

SGS

AXYS

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SGS AXYS Client No.: 4972

Client Address: AECOM
1111 Third Avenue, Suite 1600
Seattle, WA, US, 98101

The SGS AXYS contact for these data is Sean Campbell.

BATCH SUMMARY

Batch ID:	WG66477	Date:	15-Feb-2019
Analysis Type:	Dioxin/Furan	Matrix Type:	XAD
BATCH MAKEUP			
Contract:	4972	Blank:	WG66477-101
Samples:			
L30522-1	PDI-WS-T05-1811		
L30522-2	PDI-WS-T01-1811		
L30522-3	PDI-WS-T03-1811		
L30522-4	PDI-WS-T07-1811		
L30522-5	PDI-WS-T02-1811		
L30522-6	PDI-WS-T04-1812		
L30522-7	PDI-WS-T06-1811		
L30522-8	PDI-RB-XD-181129		
		Reference or Spike:	WG66477-102
		Duplicate:	
Comments: 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. 1,2,3,4,6,7,8-HpCDD was detected in Lab Blank WG66477-101 at a concentration above the method control limit. As noted above, sample analyte concentrations are not blank corrected and blank levels should be considered during sample data review. 5. The recovery of ¹³C-1,2,3,6,7,8-HxCDD in samples PDI-WS-T05-1811, PDI-WS-T03-1811, PDI-WS-T07-1811, PDI-WS-T04-1812 and the Laboratory blank (SGS AXYS IDs: L30522-1, -3, -4, -6 and WG66477-101, respectively) did not meet the method criteria; this compound is flagged with a 'V'. As the isotope dilution/internal standard method of quantification produces data that are recovery corrected, the slight variances from the method acceptance criteria are deemed not to affect the quantification of these analytes. Percent surrogate recoveries are used as general method performance indicator only.			

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February 2017

FQA-006 Rev. 4. 20-Sep-2013

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORT

CLIENT SAMPLE NO.
PDI-WS-T05-1811
Sample Collection:
27-Nov-2018 15:44

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-1 i
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	06-Feb-2019 Time: 13:40:49	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 46
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 42

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.848 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.848 (Q)		
1,2,3,4,7,8-HXCDD	U		0.848 (Q)		
1,2,3,6,7,8-HXCDD	U		0.848 (Q)		
1,2,3,7,8,9-HXCDD	U		0.848 (Q)		
1,2,3,4,6,7,8-HPCDD	J	6.38	0.936 (S)	1.10	1.000
OCDD		89.5	2.37 (S)	0.94	1.000
2,3,7,8-TCDF	J	1.04	0.848 (Q)	0.85	1.003
1,2,3,7,8-PECDF	U		0.848 (Q)		
2,3,4,7,8-PECDF	U		0.848 (Q)		
1,2,3,4,7,8-HXCDF	U		0.848 (Q)		
1,2,3,6,7,8-HXCDF	U		0.848 (Q)		
1,2,3,7,8,9-HXCDF	U		0.848 (Q)		
2,3,4,6,7,8-HXCDF	U		0.848 (Q)		
1,2,3,4,6,7,8-HPCDF	K J	0.856	0.848 (Q)	2.15	1.000
1,2,3,4,7,8,9-HPCDF	U		0.848 (Q)		
OCDF	U		0.848 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-1_Form1A_DX9M_014AS46_SJ2509592.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T05-1811
Sample Collection:
27-Nov-2018 15:44

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-1 i
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	06-Feb-2019 Time: 13:40:49	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 46
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 42

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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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3560	89.1	0.78	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3460	86.4	0.61	1.385
13C-1,2,3,4,7,8-HXCDD		4000	3980	99.6	1.28	0.988
13C-1,2,3,6,7,8-HXCDD	V	4000	6240	156	1.26	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	3280	82.0	1.04	1.095
13C-OCDD		8000	4880	61.1	0.88	1.179
13C-2,3,7,8-TCDF		4000	3480	87.1	0.77	0.966
13C-1,2,3,7,8-PECDF		4000	3460	86.5	1.56	1.284
13C-2,3,4,7,8-PECDF		4000	3270	81.7	1.61	1.353
13C-1,2,3,4,7,8-HXCDF		4000	3490	87.2	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3860	96.5	0.53	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3500	87.5	0.51	1.005
13C-2,3,4,6,7,8-HXCDF		4000	3560	89.1	0.51	0.983
13C-1,2,3,4,6,7,8-HPCDF		4000	3290	82.2	0.45	1.063
13C-1,2,3,4,7,8,9-HPCDF		4000	2950	73.6	0.44	1.105

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	188	93.8		1.001
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(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-1_Form2_DX9M_014AS46_SJ2509592.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T05-1811
Sample Collection:
27-Nov-2018 15:44

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 11:17:24

Extract Volume (uL): 20

Injection Volume (uL): 2.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER
L30522-1

1 sample

15-Jan-2019

HR GC/MS

DB225

DB93_026 S: 6

DX9M_014A S: 6

DB93_026 S: 2

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COMPOUND	LAB FLAG ¹	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDF	U		0.848 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axs Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:47:59; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB225_L30522-1_Form1A_DB93_026S6_SJ2509631.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T05-1811

Sample Collection:

27-Nov-2018 15:44

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 00:51:41

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-1

1 sample

04-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 7

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		528	2.34 (S)	106	0.74	0.987

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-1_Form1B_SJ2508898.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T01-1811
Sample Collection:
28-Nov-2018 14:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-2
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 01:46:43	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 8
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 2

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This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.851 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.851 (Q)		
1,2,3,4,7,8-HXCDD	U		0.851 (Q)		
1,2,3,6,7,8-HXCDD	U		0.851 (Q)		
1,2,3,7,8,9-HXCDD	U		0.851 (Q)		
1,2,3,4,6,7,8-HPCDD	J	4.87	0.851 (Q)	0.90	1.000
OCDD		54.1	0.851 (Q)	0.93	1.000
2,3,7,8-TCDF	U		0.851 (Q)		
1,2,3,7,8-PECDF	U		0.851 (Q)		
2,3,4,7,8-PECDF	U		0.851 (Q)		
1,2,3,4,7,8-HXCDF	U		0.851 (Q)		
1,2,3,6,7,8-HXCDF	U		0.851 (Q)		
1,2,3,7,8,9-HXCDF	U		0.851 (Q)		
2,3,4,6,7,8-HXCDF	U		0.851 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.851 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.851 (Q)		
OCDF	J	1.48	0.851 (Q)	0.88	1.002

