807 (Q)		
6:2 FTS	B	3.10	0.727 (Q)	0.46	1.000
8:2 FTS	U		0.686 (Q)		
PFOSA	U		0.202 (Q)		
N-MeFOSA	U		0.202 (Q)		
N-EtFOSA	U		0.565 (Q)		
MeFOSAA	U		0.202 (Q)		
EtFOSAA	U		0.202 (Q)		
N-MeFOSE	U		2.02 (Q)		
N-EtFOSE	U		2.02 (Q)		
3:3 FTCA	U		0.807 (Q)		
5:3 FTCA	U		5.04 (Q)		
7:3 FTCA	U		5.04 (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; E = exceeds calibrated linear range, see dilution data.

(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: _____ Bryan Alonzo _____

For Alys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 17-Oct-2023 11:03:22; Application: XMLTransformer-1.18.44;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_WG86419-104_Form1A_FC3G_205S26_SJ3294230.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate2)
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

WG86419-104 N (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.95 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 16:56:46

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 46

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

2.59

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	D	5710	12.1 (Q)		1.003
PFPeA	D	9240	6.05 (Q)		1.000
PFHxA	D	4530	3.03 (Q)	4.72	1.000
PFHpA	D	657	3.03 (Q)	2.17	1.000
PFOA	X				
PFNA	X				
PFDA	X				
PFUnA	X				
PFDaA	X				
PFTTrDA	X				
PFTeDA	X				
PFBS	X				
PFPeS	X				
PFHxS	X				
PFHpS	X				
PFOS	X				
PFNS	X				
PFDS	X				
PFDoS	X				
4:2 FTS	X				
6:2 FTS	X				
8:2 FTS	X				
PFOSA	X				
N-MeFOSA	X				
N-EtFOSA	X				
MeFOSAA	X				
EtFOSAA	X				
N-MeFOSE	X				
N-EtFOSE	X				
3:3 FTCA	X				
5:3 FTCA	X				
7:3 FTCA	X				

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

PERFLUORINATED ORGANICS ANALYSIS REPORT
RELATIVE PERCENT DIFFERENCE

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4066

Client ID: DU-3_FC1302-1

Project No.

RED HILL AFFF

Concentration Units:

ng/g (dry weight basis)

COMPOUND	L38863-4 (A)		WG86419-103		MEAN	RELATIVE PERCENT DIFFERENCE
	LAB FLAG ¹	CONC. FOUND	LAB FLAG ¹	CONC. FOUND		
PFBA	D	6690	D	6150	6420	8.39
PFPeA	D	12100	D	9460	10800	24.4
PFHxA	D	5770	D	4220	4990	31.1
PFHpA	D	757	D	707	732	6.80
PFOA		1.74		1.65	1.70	5.25
PFNA	J	0.315	J	0.310	0.312	1.52
PFDA	R J	0.432	J	0.377		
PFUnA	U		U			
PFDoA	U		U			
PFTTrDA	U		U			
PFTeDA	U		U			
PFBS	U		U			
PFPeS	U		U			
PFHxS	U		U			
PFHpS	U		U			
PFOS	J	0.491	J	0.332	0.411	38.6
PFNS	U		U			
PFDS	U		U			
PFDoS	U		U			
4:2 FTS	U		U			
6:2 FTS		5.11		5.18	5.14	1.46
8:2 FTS	U		U			
PFOSA	U		U			
N-MeFOSA	U		U			
N-EtFOSA	U		U			
MeFOSAA	U		U			
EtFOSAA	U		U			
N-MeFOSE	U		U			
N-EtFOSE	U		U			
3:3 FTCA	U		U			
5:3 FTCA	U		U			
7:3 FTCA	U		U			

(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; D = dilution data; J = concentration less than limit of quantification.

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

Signed: Bryan Alonzo

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.

For Axys Internal Use Only [XSL Template: RPD.xsl; Created: 17-Oct-2023 11:05:01; Application: XMLTransformer-1.18.44;
Report Filename: RPD_FC_LC_PFAS_POSTTOP-RPD_WG86419-103_L38863-4_.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate2)
Sample Collection:
07-Dec-2022 14:30

SGS AXYS ANALYTICAL SERVICES

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

Project No.

RED HILL AFFF

Contract No.: 4066

Lab Sample I.D.:

WG86419-104 (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.95 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:34:56

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 26

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

2.59

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	X					
13C5-PFPeA		100	63.9	63.9		0.871
13C5-PFHxA		50.0	29.0	58.1	13.3	1.000
13C4-PFHpA	X					
13C8-PFOA		50.0	36.1	72.2		0.999
13C9-PFNA		25.0	18.8	75.2		1.000
13C6-PFDA		25.0	18.2	72.8		0.999
13C7-PFUnA		25.0	16.9	67.7		1.047
13C2-PFDoA		25.0	15.6	62.4		1.082
13C2-PFTeDA		25.0	15.8	63.3		1.161
13C3-PFBS		50.1	38.8	77.4	2.55	0.801
13C3-PFHxS		50.1	42.3	84.5	2.21	1.000
13C8-PFOS		50.3	42.6	84.7	2.06	1.000
13C2-4:2 FTS		20.2	17.5	86.6	1.87	0.839
13C2-6:2 FTS		20.0	19.9	99.6	2.03	1.002
13C2-8:2 FTS		20.0	16.5	82.1	3.04	1.266
13C8-PFOA		10.0	11.0	110		1.138
D3-N-MeFOSA		10.0	11.4	114		1.332
D5-N-EtFOSA		10.0	11.5	115		1.370
D3-MeFOSAA		20.0	14.7	73.7		1.311
D5-EtFOSAA		20.0	15.5	77.4		1.337
d7-NMe-FOSE		100	133	133		1.315
d9-NEt-FOSE		100	147	147		1.354

(1) Where applicable, custom lab flags have been used on this report; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate2)
Sample Collection:
07-Dec-2022 14:30

SGS AXYS ANALYTICAL SERVICES

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

Project No.

RED HILL AFFF

Contract No.: 4066

Lab Sample I.D.:

WG86419-104 N (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.95 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 16:56:46

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 46

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng absolute

% Moisture:

2.59

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	D	200	144	71.9		1.000
13C5-PFPeA	D	100	62.9	62.9		0.877
13C5-PFHxA	D	50.0	31.2	62.5	10.6	1.000
13C4-PFHpA	D	50.0	32.0	64.0		0.869
13C8-PFOA	X					
13C9-PFNA	X					
13C6-PFDA	X					
13C7-PFUnA	X					
13C2-PFDoA	X					
13C2-PFTeDA	X					
13C3-PFBS	X					
13C3-PFHxS	X					
13C8-PFOS	X					
13C2-4:2 FTS	X					
13C2-6:2 FTS	X					
13C2-8:2 FTS	X					
13C8-PFOSA	X					
D3-N-MeFOSA	X					
D5-N-EtFOSA	X					
D3-MeFOSAA	X					
D5-EtFOSAA	X					
d7-NMe-FOSE	X					
d9-NEt-FOSE	X					

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

PERFLUORINATED ORGANICS ANALYSIS REPORT
RELATIVE PERCENT DIFFERENCE

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4066

Client ID: DU-3_FC1302-1

Project No.