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than lowest calibration equivalent.
(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.
(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.
(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-2_Form1A_DX9M_014AS8_SJ2508851.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T01-1811
Sample Collection:
28-Nov-2018 14:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-2
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 01:46:43	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 8
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 2

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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3280	82.0	0.79	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3200	79.9	0.65	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3480	86.9	1.26	0.987
13C-1,2,3,6,7,8-HXCDD		4000	4500	112	1.28	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	3080	77.0	1.06	1.095
13C-OCDD		8000	4510	56.4	0.90	1.179
13C-2,3,7,8-TCDF		4000	3130	78.3	0.78	0.966
13C-1,2,3,7,8-PECDF		4000	3180	79.5	1.52	1.283
13C-2,3,4,7,8-PECDF		4000	3020	75.6	1.55	1.351
13C-1,2,3,4,7,8-HXCDF		4000	3570	89.2	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	4310	108	0.52	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3370	84.3	0.52	1.004
13C-2,3,4,6,7,8-HXCDF		4000	3730	93.2	0.52	0.980
13C-1,2,3,4,6,7,8-HPCDF		4000	3240	81.0	0.45	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2830	70.7	0.47	1.104

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	169	84.4		1.001
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(1) Where applicable, custom lab flags have been used on this report.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-2_Form2_DX9M_014AS8_SJ2508851.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T01-1811

Sample Collection:

28-Nov-2018 14:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 01:46:43

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-2

1 sample

04-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 8

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		455	1.08 (S)	91.0	0.78	0.987

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-2_Form1B_SJ2508899.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T03-1811
Sample Collection:
27-Nov-2018 16:22

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-3
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 02:41:51	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 9
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 2

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.849 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.849 (Q)		
1,2,3,4,7,8-HXCDD	U		0.849 (Q)		
1,2,3,6,7,8-HXCDD	U		0.849 (Q)		
1,2,3,7,8,9-HXCDD	U		0.849 (Q)		
1,2,3,4,6,7,8-HPCDD	J	8.21	0.849 (Q)	0.92	1.000
OCDD		79.3	7.05 (S)	0.89	1.000
2,3,7,8-TCDF	U		0.849 (Q)		
1,2,3,7,8-PECDF	U		0.849 (Q)		
2,3,4,7,8-PECDF	U		0.849 (Q)		
1,2,3,4,7,8-HXCDF	U		0.849 (Q)		
1,2,3,6,7,8-HXCDF	U		0.849 (Q)		
1,2,3,7,8,9-HXCDF	U		0.849 (Q)		
2,3,4,6,7,8-HXCDF	U		0.849 (Q)		
1,2,3,4,6,7,8-HPCDF	J	1.36	0.849 (Q)	0.96	1.000
1,2,3,4,7,8,9-HPCDF	U		0.849 (Q)		
OCDF	K J	2.26	1.56 (S)	1.30	1.002

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-3_Form1A_DX9M_014AS9_SJ2508852.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T03-1811
Sample Collection:
27-Nov-2018 16:22

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-3
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 02:41:51	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 9
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 2

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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3100	77.6	0.77	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3090	77.2	0.64	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3510	87.7	1.27	0.987
13C-1,2,3,6,7,8-HXCDD	V	4000	5310	133	1.23	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	2670	66.7	1.02	1.095
13C-OCDD		8000	3980	49.8	0.92	1.179
13C-2,3,7,8-TCDF		4000	3080	77.0	0.77	0.966
13C-1,2,3,7,8-PECDF		4000	2990	74.6	1.56	1.283
13C-2,3,4,7,8-PECDF		4000	2930	73.3	1.57	1.351
13C-1,2,3,4,7,8-HXCDF		4000	3080	77.0	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3550	88.6	0.51	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3090	77.2	0.53	1.004
13C-2,3,4,6,7,8-HXCDF		4000	3150	78.8	0.52	0.982
13C-1,2,3,4,6,7,8-HPCDF		4000	2720	67.9	0.43	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2360	59.0	0.44	1.104

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	154	77.0		1.001
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(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-3_Form2_DX9M_014AS9_SJ2508852.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T03-1811

Sample Collection:

27-Nov-2018 16:22

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 02:41:51

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-3

1 sample

04-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 9

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		441	0.654 (S)	88.1	0.76	0.988

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-3_Form1B_SJ2508900.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T07-1811
Sample Collection:
28-Nov-2018 13:18

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-4
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 03:36:53	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 10
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 2

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This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.851 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.851 (Q)		
1,2,3,4,7,8-HXCDD	U		0.851 (Q)		
1,2,3,6,7,8-HXCDD	U		0.851 (Q)		
1,2,3,7,8,9-HXCDD	U		0.851 (Q)		
1,2,3,4,6,7,8-HPCDD	K J	3.18	1.00 (S)	0.58	1.000
OCDD		46.6	0.851 (Q)	0.84	1.000
2,3,7,8-TCDF	U		0.851 (Q)		
1,2,3,7,8-PECDF	U		0.851 (Q)		
2,3,4,7,8-PECDF	U		0.851 (Q)		
1,2,3,4,7,8-HXCDF	U		0.851 (Q)		
1,2,3,6,7,8-HXCDF	U		0.851 (Q)		
1,2,3,7,8,9-HXCDF	U		0.851 (Q)		
2,3,4,6,7,8-HXCDF	U		0.851 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.851 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.851 (Q)		
OCDF	U		0.851 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-4_Form1A_DX9M_014AS10_SJ2508844.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T07-1811
Sample Collection:
28-Nov-2018 13:18