RED HILL AFFF

Concentration Units:

ng/g (dry weight basis)

COMPOUND	L38863-4 (A)		WG86419-104		MEAN	RELATIVE PERCENT DIFFERENCE
	LAB FLAG ¹	CONC. FOUND	LAB FLAG ¹	CONC. FOUND		
PFBA	D	6690	D	5710	6200	15.7
PFPeA	D	12100	D	9240	10700	26.6
PFHxA	D	5770	D	4530	5150	24.0
PFHpA	D	757	D	657	707	14.1
PFOA		1.74		1.65	1.70	5.30
PFNA	J	0.315	J	0.285	0.300	9.90
PFDA	R J	0.432	J	0.262		
PFUnA	U		U			
PFDaA	U		U			
PFTTrDA	U		U			
PFTeDA	U		U			
PFBS	U		U			
PFPeS	U		U			
PFHxS	U		U			
PFHpS	U		U			
PFOS	J	0.491	J	0.271	0.381	57.7
PFNS	U		U			
PFDS	U		U			
PFDoS	U		U			
4:2 FTS	U		U			
6:2 FTS		5.11		3.10	4.10	48.8
8:2 FTS	U		U			
PFOSA	U		U			
N-MeFOSA	U		U			
N-EtFOSA	U		U			
MeFOSAA	U		U			
EtFOSAA	U		U			
N-MeFOSE	U		U			
N-EtFOSE	U		U			
3:3 FTCA	U		U			
5:3 FTCA	U		U			
7:3 FTCA	U		U			

(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; D = dilution data; J = concentration less than limit of quantification.

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

Signed: Bryan Alonzo

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.

For Axys Internal Use Only [XSL Template: RPD.xsl; Created: 17-Oct-2023 11:05:01; Application: XMLTransformer-1.18.44;
Report Filename: RPD_FC_LC_PFAS_POSTTOP-RPD_WG86419-104_L38863-4_.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT 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.: WG86419-101

Matrix: SOLID

Sample Size: 5.00 g

Sample Receipt Date: N/A

Initial Calibration Date: 19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID: LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:16:18

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC3G_205 S: 20

Injection Volume (uL): 2

Blank Data Filename: FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename: FC3G_205 S: 15

Concentration Units: ng/g

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	J	1.88	0.798 (Q)		1.004
PFPeA		2.75	0.399 (Q)		1.000
PFHxA		2.94	0.199 (Q)	4.76	1.000
PFHpA	J	0.667	0.199 (Q)	1.91	1.000
PFOA	U		0.199 (Q)		
PFNA	U		0.199 (Q)		
PFDA	U		0.199 (Q)		
PFUnA	U		0.199 (Q)		
PFDoA	U		0.160 (Q)		
PFTTrDA	U		0.199 (Q)		
PFTeDA	U		0.258 (S)		
PFBS	U		0.199 (Q)		
PFPeS	U		0.200 (Q)		
PFHxS	U		0.199 (Q)		
PFHpS	U		0.199 (Q)		
PFOS	J	0.201	0.199 (Q)	2.75	
PFNS	U		0.199 (Q)		
PFDS	U		0.199 (Q)		
PFDoS	U		0.199 (Q)		
4:2 FTS	U		0.798 (Q)		
6:2 FTS		4.37	0.719 (Q)	0.44	1.000
8:2 FTS	U		0.678 (Q)		
PFOSA	U		0.199 (Q)		
N-MeFOSA	U		0.199 (Q)		
N-EtFOSA	U		0.558 (Q)		
MeFOSAA	U		0.199 (Q)		
EtFOSAA	U		0.199 (Q)		
N-MeFOSE	U		1.99 (Q)		
N-EtFOSE	U		1.99 (Q)		
3:3 FTCA	U		0.798 (Q)		
5:3 FTCA	U		4.98 (Q)		
7:3 FTCA	U		4.98 (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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT 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.: WG86419-101

Matrix: SOLID

Sample Size: 5.00 g

Sample Receipt Date: N/A

Initial Calibration Date: 19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID: LC MS/MS

Analysis Date: 29-Jul-2023 Time: 11:16:18

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC3G_205 S: 20

Injection Volume (uL): 2

Blank Data Filename: FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename: FC3G_205 S: 15

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		200	123	61.7		1.000
13C5-PFPeA		100	84.1	84.1		0.871
13C5-PFHxA		50.0	33.4	66.8	17.1	0.999
13C4-PFHpA		50.0	30.1	60.2		0.895
13C8-PFOA		50.0	35.7	71.4		1.000
13C9-PFNA		25.0	18.2	72.6		1.001
13C6-PFDA		25.0	17.3	69.1		0.999
13C7-PFUnA		25.0	15.7	62.9		1.047
13C2-PFDoA		25.0	13.0	51.9		1.082
13C2-PFTeDA	V	25.0	11.1	44.5		1.162
13C3-PFBS		50.1	39.1	78.0	2.59	0.802
13C3-PFHxS		50.1	43.1	86.0	2.36	1.000
13C8-PFOS		50.3	41.1	81.7	2.10	1.000
13C2-4:2 FTS		20.2	17.1	85.0	1.79	0.839
13C2-6:2 FTS		20.0	19.3	96.3	2.08	1.001
13C2-8:2 FTS		20.0	16.7	83.2	3.19	1.265
13C8-PFOA		10.0	10.7	107		1.140
D3-N-MeFOSA		10.0	11.2	112		1.333
D5-N-EtFOSA		10.0	11.3	113		1.370
D3-MeFOSAA		20.0	14.6	72.8		1.311
D5-EtFOSAA		20.0	14.8	74.2		1.336
d7-NMe-FOSE		100	130	129		1.315
d9-NEt-FOSE		100	139	138		1.354

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

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.:	WG86419-102
Matrix:	SOLID	Initial Calibration Date:	19-Feb-2023
Extraction Date:	25-Jul-2023	Instrument ID:	LC MS/MS
Analysis Date:	29-Jul-2023 Time: 10:49:33	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC3G_205 S: 18
Injection Volume (uL):	2	Blank Data Filename:	FC3G_205 S: 20
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC3G_205 S: 15

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			226	286	127	1.003
PFPeA			167	215	129	1.000
PFHxA		4.48	160	199	124	1.000
PFHpA		1.90	144	138	96.2	1.000
PFOA		2.01	502	610	121	
PFNA		2.65	39.4	39.4	100	
PFDA		2.81	25.0	24.4	97.5	1.000
PFUnA		3.48	25.0	25.7	103	1.000
PFDoA		6.91	25.0	22.6	90.4	0.999
PFTTrDA		2.70	25.0	26.8	107	0.962
PFTeDA		2.22	25.0	24.4	97.4	1.000
PFBS		2.48	25.0	26.2	105	1.000
PFPeS		2.14	24.9	24.1	96.8	0.890
PFHxS		2.31	25.0	21.9	87.6	
PFHpS		2.04	25.0	25.5	102	0.922
PFOS		2.49	27.1	28.3	105	
PFNS		2.21	25.0	20.0	79.8	1.046
PFDS		2.40	25.0	20.5	82.2	1.080
PFDoS		2.27	25.0	19.8	79.3	1.165
4:2 FTS	U		100		0	
6:2 FTS	U		100		0	
8:2 FTS	J	0.54	100	3.77	3.8	0.999
MeFOSAA	J	2.56	70.0	2.84	4.1	
EtFOSAA	J	1.03	70.0	3.26	4.7	

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.