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 03:36:53

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg absolute

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER
L30522-4

1 sample

03-Dec-2018

HR GC/MS

DB5

DX9M_014A S: 10

DX9M_014A S: 6

DX9M_014A S: 2

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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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3240	81.0	0.74	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3230	80.8	0.63	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3500	87.5	1.27	0.987
13C-1,2,3,6,7,8-HXCDD	V	4000	5520	138	1.26	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	2870	71.7	1.01	1.095
13C-OCDD		8000	4240	53.0	0.92	1.179
13C-2,3,7,8-TCDF		4000	3160	79.0	0.76	0.966
13C-1,2,3,7,8-PECDF		4000	3180	79.5	1.61	1.283
13C-2,3,4,7,8-PECDF		4000	3040	76.0	1.55	1.351
13C-1,2,3,4,7,8-HXCDF		4000	3380	84.4	0.52	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3920	98.0	0.52	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3180	79.5	0.51	1.004
13C-2,3,4,6,7,8-HXCDF		4000	3440	86.1	0.51	0.981
13C-1,2,3,4,6,7,8-HPCDF		4000	2970	74.3	0.44	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2520	63.0	0.47	1.104

CLEANUP STANDARD

37CL-2,3,7,8-TCDD	200	163	81.6	1.001
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(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-4_Form2_DX9M_014AS10_SJ2508844.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T07-1811

Sample Collection:

28-Nov-2018 13:18

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 03:36:53

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-4

1 sample

04-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 10

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		511	1.03 (S)	102	0.78	0.987

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-4_Form1B_SJ2508892.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T02-1811
Sample Collection:
30-Nov-2018 15:06

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-5
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 04:31:59	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 11
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 2

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.853 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.853 (Q)		
1,2,3,4,7,8-HXCDD	U		0.853 (Q)		
1,2,3,6,7,8-HXCDD	U		0.853 (Q)		
1,2,3,7,8,9-HXCDD	U		0.853 (Q)		
1,2,3,4,6,7,8-HPCDD	K J	2.51	0.926 (S)	1.84	1.000
OCDD	K	36.2	1.52 (S)	1.07	1.000
2,3,7,8-TCDF	U		0.853 (Q)		
1,2,3,7,8-PECDF	U		0.853 (Q)		
2,3,4,7,8-PECDF	U		0.853 (Q)		
1,2,3,4,7,8-HXCDF	U		0.853 (Q)		
1,2,3,6,7,8-HXCDF	U		0.853 (Q)		
1,2,3,7,8,9-HXCDF	U		0.853 (Q)		
2,3,4,6,7,8-HXCDF	U		0.853 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.853 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.853 (Q)		
OCDF	K J	1.47	0.853 (Q)	0.75	1.002

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-5_Form1A_DX9M_014AS11_SJ2508845.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T02-1811
Sample Collection:
30-Nov-2018 15:06

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-5
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 04:31:59	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 11
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 2

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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3040	75.9	0.78	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3050	76.3	0.63	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3450	86.3	1.25	0.987
13C-1,2,3,6,7,8-HXCDD		4000	4450	111	1.21	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	3080	77.0	1.04	1.095
13C-OCDD		8000	4610	57.6	0.88	1.179
13C-2,3,7,8-TCDF		4000	3010	75.2	0.76	0.966
13C-1,2,3,7,8-PECDF		4000	3110	77.8	1.62	1.283
13C-2,3,4,7,8-PECDF		4000	2890	72.3	1.56	1.351
13C-1,2,3,4,7,8-HXCDF		4000	3390	84.8	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3950	98.7	0.48	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3230	80.8	0.53	1.005
13C-2,3,4,6,7,8-HXCDF		4000	3610	90.3	0.50	0.980
13C-1,2,3,4,6,7,8-HPCDF		4000	3020	75.6	0.45	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2730	68.1	0.46	1.105

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	161	80.6		1.001
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(1) Where applicable, custom lab flags have been used on this report.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-5_Form2_DX9M_014AS11_SJ2508845.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T02-1811

Sample Collection:

30-Nov-2018 15:06

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 04:31:59

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-5

1 sample

04-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 11

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		476	2.49 (S)	95.3	0.77	0.988

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-5_Form1B_SJ2508893.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORT

CLIENT SAMPLE NO.
PDI-WS-T04-1812
Sample Collection:
01-Dec-2018 13:10

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-6
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 10:09:11	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 17
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 12

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.847 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.847 (Q)		
1,2,3,4,7,8-HXCDD	U		0.847 (Q)		
1,2,3,6,7,8-HXCDD	U		0.847 (Q)		
1,2,3,7,8,9-HXCDD	U		0.847 (Q)		
1,2,3,4,6,7,8-HPCDD	J	2.46	1.11 (S)	1.12	1.000
OCDD	J	28.7	0.847 (Q)	0.90	1.000
2,3,7,8-TCDF	U		0.847 (Q)		
1,2,3,7,8-PECDF	U		0.847 (Q)		
2,3,4,7,8-PECDF	U		0.847 (Q)		
1,2,3,4,7,8-HXCDF	U		0.847 (Q)		
1,2,3,6,7,8-HXCDF	U		0.847 (Q)		
1,2,3,7,8,9-HXCDF	U		0.847 (Q)		
2,3,4,6,7,8-HXCDF	U		0.847 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.847 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.847 (Q)		
OCDF	K J	1.77	0.847 (Q)	0.73	1.002

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-6_Form1A_DX9M_014AS17_SJ2508864.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T04-1812
Sample Collection:
01-Dec-2018 13:10

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-6
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 10:09:11	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 17
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 12

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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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3150	78.8	0.79	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	3060	76.6	0.61	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3640	91.1	1.26	0.988
13C-1,2,3,6,7,8-HXCDD	V	4000	5460	136	1.25	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	2810	70.3	1.04	1.095
13C-OCDD		8000	4010	50.2	0.92	1.179
13C-2,3,7,8-TCDF		4000	3130	78.3	0.77	0.966
13C-1,2,3,7,8-PECDF		4000	3010	75.4	1.53	1.283
13C-2,3,4,7,8-PECDF		4000	2920	72.9	1.54	1.352
13C-1,2,3,4,7,8-HXCDF		4000	3080	77.0	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3580	89.5	0.49	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3020	75.6	0.53	1.004
13C-2,3,4,6,7,8-HXCDF		4000	3240	81.0	0.52	0.983
13C-1,2,3,4,6,7,8-HPCDF		4000	2840	70.9	0.45	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2430	60.8	0.45	1.104