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

Signed: _____ Bryan Alonzo _____

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-111 Rev 03

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.:	WG86419-102
Matrix:	SOLID	Initial Calibration Date:	19-Feb-2023
Extraction Date:	25-Jul-2023	Instrument ID:	LC MS/MS
Analysis Date:	29-Jul-2023 Time: 10:49:33	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC3G_205 S: 18
Injection Volume (uL):	2	Blank Data Filename:	FC3G_205 S: 20
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC3G_205 S: 15

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			200	129	64.7	0.997
13C5-PFPeA			100	88.8	88.8	0.873
13C5-PFHxA		17.6	50.0	35.3	70.5	1.000
13C4-PFHpA			50.0	29.7	59.5	0.899
13C8-PFOA			50.0	35.5	71.1	1.000
13C9-PFNA			25.0	19.7	78.8	0.999
13C6-PFDA			25.0	18.2	72.9	0.999
13C7-PFUnA			25.0	16.7	66.7	1.047
13C2-PFDoA			25.0	14.6	58.3	1.082
13C2-PFTeDA			25.0	13.6	54.4	1.160
13C3-PFBS		2.68	50.1	42.6	84.9	0.804
13C3-PFHxS		2.27	50.1	46.1	92.1	1.000
13C8-PFOS		2.12	50.3	44.4	88.3	1.000
13C2-4:2 FTS		1.73	20.2	17.5	87.0	0.839
13C2-6:2 FTS		2.07	20.0	19.3	96.7	1.002
13C2-8:2 FTS		3.19	20.0	17.1	85.1	1.262
13C8-PFOSA			10.0	10.8	108	1.136
D3-N-MeFOSA			10.0	10.8	108	1.332
D5-N-EtFOSA			10.0	11.0	110	1.370
D3-MeFOSAA			20.0	15.5	77.6	1.309
D5-EtFOSAA			20.0	16.1	80.6	1.335
d7-NMe-FOSE			100	126	126	1.315
d9-NEt-FOSE			100	140	140	1.355

(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: _____ Bryan Alonzo _____

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-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate)
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

WG86419-103 (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:21:59

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 25

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng/g (dry weight basis)

% Moisture:

5.09

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	E				
PFPeA	E				
PFHxA	E				
PFHpA	E				
PFOA		1.65	0.211 (Q)	1.99	
PFNA	J	0.310	0.211 (Q)	2.59	
PFDA	J	0.377	0.211 (Q)	3.72	1.001
PFUnA	U		0.211 (Q)		
PFDoA	U		0.169 (Q)		
PFTTrDA	U		0.211 (Q)		
PFTeDA	U		0.211 (Q)		
PFBS	U		0.211 (Q)		
PFPeS	U		0.212 (Q)		
PFHxS	U		0.211 (Q)		
PFHpS	U		0.211 (Q)		
PFOS	B J	0.332	0.211 (Q)	2.37	
PFNS	U		0.211 (Q)		
PFDS	U		0.211 (Q)		
PFDoS	U		0.211 (Q)		
4:2 FTS	U		0.843 (Q)		
6:2 FTS	B	5.18	0.759 (Q)	0.43	1.000
8:2 FTS	U		0.716 (Q)		
PFOSA	U		0.211 (Q)		
N-MeFOSA	U		0.211 (Q)		
N-EtFOSA	U		0.590 (Q)		
MeFOSAA	U		0.211 (Q)		
EtFOSAA	U		0.211 (Q)		
N-MeFOSE	U		2.11 (Q)		
N-EtFOSE	U		2.11 (Q)		
3:3 FTCA	U		0.843 (Q)		
5:3 FTCA	U		5.27 (Q)		
7:3 FTCA	U		5.27 (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; E = exceeds calibrated linear range, see dilution data.

(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: _____ Bryan Alonzo _____

For Alys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 17-Oct-2023 11:03:22; Application: XMLTransformer-1.18.44;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_WG86419-103_Form1A_FC3G_205S25_SJ3294229.html; Workgroup: WG86419; Design ID: 4411]

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate)
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

WG86419-103 N (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 16:43:03

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 45

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

5.09

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	D	6150	12.6 (Q)		1.003
PFPeA	D	9460	6.32 (Q)		1.000
PFHxA	D	4220	3.16 (Q)	4.72	1.001
PFHpA	D	707	3.16 (Q)	2.16	1.000
PFOA	X				
PFNA	X				
PFDA	X				
PFUnA	X				
PFDoA	X				
PFTTrDA	X				
PFTeDA	X				
PFBS	X				
PFPeS	X				
PFHxS	X				
PFHpS	X				
PFOS	X				
PFNS	X				
PFDS	X				
PFDoS	X				
4:2 FTS	X				
6:2 FTS	X				
8:2 FTS	X				
PFOSA	X				
N-MeFOSA	X				
N-EtFOSA	X				
MeFOSAA	X				
EtFOSAA	X				
N-MeFOSE	X				
N-EtFOSE	X				
3:3 FTCA	X				
5:3 FTCA	X				
7:3 FTCA	X				

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate)
Sample Collection:
07-Dec-2022 14:30

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.

RED HILL AFFF

Lab Sample I.D.:

WG86419-103 (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LC MS/MS

Analysis Date: 29-Jul-2023 Time: 12:21:59

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3G_205 S: 25

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC3G_205 S: 15

Concentration Units: ng absolute

% Moisture:

5.09

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	X					
13C5-PFPeA		100	58.8	58.8		0.871
13C5-PFHxA		50.0	28.4	56.8	14.4	1.000
13C4-PFHpA	X					
13C8-PFOA		50.0	35.2	70.5		1.000
13C9-PFNA		25.0	18.3	73.0		1.001
13C6-PFDA		25.0	17.6	70.3		0.999
13C7-PFUnA		25.0	15.9	63.5		1.047
13C2-PFDoA		25.0	13.8	55.1		1.082
13C2-PFTeDA		25.0	13.9	55.6		1.162
13C3-PFBS		50.1	37.9	75.6	2.64	0.802
13C3-PFHxS		50.1	41.2	82.4	2.30	1.000
13C8-PFOS		50.3	39.8	79.1	2.05	1.000
13C2-4:2 FTS		20.2	17.3	85.8	1.86	0.839
13C2-6:2 FTS		20.0	19.2	95.9	2.00	1.002
13C2-8:2 FTS		20.0	16.4	81.8	3.22	1.265
13C8-PFOA		10.0	10.9	109		1.139
D3-N-MeFOSA		10.0	11.0	110		1.333
D5-N-EtFOSA		10.0	11.3	113		1.371
D3-MeFOSAA		20.0	14.9	74.7		1.312
D5-EtFOSAA		20.0	14.7	73.5		1.337
d7-NMe-FOSE		100	129	128		1.316
d9-NEt-FOSE		100	144	144		1.355

(1) Where applicable, custom lab flags have been used on this report; X = result reported separately.

(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: _____ Bryan Alonzo_____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
DU-3_FC1302-1 (Duplicate)
Sample Collection:
07-Dec-2022 14:30

SGS AXYS ANALYTICAL SERVICES

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

Project No.

RED HILL AFFF

Contract No.: 4066

Lab Sample I.D.:

WG86419-103 N (DUP L38863-4)

Matrix: SOLID

Sample Size:

4.78 g (dry)

Sample Receipt Date: 15-Feb-2023

Initial Calibration Date:

01-Mar-2023

Extraction Date: 25-Jul-2023

Instrument ID:

LCMS/MS

Analysis Date: 10-Aug-2023 Time: 16:43:03

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC3L_339 S: 45

Injection Volume (uL): 2

Blank Data Filename:

FC3G_205 S: 20

Dilution Factor: 15

Cal. Ver. Data Filename:

FC3L_339 S: 43

Concentration Units: ng absolute

% Moisture:

5.09

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	D	200	132	65.9		1.000
13C5-PFPeA	D	100	63.5	63.5		0.876
13C5-PFHxA	D	50.0	30.6	61.2	17.4	0.999
13C4-PFHpA	D	50.0	38.5	77.0		0.870
13C8-PFOA	X					
13C9-PFNA	X					
13C6-PFDA	X					
13C7-PFUnA	X					
13C2-PFDoA	X					
13C2-PFTeDA	X					
13C3-PFBS	X					
13C3-PFHxS	X					
13C8-PFOS	X					
13C2-4:2 FTS	X					
13C2-6:2 FTS	X					
13C2-8:2 FTS	X					
13C8-PFOSA	X					
D3-N-MeFOSA	X					
D5-N-EtFOSA	X					
D3-MeFOSAA	X					
D5-EtFOSAA	X					
d7-NMe-FOSE	X					
d9-NEt-FOSE	X					

(1) Where applicable, custom lab flags have been used on this report; D = dilution data; X = result reported separately.

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

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: 01-Mar-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3L_107 S: 16
CS2 Data Filename: FC3L_107 S: 17
CS3 Data Filename: FC3L_107 S: 18
CS4 Data Filename: FC3L_107 S: 19
CS5 Data Filename: FC3L_107 S: 20
CS6 Data Filename: FC3L_107 S: 21
CS7 Data Filename: FC3L_107 S: 22
CS8 Data Filename: FC3L_107 S: 23

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7		
PFBA		0.86	0.83	0.85	0.81	0.85	0.82	0.82	0.82	0.83	2.14
PFPeA		1.14	1.11	1.07	0.98	1.07	1.04	1.00	1.00	1.05	5.39
PFHxA		1.33	1.23	1.13	1.03	1.04	1.00	1.01	1.05	1.10	11.0
PFHpA		1.15	1.24	1.20	1.13	1.16	1.11	1.13	1.13	1.16	3.70
PFOA		1.47	1.32	1.34	1.34	1.26	1.29	1.28	1.27	1.32	5.22
PFNA		1.08	1.00	0.99	1.04	0.99	0.99	0.98	0.97	1.01	3.77
PFDA		0.83	0.74	0.70	0.66	0.74	0.67	0.70	0.68	0.71	7.38
PFUnA		0.78	0.76	0.77	0.70	0.75	0.71	0.70	0.70	0.73	4.69
PFDoA		1.18	1.14	1.11	1.12	1.17	1.09	1.07	1.02	1.11	4.78
PFTrDA		0.98	0.92	0.84	0.81	0.83	0.80	0.80	0.75	0.84	8.87
PFTeDA		0.87	0.83	0.77	0.75	0.78	0.76	0.74	0.68	0.77	7.62
PFBS		1.14	1.01	1.05	1.05	1.08	1.04	1.06	1.04	1.06	3.67
PFPeS		1.00	0.92	0.99	0.95	1.01	0.94	0.96	0.91	0.96	3.99
PFHxS		1.37	1.28	1.26	1.14	1.26	1.16	1.19	1.20	1.23	6.14
PFHpS		1.11	1.09	1.00	0.97	1.02	0.99	1.00	0.93	1.01	5.99
PFOS		1.25	1.14	1.12	1.02	1.11	1.17	1.10	1.06	1.12	6.16
PFNS		1.05	1.00	1.02	0.97	1.01	0.96	0.99	0.97	0.99	2.96
PFDS		0.93	0.97	0.92	0.89	0.94	0.93	0.95	0.94	0.94	2.43
PFDoS		0.84	0.82	0.86	0.79	0.86	0.84	0.87	0.87	0.85	3.31
4:2 FTS		0.53	0.50	0.49	0.45	0.49	0.47	0.45	0.42	0.47	7.27
6:2 FTS		0.51	0.46	0.48	0.43	0.46	0.44	0.43	0.40	0.45	7.25
8:2 FTS		0.35	0.30	0.32	0.30	0.32	0.30	0.30	0.25	0.31	9.70
PFOSA		0.97	0.96	0.93	0.89	0.92	0.90	0.90	0.91	0.92	3.33
N-MeFOSA		0.90	1.05	0.93	0.93	0.92	0.96	0.95	0.90	0.94	4.82
N-EtFOSA		1.15	1.14	1.08	1.10	1.18	1.10	1.18	1.13	1.13	3.25
MeFOSAA		0.87	0.93	1.00	0.91	0.94	0.88	0.86		0.91	5.56
EtFOSAA		0.77	0.75	0.68	0.75	0.78	0.73	0.74		0.74	4.16
N-MeFOSE		0.81	0.78	0.77	0.74	0.77	0.76	0.74	0.73	0.76	3.65
N-EtFOSE		1.08	1.03	1.03	0.99	1.04	1.02	1.01	0.98	1.02	3.19
3:3 FTCA		0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.07	8.61
5:3 FTCA		0.18	0.16	0.17	0.17	0.17	0.17	0.18	0.21	0.18	7.83
7:3 FTCA		0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.12	0.10	7.99

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03

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

Signed: _____ Jordan Berends _____

SGS AXYS METHOD MLA-111 Rev 03

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: 01-Mar-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3L_107 S: 16
CS2 Data Filename: FC3L_107 S: 17
CS3 Data Filename: FC3L_107 S: 18
CS4 Data Filename: FC3L_107 S: 19
CS5 Data Filename: FC3L_107 S: 20
CS6 Data Filename: FC3L_107 S: 21
CS7 Data Filename: FC3L_107 S: 22
CS8 Data Filename: FC3L_107 S: 23