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	166	83.0		1.001
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(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-6_Form2_DX9M_014AS17_SJ2508864.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T04-1812

Sample Collection:

01-Dec-2018 13:10

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 10:09:11

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-6

1 sample

05-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 17

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		507	1.28 (S)	101	0.77	0.988

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-6_Form1B_SJ2508905.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T06-1811
Sample Collection:
30-Nov-2018 16:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-7
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 11:04:13	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 18
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 12

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.850 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.850 (Q)		
1,2,3,4,7,8-HXCDD	U		0.850 (Q)		
1,2,3,6,7,8-HXCDD	U		0.850 (Q)		
1,2,3,7,8,9-HXCDD	U		0.850 (Q)		
1,2,3,4,6,7,8-HPCDD	J	2.37	1.07 (S)	1.18	1.001
OCDD	J	30.3	2.70 (S)	0.94	1.000
2,3,7,8-TCDF	U		0.850 (Q)		
1,2,3,7,8-PECDF	U		0.850 (Q)		
2,3,4,7,8-PECDF	U		0.850 (Q)		
1,2,3,4,7,8-HXCDF	U		0.850 (Q)		
1,2,3,6,7,8-HXCDF	U		0.850 (Q)		
1,2,3,7,8,9-HXCDF	U		0.850 (Q)		
2,3,4,6,7,8-HXCDF	U		0.850 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.850 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.850 (Q)		
OCDF	K J	1.40	0.850 (Q)	1.21	1.002

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-7_Form1A_DX9M_014AS18_SJ2508865.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-WS-T06-1811
Sample Collection:
30-Nov-2018 16:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-7
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 11:04:13	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 18
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 12

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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	2840	70.9	0.75	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	2890	72.3	0.63	1.384
13C-1,2,3,4,7,8-HXCDD		4000	3090	77.2	1.25	0.987
13C-1,2,3,6,7,8-HXCDD		4000	4690	117	1.26	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	2940	73.6	1.05	1.095
13C-OCDD		8000	3970	49.6	0.92	1.179
13C-2,3,7,8-TCDF		4000	2630	65.7	0.77	0.967
13C-1,2,3,7,8-PECDF		4000	2820	70.5	1.56	1.284
13C-2,3,4,7,8-PECDF		4000	2670	66.6	1.56	1.352
13C-1,2,3,4,7,8-HXCDF		4000	3030	75.7	0.51	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3580	89.6	0.50	0.958
13C-1,2,3,7,8,9-HXCDF		4000	2890	72.4	0.50	1.005
13C-2,3,4,6,7,8-HXCDF		4000	3190	79.7	0.51	0.981
13C-1,2,3,4,6,7,8-HPCDF		4000	2740	68.6	0.47	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2490	62.2	0.50	1.105

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	153	76.4		1.001
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(1) Where applicable, custom lab flags have been used on this report.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-7_Form2_DX9M_014AS18_SJ2508865.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-WS-T06-1811

Sample Collection:

30-Nov-2018 16:26

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 11:04:13

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-7

1 sample

05-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 18

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		514	2.27 (S)	103	0.82	0.987

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-7_Form1B_SJ2508906.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-RB-XD-181129
Sample Collection:
29-Nov-2018 09:50

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-8
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 11:59:21	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 19
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg/sample	Cal. Ver. Data Filename:	DX9M_014A S: 12

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.848 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.848 (Q)		
1,2,3,4,7,8-HXCDD	U		0.848 (Q)		
1,2,3,6,7,8-HXCDD	U		0.848 (Q)		
1,2,3,7,8,9-HXCDD	U		0.848 (Q)		
1,2,3,4,6,7,8-HPCDD	U		0.848 (Q)		
OCDD	K J	2.56	0.848 (Q)	0.26	1.001
2,3,7,8-TCDF	U		0.848 (Q)		
1,2,3,7,8-PECDF	U		0.848 (Q)		
2,3,4,7,8-PECDF	U		0.848 (Q)		
1,2,3,4,7,8-HXCDF	U		0.848 (Q)		
1,2,3,6,7,8-HXCDF	U		0.848 (Q)		
1,2,3,7,8,9-HXCDF	U		0.848 (Q)		
2,3,4,6,7,8-HXCDF	U		0.848 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.848 (Q)		
1,2,3,4,7,8,9-HPCDF	U		0.848 (Q)		
OCDF	U		0.848 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-8_Form1A_DX9M_014AS19_SJ2508866.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF ANALYSIS REPORTCLIENT SAMPLE NO.
PDI-RB-XD-181129
Sample Collection:
29-Nov-2018 09:50

SGS AXYS ANALYTICAL SERVICES

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

Contract No.:	4972	Project No.	PORTLAND HARBOR PDI AND BASELINE WATER
Matrix:	XAD	Lab Sample I.D.:	L30522-8
Sample Receipt Date:	04-Dec-2018	Sample Size:	1 sample
Extraction Date:	28-Jan-2019	Initial Calibration Date:	03-Dec-2018
Analysis Date:	05-Feb-2019 Time: 11:59:21	Instrument ID:	HR GC/MS
Extract Volume (uL):	20	GC Column ID:	DB5
Injection Volume (uL):	1.0	Sample Data Filename:	DX9M_014A S: 19
Dilution Factor:	N/A	Blank Data Filename:	DX9M_014A S: 6
Concentration Units:	pg absolute	Cal. Ver. Data Filename:	DX9M_014A S: 12

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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3040	75.9	0.77	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	2980	74.5	0.61	1.384
13C-1,2,3,4,7,8-HXCDD		4000	4520	113	1.25	0.989
13C-1,2,3,6,7,8-HXCDD		4000	4490	112	1.26	0.991
13C-1,2,3,4,6,7,8-HPCDD		4000	2560	64.0	1.14	1.095
13C-OCDD		8000	3990	49.9	0.88	1.179
13C-2,3,7,8-TCDF		4000	2910	72.7	0.77	0.966
13C-1,2,3,7,8-PECDF		4000	2880	72.0	1.59	1.284
13C-2,3,4,7,8-PECDF		4000	2790	69.8	1.56	1.352
13C-1,2,3,4,7,8-HXCDF		4000	2760	69.0	0.52	0.956
13C-1,2,3,6,7,8-HXCDF		4000	3010	75.2	0.51	0.960
13C-1,2,3,7,8,9-HXCDF		4000	2930	73.1	0.52	1.005
13C-2,3,4,6,7,8-HXCDF		4000	2890	72.2	0.48	0.986
13C-1,2,3,4,6,7,8-HPCDF		4000	2540	63.4	0.45	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2380	59.5	0.47	1.105

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	150	75.2		1.001
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(1) Where applicable, custom lab flags have been used on this report.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_L30522-8_Form2_DX9M_014AS19_SJ2508866.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD ANALYSIS REPORT

CLIENT SAMPLE NO.