Labeled Compound	Lab Flag ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C4-PFBA			1.07	1.11	1.08	1.05	1.08	1.09	1.09	1.07	1.08	1.60
13C5-PFPeA			0.93	0.95	0.93	0.92	0.94	0.93	0.95	0.90	0.93	1.71
13C5-PFHxA			0.65	0.70	0.66	0.64	0.69	0.66	0.66	0.63	0.66	3.33
13C4-PFHpA			3.41	3.65	3.45	3.36	3.21	3.53	3.36	3.31	3.41	3.96
13C8-PFOA			3.71	3.92	3.85	3.61	3.62	3.81	3.68	3.81	3.75	3.04
13C9-PFNA			1.02	1.04	1.03	1.05	1.06	1.05	1.04	1.02	1.04	1.56
13C6-PFDA			0.99	1.10	1.05	1.02	1.02	1.04	1.00	1.01	1.03	3.30
13C7-PFUnA			1.07	1.14	1.11	1.07	1.10	1.09	1.06	1.04	1.08	3.02
13C2-PFDoA			0.88	0.94	0.91	0.85	0.87	0.90	0.88	0.95	0.90	3.90
13C2-PFTeDA			0.92	0.98	0.98	0.94	0.98	0.96	0.96	1.06	0.97	4.24
13C3-PFBS			1.31	1.40	1.31	1.24	1.37	1.30	1.25	1.08	1.28	7.48
13C3-PFHxS			1.10	1.15	1.12	1.07	1.12	1.11	1.12	1.10	1.11	2.19
13C8-PFOS			1.04	1.03	1.05	1.06	1.05	1.04	0.99	1.05	1.04	1.93
13C2-4:2 FTS			1.22	1.17	1.10	1.15	1.11	1.01	0.95	0.92	1.08	9.94
13C2-6:2 FTS			1.00	1.00	0.94	0.97	0.98	0.93	0.97	1.01	0.98	2.97
13C2-8:2 FTS			1.49	1.45	1.42	1.44	1.43	1.34	1.33	1.40	1.41	3.76
13C8-PFOA			1.72	1.76	1.77	1.72	1.77	1.75	1.73	1.93	1.77	3.87
D3-N-MeFOSA			0.24	0.26	0.27	0.26	0.27	0.25	0.25	0.28	0.26	5.17
D5-N-EtFOSA			0.25	0.26	0.26	0.25	0.25	0.26	0.24	0.26	0.25	3.36
D3-MeFOSAA			0.45	0.45	0.46	0.42	0.47	0.50	0.62		0.48	13.6
D5-EtFOSAA			0.40	0.40	0.39	0.39	0.42	0.43	0.52		0.42	10.7
d7-NMe-FOSE			2.21	2.19	2.26	2.22	2.24	2.17	2.19	2.37	2.23	2.77
d9-NEt-FOSE			1.85	1.84	1.90	1.88	1.88	1.83	1.80	1.95	1.87	2.49

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03.

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

Signed: _____ Jordan Berends _____

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: 01-Mar-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3L_107 S: 16
CS2 Data Filename: FC3L_107 S: 17
CS3 Data Filename: FC3L_107 S: 18
CS4 Data Filename: FC3L_107 S: 19
CS5 Data Filename: FC3L_107 S: 20
CS6 Data Filename: FC3L_107 S: 21
CS7 Data Filename: FC3L_107 S: 22
CS8 Data Filename: FC3L_107 S: 23

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA			5.24	5.95	5.71	5.10	5.29	5.21	5.37	5.23
PFHpA			2.11	2.24	2.38	2.36	2.23	2.23	2.23	2.21
PFOA			2.14	1.90	2.05	2.03	1.95	1.99	2.00	1.99
PFNA			2.97	2.71	2.79	2.82	2.69	2.84	2.83	2.78
PFDA			3.28	3.99	2.90	3.07	3.10	2.98	3.12	3.01
PFUnA			5.66	5.27	4.47	4.61	4.63	4.60	4.49	4.49
PFDaA			7.35	7.43	7.38	7.72	7.38	7.27	7.30	7.39
PFTTrDA			3.39	3.56	3.13	3.19	3.16	3.16	3.17	3.20
PFTeDA			2.56	2.87	2.55	2.81	2.83	2.83	2.78	2.79
PFBS			2.64	2.75	2.72	2.70	2.75	2.74	2.76	2.72
PFPeS			2.35	2.06	2.47	2.30	2.27	2.33	2.37	2.34
PFHxS			2.33	2.29	2.49	2.42	2.61	2.44	2.50	2.45
PFHpS			2.38	2.02	2.09	2.03	2.15	2.08	2.09	2.07
PFOS			2.07	2.49	2.62	2.63	2.60	2.67	2.61	2.60
PFNS			2.39	2.19	2.34	2.41	2.27	2.28	2.24	2.30
PFDS			2.05	2.40	2.30	2.33	2.30	2.30	2.31	2.30
PFDoS			1.86	2.05	2.15	2.13	2.14	2.23	2.18	2.21
4:2 FTS			0.45	0.45	0.45	0.43	0.45	0.45	0.44	0.45
6:2 FTS			0.44	0.42	0.43	0.40	0.41	0.41	0.41	0.42
8:2 FTS			0.55	0.48	0.51	0.53	0.52	0.53	0.53	0.54
PFOSA										
N-MeFOSA			0.48	0.60	0.52	0.53	0.53	0.53	0.54	0.53
N-EtFOSA			0.49	0.53	0.49	0.51	0.52	0.53	0.54	0.53
MeFOSAA			1.36	2.00	2.51	2.02	1.92	1.89	1.91	
EtFOSAA			1.43	1.05	1.05	1.25	1.14	1.12	1.15	
N-MeFOSE										
N-EtFOSE										
3:3 FTCA			1.60	1.42	1.60	1.50	1.59	1.60	1.57	1.60
5:3 FTCA			1.37	1.31	1.40	1.40	1.39	1.40	1.41	1.41
7:3 FTCA			0.62	0.67	0.65	0.68	0.66	0.64	0.66	0.66

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-111 Rev 03

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: 01-Mar-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
 CS1 Data Filename: FC3L_107 S: 16
 CS2 Data Filename: FC3L_107 S: 17
 CS3 Data Filename: FC3L_107 S: 18
 CS4 Data Filename: FC3L_107 S: 19
 CS5 Data Filename: FC3L_107 S: 20
 CS6 Data Filename: FC3L_107 S: 21
 CS7 Data Filename: FC3L_107 S: 22
 CS8 Data Filename: FC3L_107 S: 23

LABELLED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA			14.8	14.6	14.9	13.9	14.9	15.4	16.1	14.7
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS			2.83	2.71	2.68	2.63	2.82	2.82	2.70	2.77
13C3-PFHxS			2.45	2.41	2.44	2.36	2.39	2.49	2.50	2.50
13C8-PFOS			2.24	2.18	2.09	2.25	2.16	2.28	2.19	2.17
13C2-4:2 FTS			1.85	1.81	1.78	1.77	1.74	1.51	1.22	0.55
13C2-6:2 FTS			2.22	2.19	2.07	2.13	2.03	1.83	1.52	0.74
13C2-8:2 FTS			3.37	3.31	3.31	3.25	3.06	2.99	2.34	1.27
13C8-PFOA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-111 Rev 03

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3G_006 S: 16
CS2 Data Filename: FC3G_006 S: 17
CS3 Data Filename: FC3G_006 S: 18
CS4 Data Filename: FC3G_006 S: 19
CS5 Data Filename: FC3G_006 S: 20
CS6 Data Filename: FC3G_006 S: 21
CS7 Data Filename: FC3G_006 S: 22
CS8 Data Filename: FC3G_006 S: 23

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
PFBA			1.14	0.93	0.92	0.86	0.90	0.86	0.86	0.86	0.92	10.4
PFPeA			1.21	1.06	1.02	0.98	1.03	0.98	0.98	0.97	1.03	7.90
PFHxA			1.30	1.13	1.04	0.94	0.98	0.95	0.94	0.97	1.03	12.1
PFHpA			1.38	1.18	1.11	1.16	1.20	1.11	1.14	1.13	1.18	7.43
PFOA			1.47	1.28	1.26	1.18	1.22	1.19	1.18	1.18	1.24	7.98
PFNA			1.21	1.05	1.00	1.01	1.05	1.04	1.02	1.02	1.05	6.47
PFDA			0.96	0.82	0.85	0.76	0.82	0.80	0.77	0.80	0.82	7.62
PFUnA			0.83	0.74	0.74	0.68	0.74	0.73	0.71	0.74	0.74	5.90
PFDaA			1.25	1.14	1.07	1.00	1.08	1.05	1.04	1.01	1.08	7.41
PFTrDA			1.02	0.84	0.84	0.82	0.86	0.81	0.81	0.73	0.84	9.87
PFTeDA			0.94	0.83	0.82	0.74	0.79	0.78	0.76	0.71	0.80	8.77
PFBS			1.07	1.05	1.00	1.01	1.02	1.00	1.01	1.02	1.02	2.48
PFPeS			1.01	0.98	1.01	0.99	1.03	1.04	1.03	0.98	1.01	2.30
PFHxS			1.38	1.39	1.37	1.26	1.35	1.32	1.34	1.32	1.34	3.07
PFHpS			1.01	0.98	1.09	0.97	1.02	1.02	1.00	0.99	1.01	3.72
PFOS			1.43	1.15	1.09	1.05	1.15	1.23	1.10	1.13	1.17	10.1
PFNS			1.17	1.19	1.19	1.10	1.16	1.15	1.14	1.11	1.15	2.93
PFDS			1.01	1.05	1.02	1.01	1.05	1.03	1.00	1.02	1.02	1.76
PFDoS			0.90	0.86	0.83	0.79	0.85	0.84	0.83	0.85	0.84	3.59
4:2 FTS			0.48	0.47	0.56	0.55	0.53	0.52	0.51	0.46	0.51	7.33
6:2 FTS			0.52	0.53	0.48	0.51	0.49	0.51	0.49	0.45	0.50	5.07
8:2 FTS			0.31	0.33	0.33	0.31	0.34	0.33	0.31	0.27	0.32	7.19
PFOSA			0.98	0.97	0.97	0.92	0.96	0.93	0.93	0.95	0.95	2.35
N-MeFOSA			0.97	0.97	1.03	0.93	0.96	0.96	0.98	0.90	0.96	4.03
N-EtFOSA			1.25	1.19	1.23	1.10	1.22	1.19	1.18	1.18	1.19	3.74
MeFOSAA			0.66	0.79	0.88	0.83	0.83	0.83	0.86	0.84	0.82	8.30
EtFOSAA			0.76	0.64	0.68	0.69	0.70	0.67	0.72	0.68	0.69	5.01
N-MeFOSE			0.81	0.78	0.78	0.74	0.78	0.77	0.75	0.74	0.77	3.09
N-EtFOSE			1.12	1.10	1.09	1.07	1.13	1.09	1.08	1.06	1.09	2.17
3:3 FTCA			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	7.14
5:3 FTCA			0.22	0.18	0.19	0.17	0.18	0.17	0.17	0.18	0.18	9.21
7:3 FTCA			0.11	0.10	0.10	0.09	0.10	0.09	0.09	0.10	0.10	6.93

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03

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

Signed: _____ Kristina Coleman _____

SGS AXYS METHOD MLA-111 Rev 03

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A

CS1 Data Filename: FC3G_006 S: 16

CS2 Data Filename: FC3G_006 S: 17

CS3 Data Filename: FC3G_006 S: 18

CS4 Data Filename: FC3G_006 S: 19

CS5 Data Filename: FC3G_006 S: 20

CS6 Data Filename: FC3G_006 S: 21

CS7 Data Filename: FC3G_006 S: 22

CS8 Data Filename: FC3G_006 S: 23

Labeled Compound	Lab Flag ¹	Relative Response (RR)								Mean RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C4-PFBA			1.15	1.18	1.14	1.13	1.15	1.16	1.16	1.14	1.15	1.43
13C5-PFPeA			0.87	0.90	0.88	0.86	0.83	0.87	0.86	0.81	0.86	3.20
13C5-PFHxA			0.70	0.75	0.73	0.72	0.73	0.74	0.74	0.72	0.73	2.04
13C4-PFHpA			3.23	3.36	3.29	3.30	3.12	3.45	3.17	3.25	3.27	3.24
13C8-PFOA			3.52	3.75	3.58	3.76	3.61	3.80	3.62	3.76	3.67	2.82
13C9-PFNA			1.05	1.09	1.09	1.05	1.07	1.06	1.07	1.09	1.07	1.63
13C6-PFDA			0.97	1.07	1.00	1.01	0.97	1.02	1.04	0.98	1.01	3.74
13C7-PFUnA			1.09	1.21	1.11	1.13	1.12	1.07	1.03	0.77	1.07	12.3
13C2-PFDoA			0.87	1.00	0.93	0.94	0.93	0.95	0.96	0.98	0.94	4.10
13C2-PFTeDA			0.76	0.85	0.77	0.79	0.81	0.81	0.83	0.88	0.81	5.10
13C3-PFBS			1.33	1.32	1.30	1.27	1.34	1.30	1.29	1.15	1.29	4.67
13C3-PFHxS			1.07	1.14	1.07	1.05	1.09	1.07	1.05	1.08	1.08	2.55
13C8-PFOS			0.91	0.94	0.91	0.92	0.91	0.91	0.96	0.90	0.92	2.11
13C2-4:2 FTS			1.12	1.07	1.02	0.98	1.05	1.01	1.00	1.00	1.03	4.27
13C2-6:2 FTS			0.92	0.96	0.95	0.90	0.97	0.93	0.98	1.01	0.95	3.79
13C2-8:2 FTS			1.37	1.43	1.33	1.38	1.41	1.37	1.41	1.46	1.40	2.80
13C8-PFOA			1.76	1.80	1.79	1.71	1.71	1.74	1.84	1.82	1.77	2.87
D3-N-MeFOSA			0.25	0.26	0.24	0.24	0.25	0.24	0.25	0.28	0.25	4.94
D5-N-EtFOSA			0.23	0.24	0.23	0.23	0.22	0.22	0.23	0.23	0.23	3.19
D3-MeFOSAA			0.62	0.67	0.65	0.64	0.71	0.74	0.76	0.88	0.71	12.2
D5-EtFOSAA			0.52	0.59	0.54	0.54	0.58	0.61	0.63	0.75	0.59	12.4
d7-NMe-FOSE			1.88	2.01	1.94	1.89	1.90	1.88	1.99	1.96	1.93	2.67
d9-NEt-FOSE			1.49	1.62	1.55	1.51	1.51	1.51	1.60	1.58	1.55	3.09

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03.