PDI-RB-XD-181129

Sample Collection:

29-Nov-2018 09:50

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4972

Matrix: XAD

Sample Receipt Date: 04-Dec-2018

Extraction Date: 28-Jan-2019

Analysis Date: 05-Feb-2019 Time: 11:59:21

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

Lab Sample I.D.:

Sample Size:

Initial Calibration Date:

Instrument ID:

GC Column ID:

Sample Data Filename:

Blank Data Filename:

Cal. Ver. Data Filename:

PORTLAND HARBOR PDI AND
BASELINE WATER

L30522-8

1 sample

05-Feb-2019

HR GC/MS

DB5

DX9M_014A S: 19

DX9M_014A S: 6

N/A

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		507	0.726 (S)	101	0.78	0.988

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_L30522-8_Form1B_SJ2508907.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1A
PCDD/PCDF 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.: 4972

Matrix: XAD

Sample Receipt Date: N/A

Extraction Date: 28-Jan-2019

Analysis Date: 04-Feb-2019 Time: 23:56:38

Extract Volume (uL): 20

Injection Volume (uL): 1.0

Dilution Factor: N/A

Concentration Units: pg/sample

Project No.

N/A

Lab Sample I.D.:

WG66477-101

Sample Size:

1 sample

Initial Calibration Date:

03-Dec-2018

Instrument ID:

HR GC/MS

GC Column ID:

DB5

Sample Data Filename:

DX9M_014A S: 6

Blank Data Filename:

DX9M_014A S: 6

Cal. Ver. Data Filename:

DX9M_014A S: 2

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	CONCENTRATION FOUND	REPORTING LIMIT (RL) ²	ION ABUND. RATIO ³	RRT ³
2,3,7,8-TCDD	U		0.847 (Q)		
1,2,3,7,8-PECDD ⁴	U		0.847 (Q)		
1,2,3,4,7,8-HXCDD	K J	1.17	0.847 (Q)	2.40	1.000
1,2,3,6,7,8-HXCDD	U		0.847 (Q)		
1,2,3,7,8,9-HXCDD	U		0.847 (Q)		
1,2,3,4,6,7,8-HPCDD	K J	1.81	1.09 (S)	1.73	1.001
OCDD	K J	7.58	0.847 (Q)	0.74	1.000
2,3,7,8-TCDF	U		0.847 (Q)		
1,2,3,7,8-PECDF	U		0.847 (Q)		
2,3,4,7,8-PECDF	U		0.847 (Q)		
1,2,3,4,7,8-HXCDF	U		0.847 (Q)		
1,2,3,6,7,8-HXCDF	U		0.847 (Q)		
1,2,3,7,8,9-HXCDF	U		0.847 (Q)		
2,3,4,6,7,8-HXCDF	U		0.847 (Q)		
1,2,3,4,6,7,8-HPCDF	U		0.847 (Q)		
1,2,3,4,7,8,9-HPCDF	K J	0.964	0.847 (Q)	0.47	1.001
OCDF	K J	5.08	0.847 (Q)	1.16	1.002

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; K = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than lowest calibration equivalent.

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form1A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_WG66477-101_Form1A_DX9M_014AS6_SJ2508849.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 2
PCDD/PCDF 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.: 4972

Project No.

N/A

Lab Sample I.D.:

WG66477-101

Matrix: XAD

Sample Size:

1 sample

Sample Receipt Date: N/A

Initial Calibration Date:

03-Dec-2018

Extraction Date: 28-Jan-2019

Instrument ID:

HR GC/MS

Analysis Date: 04-Feb-2019 Time: 23:56:38

GC Column ID:

DB5

Extract Volume (uL): 20

Sample Data Filename:

DX9M_014A S: 6

Injection Volume (uL): 1.0

Blank Data Filename:

DX9M_014A S: 6

Dilution Factor: N/A

Cal. Ver. Data Filename:

DX9M_014A S: 2

Concentration Units: pg 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	ION ABUND. RATIO ³	RRT ³
13C-2,3,7,8-TCDD		4000	3140	78.4	0.79	1.013
13C-1,2,3,7,8-PECDD ⁴		4000	2970	74.1	0.60	1.383
13C-1,2,3,4,7,8-HXCDD		4000	3640	90.9	1.26	0.988
13C-1,2,3,6,7,8-HXCDD	V	4000	5760	144	1.23	0.990
13C-1,2,3,4,6,7,8-HPCDD		4000	2670	66.8	0.99	1.095
13C-OCDD		8000	3620	45.2	0.91	1.179
13C-2,3,7,8-TCDF		4000	3060	76.6	0.78	0.966
13C-1,2,3,7,8-PECDF		4000	3040	75.9	1.53	1.283
13C-2,3,4,7,8-PECDF		4000	2920	72.9	1.54	1.351
13C-1,2,3,4,7,8-HXCDF		4000	3150	78.8	0.52	0.954
13C-1,2,3,6,7,8-HXCDF		4000	3770	94.2	0.50	0.958
13C-1,2,3,7,8,9-HXCDF		4000	3130	78.3	0.54	1.004
13C-2,3,4,6,7,8-HXCDF		4000	3300	82.6	0.53	0.983
13C-1,2,3,4,6,7,8-HPCDF		4000	2720	68.1	0.45	1.062
13C-1,2,3,4,7,8,9-HPCDF		4000	2440	61.1	0.46	1.104

CLEANUP STANDARD

37CL-2,3,7,8-TCDD		200	157	78.4		1.001
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(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) Contract-required limits for percent recovery (R) are specified in Section 9.3.3, Method 1613.