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

Signed: _____ Kristina Coleman _____

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3G_006 S: 16
CS2 Data Filename: FC3G_006 S: 17
CS3 Data Filename: FC3G_006 S: 18
CS4 Data Filename: FC3G_006 S: 19
CS5 Data Filename: FC3G_006 S: 20
CS6 Data Filename: FC3G_006 S: 21
CS7 Data Filename: FC3G_006 S: 22
CS8 Data Filename: FC3G_006 S: 23

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA			5.63	5.90	5.29	4.81	5.06	4.89	4.87	5.02
PFHpA			2.04	2.02	2.06	2.01	2.00	1.95	2.00	2.00
PFOA			1.90	1.98	1.92	1.86	1.89	1.91	1.95	1.86
PFNA			3.21	2.58	2.42	2.64	2.78	2.71	2.66	2.67
PFDA			2.73	2.60	2.75	2.69	2.64	2.75	2.67	2.68
PFUnA			3.76	3.56	3.89	3.64	3.81	3.83	3.70	3.79
PFDoA			6.48	6.53	6.28	6.40	6.42	6.55	6.31	6.34
PFTTrDA			2.95	2.60	2.69	2.75	2.74	2.74	2.69	2.66
PFTeDA			3.00	2.18	2.31	2.19	2.29	2.29	2.28	2.31
PFBS			2.39	2.39	2.41	2.57	2.52	2.49	2.48	2.48
PFPeS			1.97	2.00	2.02	2.15	2.03	2.11	2.10	2.12
PFHxS			1.78	2.06	2.22	2.05	2.26	2.22	2.19	2.22
PFHpS			2.22	2.01	2.15	2.11	2.05	2.07	2.04	2.03
PFOS			2.03	2.34	2.37	2.33	2.57	2.48	2.38	2.49
PFNS			2.06	2.21	2.14	2.21	2.20	2.19	2.18	2.17
PFDS			2.14	2.11	2.26	2.27	2.23	2.22	2.21	2.23
PFDoS			2.14	2.14	2.07	2.12	2.12	2.17	2.16	2.14
4:2 FTS			0.43	0.42	0.49	0.52	0.49	0.48	0.48	0.50
6:2 FTS			0.48	0.51	0.48	0.50	0.46	0.47	0.48	0.49
8:2 FTS			0.49	0.50	0.51	0.50	0.53	0.51	0.51	0.50
PFOSA										
N-MeFOSA			0.64	0.57	0.59	0.56	0.57	0.58	0.58	0.58
N-EtFOSA			0.61	0.57	0.58	0.56	0.57	0.57	0.58	0.57
MeFOSAA			1.25	1.51	1.92	1.84	1.84	1.96	1.98	2.00
EtFOSAA			0.96	1.23	1.29	1.33	1.26	1.22	1.30	1.28
N-MeFOSE										
N-EtFOSE										
3:3 FTCA			1.08	1.07	1.14	1.13	1.16	1.16	1.19	1.18
5:3 FTCA			1.42	1.32	1.35	1.21	1.24	1.20	1.21	1.22
7:3 FTCA			0.81	0.77	0.81	0.76	0.79	0.76	0.78	0.77

(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: _____ Kristina Coleman _____

SGS AXYS METHOD MLA-111 Rev 03

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3G_006 S: 16
CS2 Data Filename: FC3G_006 S: 17
CS3 Data Filename: FC3G_006 S: 18
CS4 Data Filename: FC3G_006 S: 19
CS5 Data Filename: FC3G_006 S: 20
CS6 Data Filename: FC3G_006 S: 21
CS7 Data Filename: FC3G_006 S: 22
CS8 Data Filename: FC3G_006 S: 23

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA			20.2	21.2	22.4	21.8	24.1	19.9	23.9	21.1
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS			2.56	2.45	2.51	2.44	2.54	2.53	2.48	2.47
13C3-PFHxS			2.22	2.29	2.28	2.25	2.22	2.24	2.19	2.24
13C8-PFOS			2.09	2.04	1.95	2.04	2.08	2.07	2.11	2.03
13C2-4:2 FTS			1.91	1.74	1.67	1.58	1.57	1.48	1.14	0.55
13C2-6:2 FTS			1.88	1.97	1.95	1.75	1.85	1.57	1.33	0.65
13C2-8:2 FTS			3.33	3.33	3.15	3.12	3.07	2.71	2.34	1.15
13C8-PFOA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										

(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: _____ Kristina Coleman _____

SGS AXYS METHOD MLA-111 Rev 03

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: 19-Feb-2023

VER Data Filename: FC3G_205 S: 15

Instrument ID: LC MS/MS

Analysis Date: 29-Jul-2023

LC Column ID: C18

Analysis Time: 10:10:41

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.004	213 > 169		20.0	19.0	95.1
PFPeA		1.000	263 > 219		10.0	9.66	96.6
PFHxA		1.000	313 > 269	4.29	5.00	5.12	102
PFHpA		1.001	363 > 319	1.89	5.00	4.91	98.2
PFOA		1.000	413 > 369	2.02	5.00	5.30	106
PFNA		1.000	463 > 419	2.63	5.00	4.99	99.7
PFDA		1.000	513 > 469	2.71	5.00	4.61	92.1
PFUnA		1.001	563 > 519	3.61	5.00	4.94	98.8
PFDoA		1.000	613 > 569	6.49	4.06	4.30	106
PFTTrDA		0.962	663 > 619	2.83	5.00	5.07	101
PFTTeDA		1.000	713 > 669	2.19	5.00	4.87	97.4
PFBS		1.000	299 > 80	2.45	5.00	4.90	98.1
PFPeS		0.887	349 > 80	2.20	5.00	5.24	105
PFHxS		1.000	399 > 80	2.19	5.00	4.33	86.7
PFHpS		0.923	449 > 80	2.08	5.00	5.09	102
PFOS		1.000	499 > 80	2.56	5.00	4.67	93.3
PFNS		1.045	549 > 80	2.25	5.00	4.49	89.9
PFDS		1.080	599 > 80	2.29	5.00	5.04	101
PFDoS		1.166	699 > 80	2.31	5.00	5.12	102
4:2 FTS		1.000	327 > 307	0.44	20.0	18.5	92.7
6:2 FTS		1.000	427 > 407	0.45	18.0	18.1	101
8:2 FTS		1.000	527 > 507	0.50	17.0	18.4	109
PFOSA		1.000	498 > 78		5.00	5.25	105
N-MeFOSA		1.000	512 > 219	0.60	5.00	5.55	111
N-EtFOSA		1.001	526 > 219	0.57	14.0	14.2	101
MeFOSAA		1.001	570 > 419	2.03	5.00	5.62	112
EtFOSAA		1.001	584 > 419	1.15	5.00	5.33	107
N-MeFOSE		1.003	616 > 59		50.0	52.5	105
N-EtFOSE		1.002	630 > 59		50.0	49.7	99.4
3:3 FTCA		0.845	241 > 177	1.19	20.0	20.4	102
5:3 FTCA		1.048	341 > 237	1.24	125	128	103
7:3 FTCA		1.333	441 > 317	0.74	125	128	102