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2,3,7,8-TCDD

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

For Axs Internal Use Only [XSL Template: Form2.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_WG66477-101_Form2_DX9M_014AS6_SJ2508849.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 1B

PCDD/PCDF CLIENT STANDARD 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.: 4972

Project No.

N/A

Lab Sample I.D.:

WG66477-101

Matrix: XAD

Sample Size:

1 sample

Sample Receipt Date: N/A

Initial Calibration Date:

04-Feb-2019

Extraction Date: 28-Jan-2019

Instrument ID:

HR GC/MS

Analysis Date: 04-Feb-2019 Time: 23:56:38

GC Column ID:

DB5

Extract Volume (uL): 20

Sample Data Filename:

DX9M_014A S: 6

Injection Volume (uL): 1.0

Blank Data Filename:

DX9M_014A S: 6

Dilution Factor: N/A

Cal. Ver. Data Filename:

N/A

Concentration Units: pg/sample

CLIENT STANDARD	SPIKE CONC.	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	R(%)	ION ABUND. RATIO ³	RRT ³
13C6-1,2,3,4-TCDD	500		499	1.50 (S)	99.9	0.81	0.987

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

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

(3) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form1B.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DXCS_WG66477-101_Form1B_SJ2508897.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 8A

PCDD/PCDF 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.: 4972

OPR Data Filename:

DX9M_014A S: 3

Matrix: XAD

Lab Sample I.D.:

WG66477-102

Extraction Date: 28-Jan-2019

Analysis Date:

04-Feb-2019 Time: 21:14:06

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 20 µL EXTRACT VOLUME.

COMPOUND	LAB FLAG ¹	ION ABUND. RATIO ²	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS ³ (ng/mL)	% RECOVERY
2,3,7,8-TCDD		0.78	20.0	20.8	13.4 - 31.6	104
1,2,3,7,8-PECDD ⁴		0.62	100	108	70.0 - 142	108
1,2,3,4,7,8-HXCDD		1.21	100	90.8	70.0 - 164	90.8
1,2,3,6,7,8-HXCDD		1.26	100	102	76.0 - 134	102
1,2,3,7,8,9-HXCDD		1.35	100	77.8	64.0 - 162	77.8
1,2,3,4,6,7,8-HPCDD		0.97	100	105	70.0 - 140	105
OCDD		0.85	200	197	156 - 288	98.5
2,3,7,8-TCDF		0.77	20.0	20.3	15.0 - 31.6	102
1,2,3,7,8-PECDF		1.56	100	102	80.0 - 134	102
2,3,4,7,8-PECDF		1.54	100	102	68.0 - 160	102
1,2,3,4,7,8-HXCDF		1.20	100	98.8	72.0 - 134	98.8
1,2,3,6,7,8-HXCDF		1.19	100	103	84.0 - 130	103
1,2,3,7,8,9-HXCDF		1.16	100	94.1	78.0 - 130	94.1
2,3,4,6,7,8-HXCDF		1.22	100	99.0	70.0 - 156	99.0
1,2,3,4,6,7,8-HPCDF		1.04	100	111	82.0 - 122	111
1,2,3,4,7,8,9-HPCDF		1.01	100	101	78.0 - 138	101
OCDF		0.90	200	209	126 - 340	104

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

(2) Contract-required Ion Abundance Ratios are specified in Table 9, Method 1613.

(3) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under OPR.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

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: Form8A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_1613DB5_WG66477-102_Form8A_SJ2508847.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 8B

PCDD/PCDF 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.: 4972

OPR Data Filename:

DX9M_014A S: 3

Matrix: XAD

Lab Sample I.D.:

WG66477-102

Extraction Date: 28-Jan-2019

Analysis Date:

04-Feb-2019 Time: 21:14:06

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 20 µL EXTRACT VOLUME.

LABELLED COMPOUND	LAB FLAG ¹	ION ABUND. RATIO ²	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS ³ (ng/mL)	% RECOVERY
13C-2,3,7,8-TCDD		0.80	200	149	40.0-350	74.5
13C-1,2,3,7,8-PECDD ⁴		0.60	200	149	42.0-454	74.5
13C-1,2,3,4,7,8-HXCDD		1.27	200	202	42.0-386	101
13C-1,2,3,6,7,8-HXCDD		1.26	200	270	50.0-326	135
13C-1,2,3,4,6,7,8-HPCDD		1.07	200	116	52.0-332	58.1
13C-OCDD		0.88	400	159	52.0-794	39.7
13C-2,3,7,8-TCDF		0.77	200	157	44.0-304	78.3
13C-1,2,3,7,8-PECDF		1.61	200	150	42.0-384	75.2
13C-2,3,4,7,8-PECDF		1.57	200	147	26.0-656	73.7
13C-1,2,3,4,7,8-HXCDF		0.52	200	153	38.0-404	76.5
13C-1,2,3,6,7,8-HXCDF		0.52	200	165	42.0-318	82.7
13C-1,2,3,7,8,9-HXCDF		0.50	200	147	34.0-410	73.4
13C-2,3,4,6,7,8-HXCDF		0.52	200	161	44.0-352	80.4
13C-1,2,3,4,6,7,8-HPCDF		0.44	200	120	42.0-316	60.1
13C-1,2,3,4,7,8,9-HPCDF		0.43	200	109	40.0-372	54.5

CLEANUP STANDARD

37CL-2,3,7,8-TCDD			10.0	7.89	3.10-19.1	78.9
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(1) Where applicable, custom lab flags have been used on this report.

(2) Contract-required Ion Abundance Ratios are specified in Table 9, Method 1613.

(3) Contract-required concentration limits for OPR as specified in Table 6, Method 1613. Labeled compound concentrations limits are based on required percent recovery (Section 15.5, Method 1613).

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Jason MacKenzie _____

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: Form8B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;

Report Filename: 1613_DIOXINS_1613DB5_WG66477-102_Form8B_SJ2508847.html; Workgroup: WG66477; Design ID: 3359]

PCDD/PCDF 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: 03-Dec-2018

Instrument ID: HR GC/MS

GC Column ID: DB5

CS0 Data Filename: DX8M_146A S: 4

CS1 Data Filename: DX8M_146A S: 6

CS2 Data Filename: DX8M_146A S: 5

CS3 Data Filename: DX8M_146A S: 10

CS4 Data Filename: DX8M_146A S: 9

CS5 Data Filename: DX8M_146A S: 8

CS6 Data Filename: DX8M_146A S: 7

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)						MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5		
2,3,7,8-TCDD		0.94	0.96	0.94	1.03	1.03	1.04	0.99	4.81
1,2,3,7,8-PECDD ³		0.94	0.94	0.90	0.98	1.00	1.00	0.96	4.01
1,2,3,4,7,8-HXCDD		0.87	0.94	0.90	0.98	0.98	1.00	0.95	5.56
1,2,3,6,7,8-HXCDD		0.83	0.85	0.85	0.91	0.93	0.94	0.88	5.40
1,2,3,7,8,9-HXCDD ⁴		0.78	0.86	0.84	0.91	0.92	0.92	0.87	6.44
1,2,3,4,6,7,8-HPCDD		0.81	0.90	0.88	0.97	0.98	0.99	0.95	6.84
OCDD		0.90	0.93	0.88	1.00	0.99	0.99	0.92	5.27
2,3,7,8-TCDF		0.86	0.88	0.84	0.91	0.93	0.92	0.89	4.02
1,2,3,7,8-PECDF		0.83	0.86	0.84	0.94	0.94	0.94	0.89	6.11
2,3,4,7,8-PECDF		0.80	0.87	0.86	0.93	0.96	0.96	0.90	7.12
1,2,3,4,7,8-HXCDF		0.96	1.08	1.06	1.17	1.17	1.17	1.10	7.75
1,2,3,6,7,8-HXCDF		0.99	1.06	1.02	1.12	1.14	1.12	1.08	5.79
1,2,3,7,8,9-HXCDF		0.97	1.02	0.93	1.02	1.04	1.07	1.01	4.86
2,3,4,6,7,8-HXCDF		1.04	1.10	1.09	1.19	1.20	1.20	1.14	5.99
1,2,3,4,6,7,8-HPCDF		1.12	1.19	1.18	1.26	1.30	1.29	1.23	5.55
1,2,3,4,7,8,9-HPCDF		1.16	1.25	1.17	1.28	1.33	1.30	1.30	5.18
OCDF ⁵		0.99	1.03	1.04	1.18	1.19	1.22	1.14	8.11

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

(2) For contract CV specifications, see Section 10.5.4, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(4) Response ratios are calculated relative to the labeled analogs of the other two HXCDDs (Section 17.1.2, Method 1613).

(5) Response ratios are calculated relative to the labeled analog of OCDD (Section 17.1.1, Method 1613).

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

Signed: _____David Nelson_____

SGS AXYS METHOD MLA-017 Rev 20

Form 3B
PCDD/PCDF 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: 03-Dec-2018

Instrument ID: HR GC/MS

GC Column ID: DB5

CS0 Data Filename: DX8M_146A S: 4

CS1 Data Filename: DX8M_146A S: 6

CS2 Data Filename: DX8M_146A S: 5

CS3 Data Filename: DX8M_146A S: 10

CS4 Data Filename: DX8M_146A S: 9

CS5 Data Filename: DX8M_146A S: 8

CS6 Data Filename: DX8M_146A S: 7

LABELED COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)						MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5		
13C-2,3,7,8-TCDD		1.01	0.98	0.99	0.96	0.99	1.03	0.99	2.27
13C-1,2,3,7,8-PECDD ³		0.66	0.66	0.67	0.65	0.69	0.75	0.67	5.39
13C-1,2,3,4,7,8-HXCDD		1.02	0.95	0.98	1.01	1.02	1.01	0.99	2.83
13C-1,2,3,6,7,8-HXCDD		1.14	1.04	1.06	1.07	1.09	1.08	1.08	2.85
13C-1,2,3,4,6,7,8-HPCDD		0.83	0.78	0.78	0.76	0.83	0.79	1.16	16.6
13C-OCDD		0.65	0.63	0.64	0.62	0.71	0.77	1.33	33.2
13C-2,3,7,8-TCDF		1.55	1.48	1.51	1.49	1.50	1.55	1.50	1.85
13C-1,2,3,7,8-PECDF		1.17	1.15	1.17	1.14	1.20	1.29	1.16	4.36
13C-2,3,4,7,8-PECDF		1.11	1.10	1.12	1.08	1.15	1.24	1.10	4.90
13C-1,2,3,4,7,8-HXCDF		1.34	1.24	1.26	1.29	1.26	1.27	1.26	2.74
13C-1,2,3,6,7,8-HXCDF		1.45	1.32	1.36	1.36	1.39	1.37	1.35	2.97
13C-1,2,3,7,8,9-HXCDF		1.11	1.06	1.09	1.06	1.11	1.11	1.11	2.23
13C-2,3,4,6,7,8-HXCDF		1.28	1.18	1.20	1.20	1.23	1.19	1.19	2.77
13C-1,2,3,4,6,7,8-HPCDF		1.01	0.96	0.98	0.96	1.00	1.00	1.41	15.4
13C-1,2,3,4,7,8,9-HPCDF		0.74	0.71	0.73	0.70	0.76	0.76	1.12	18.5
CLEANUP STANDARD									
37CL-2,3,7,8-TCDD		1.08	0.98	0.99	1.02	1.07	1.13	1.04	5.57

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

(2) For contract CV specifications, see Section 10.5.4, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ David Nelson _____

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Report Filename: 1613_DIOXINS_03-Dec-2018_DX8M__Form3B_GS80099.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 3C

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE 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: 03-Dec-2018