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

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: 19-Feb-2023

VER Data Filename: FC3G_205 S: 15

Instrument ID: LC MS/MS

Analysis Date: 29-Jul-2023

LC Column ID: C18

Analysis Time: 10:10:41

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	34.4	86.0
13C5-PFPeA		0.871	268 > 223		20.0	23.4	117
13C5-PFHxA		1.000	318 > 273	17.2	10.0	9.27	92.7
13C4-PFHpA		0.895	367 > 322		10.0	9.09	90.9
13C8-PFOA		1.000	421 > 376		10.0	10.2	102
13C9-PFNA		1.000	472 > 427		5.00	5.04	101
13C6-PFDA		1.000	519 > 474		5.00	4.92	98.4
13C7-PFUnA		1.048	570 > 525		5.00	4.92	98.3
13C2-PFDoA		1.082	615 > 570		5.00	4.64	92.8
13C2-PFTeDA		1.162	715 > 670		5.00	4.69	93.9
13C3-PFBS		0.803	302 > 80	2.62	10.0	10.3	103
13C3-PFHxS		1.000	402 > 80	2.23	10.0	10.1	101
13C8-PFOS		1.000	507 > 80	2.13	10.1	11.0	109
13C2-4:2 FTS		0.840	329 > 81	1.76	20.2	18.5	91.6
13C2-6:2 FTS		1.002	429 > 81	2.01	20.0	19.8	99.2
13C2-8:2 FTS		1.266	529 > 81	3.21	20.0	17.1	85.5
13C8-PFOA		1.137	506 > 78		10.0	10.7	107
D3-N-MeFOSA		1.331	515 > 219		10.0	10.0	100
D5-N-EtFOSA		1.368	531 > 219		10.0	10.8	108
D3-MeFOSAA		1.312	573 > 419		20.0	14.9	74.7
D5-EtFOSAA		1.338	589 > 419		20.0	15.7	78.7
d7-NMe-FOSE		1.313	623 > 59		100	121	121
d9-NEt-FOSE		1.353	639 > 59		100	130	130

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

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: 01-Mar-2023

VER Data Filename: FC3L_339 S: 43

Instrument ID: LCMS/MS

Analysis Date: 10-Aug-2023

LC Column ID: C18

Analysis Time: 16:15:32

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.003	213 > 169		20.0	20.4	102
PFPeA		1.000	263 > 219		10.0	9.36	93.6
PFHxA		1.000	313 > 269	5.08	5.00	4.95	99.0
PFHpA		1.000	363 > 319	2.14	5.00	5.25	105
PFOA		1.001	413 > 369	2.04	5.00	5.30	106
PFNA		1.000	463 > 419	2.65	5.00	5.07	101
PFDA		1.000	513 > 469	2.77	5.00	4.72	94.5
PFUnA		1.000	563 > 519	4.41	5.00	4.95	99.0
PFDoA		0.999	613 > 569	7.44	4.06	4.14	102
PFTTrDA		0.955	663 > 619	3.06	5.00	5.12	102
PFTeDA		1.000	713 > 669	2.65	5.00	5.13	103
PFBS		1.000	299 > 80	2.59	5.00	4.47	89.4
PFPeS		0.859	349 > 80	2.25	5.00	5.30	106
PFHxS		1.001	399 > 80	2.49	5.00	4.83	96.7
PFHpS		0.931	449 > 80	2.10	5.00	5.27	105
PFOS		1.000	499 > 80	2.55	5.00	4.61	92.2
PFNS		1.039	549 > 80	2.27	5.00	4.78	95.6
PFDS		1.080	599 > 80	2.45	5.00	5.66	113
PFDoS		1.186	699 > 80	2.18	5.00	5.02	100
4:2 FTS		1.000	327 > 307	0.43	20.0	20.3	101
6:2 FTS		0.999	427 > 407	0.39	18.0	18.6	104
8:2 FTS		1.000	527 > 507	0.54	17.0	16.6	97.9
PFOSA		1.000	498 > 78		5.00	5.33	107
N-MeFOSA		1.000	512 > 219	0.51	5.00	5.25	105
N-EtFOSA		1.001	526 > 219	0.53	14.0	14.7	105
MeFOSAA		1.000	570 > 419	2.02	5.00	4.91	98.2
EtFOSAA		1.000	584 > 419	1.16	5.00	5.02	100
N-MeFOSE		1.002	616 > 59		50.0	51.1	102
N-EtFOSE		1.002	630 > 59		50.0	50.9	102
3:3 FTCA		0.898	241 > 177	1.57	20.0	17.8	88.8
5:3 FTCA		1.056	341 > 237	1.44	125	132	106
7:3 FTCA		1.410	441 > 317	0.66	125	107	85.7

(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: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

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: 01-Mar-2023

VER Data Filename: FC3L_339 S: 43

Instrument ID: LCMS/MS

Analysis Date: 10-Aug-2023

LC Column ID: C18

Analysis Time: 16:15:32

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	39.0	97.6
13C5-PFPeA		0.877	268 > 223		20.0	20.9	104
13C5-PFHxA		1.000	318 > 273	13.4	10.0	9.70	97.0
13C4-PFHpA		0.870	367 > 322		10.0	9.71	97.1
13C8-PFOA		0.999	421 > 376		10.0	9.41	94.1
13C9-PFNA		1.000	472 > 427		5.00	5.23	105
13C6-PFDA		1.000	519 > 474		5.00	4.92	98.3
13C7-PFUnA		1.039	570 > 525		5.00	5.17	103
13C2-PFDoA		1.078	615 > 570		5.00	5.27	105
13C2-PFTeDA		1.177	715 > 670		5.00	4.57	91.5
13C3-PFBS		0.762	302 > 80	2.67	10.0	10.0	99.9
13C3-PFHxS		0.999	402 > 80	2.45	10.0	10.5	105
13C8-PFOS		1.000	507 > 80	2.11	10.1	10.5	104
13C2-4:2 FTS		0.807	329 > 81	1.75	20.2	22.2	110
13C2-6:2 FTS		1.002	429 > 81	2.16	20.0	20.3	101
13C2-8:2 FTS		1.294	529 > 81	3.51	20.0	17.8	88.7
13C8-PFOSA		1.144	506 > 78		10.0	11.7	117
D3-N-MeFOSA		1.331	515 > 219		10.0	9.49	94.9
D5-N-EtFOSA		1.367	531 > 219		10.0	10.0	100
D3-MeFOSAA		1.333	573 > 419		20.0	24.5	123
D5-EtFOSAA		1.355	589 > 419		20.0	23.1	116
d7-NMe-FOSE		1.313	623 > 59		100	134	134
d9-NEt-FOSE		1.352	639 > 59		100	135	135

(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: _____ Bryan Alonzo _____