Instrument ID: HR GC/MS

GC Column ID: DB5

CS0 Data Filename: DX8M_146A S: 4

CS1 Data Filename: DX8M_146A S: 6

CS2 Data Filename: DX8M_146A S: 5

CS3 Data Filename: DX8M_146A S: 10

CS4 Data Filename: DX8M_146A S: 9

CS5 Data Filename: DX8M_146A S: 8

CS6 Data Filename: DX8M_146A S: 7

COMPOUND	LAB FLAG ¹	M/Z's FORMING RATIO ²	ION ABUNDANCE RATIO						QC LIMITS ³	
			CS0	CS1	CS2	CS3	CS4	CS5		CS6
2,3,7,8-TCDD		M/M+2	0.69	0.80	0.78	0.78	0.78	0.78		0.65-0.89
1,2,3,7,8-PECDD ⁴		M/M+2	0.62	0.62	0.62	0.61	0.61	0.62		0.52-0.70
1,2,3,4,7,8-HXCDD		M+2/M+4	1.27	1.24	1.27	1.25	1.24	1.25		1.05-1.43
1,2,3,6,7,8-HXCDD		M+2/M+4	1.21	1.24	1.26	1.26	1.24	1.23		1.05-1.43
1,2,3,7,8,9-HXCDD		M+2/M+4	1.21	1.23	1.25	1.24	1.24	1.24		1.05-1.43
1,2,3,4,6,7,8-HPCDD		M+2/M+4	0.93	1.07	1.07	1.06	1.07	1.03	1.04	0.88-1.20
OCDD		M+2/M+4	0.90	0.87	0.89	0.88	0.87	0.88	0.93	0.76-1.02
2,3,7,8-TCDF		M/M+2	0.77	0.78	0.78	0.77	0.77	0.78		0.65-0.89
1,2,3,7,8-PECDF		M+2/M+4	1.52	1.56	1.61	1.56	1.57	1.55		1.32-1.78
2,3,4,7,8-PECDF		M+2/M+4	1.47	1.60	1.56	1.58	1.56	1.56		1.32-1.78
1,2,3,4,7,8-HXCDF		M+2/M+4	1.27	1.21	1.24	1.24	1.25	1.24		1.05-1.43
1,2,3,6,7,8-HXCDF		M+2/M+4	1.28	1.23	1.25	1.28	1.24	1.24		1.05-1.43
1,2,3,7,8,9-HXCDF		M+2/M+4	1.27	1.23	1.26	1.24	1.25	1.25		1.05-1.43
2,3,4,6,7,8-HXCDF		M+2/M+4	1.16	1.28	1.27	1.25	1.24	1.25		1.05-1.43
1,2,3,4,6,7,8-HPCDF		M+2/M+4	1.12	1.04	1.01	1.04	1.04	1.05	1.04	0.88-1.20
1,2,3,4,7,8,9-HPCDF		M+2/M+4	0.97	1.06	1.01	1.04	1.04	1.05	1.04	0.88-1.20
OCDF		M+2/M+4	0.88	0.96	0.89	0.91	0.90	0.90	0.94	0.76-1.02

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits from Table 9, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ David Nelson _____

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Form 3D
PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE 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: 03-Dec-2018

Instrument ID: HR GC/MS

GC Column ID: DB5

CS0 Data Filename: DX8M_146A S: 4

CS1 Data Filename: DX8M_146A S: 6

CS2 Data Filename: DX8M_146A S: 5

CS3 Data Filename: DX8M_146A S: 10

CS4 Data Filename: DX8M_146A S: 9

CS5 Data Filename: DX8M_146A S: 8

CS6 Data Filename: DX8M_146A S: 7

LABELED COMPOUND	LAB FLAG ¹	M/Z's FORMING RATIO ²	ION ABUNDANCE RATIO						QC LIMITS ³	
			CS0	CS1	CS2	CS3	CS4	CS5		CS6
13C-2,3,7,8-TCDD		M/M+2	0.77	0.78	0.78	0.78	0.77	0.78	0.78	0.65-0.89
13C-1,2,3,7,8-PECDD ⁴		M/M+2	0.62	0.62	0.63	0.62	0.63	0.63	0.62	0.52-0.70
13C-1,2,3,4,7,8-HXCDD		M+2/M+4	1.29	1.27	1.26	1.26	1.26	1.27	1.28	1.05-1.43
13C-1,2,3,6,7,8-HXCDD		M+2/M+4	1.26	1.25	1.27	1.25	1.26	1.26	1.27	1.05-1.43
13C-1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.05	1.06	1.04	1.04	1.05	1.04	1.05	0.88-1.20
13C-OCDD		M+2/M+4	0.91	0.88	0.90	0.88	0.89	0.89	0.89	0.76-1.02
13C-2,3,7,8-TCDF		M/M+2	0.78	0.77	0.78	0.77	0.77	0.77	0.78	0.65-0.89
13C-1,2,3,7,8-PECDF		M+2/M+4	1.59	1.57	1.59	1.56	1.58	1.58	1.59	1.32-1.78
13C-2,3,4,7,8-PECDF		M+2/M+4	1.56	1.59	1.55	1.58	1.58	1.57	1.57	1.32-1.78
13C-1,2,3,4,7,8-HXCDF		M/M+2	0.51	0.51	0.52	0.51	0.51	0.51	0.51	0.43-0.59
13C-1,2,3,6,7,8-HXCDF		M/M+2	0.52	0.51	0.51	0.51	0.52	0.52	0.51	0.43-0.59
13C-1,2,3,7,8,9-HXCDF		M/M+2	0.51	0.51	0.51	0.52	0.53	0.50	0.52	0.43-0.59
13C-2,3,4,6,7,8-HXCDF		M/M+2	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.43-0.59
13C-1,2,3,4,6,7,8-HPCDF		M/M+2	0.44	0.45	0.44	0.44	0.46	0.45	0.44	0.37-0.51
13C-1,2,3,4,7,8,9-HPCDF		M/M+2	0.46	0.45	0.45	0.44	0.44	0.44	0.45	0.37-0.51

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits from Table 9, Method 1613.

(4) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ **David Nelson** _____

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SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	03-Dec-2018
RT Window Data Filename:	DX8M_146A S: 10	Analysis Date:	03-Dec-2018
DB-5 IS Data Filename:	DX8M_146A S: 10	Analysis Date:	03-Dec-2018
DB-225 IS Data Filename:		Analysis Date:	
		Time:	20:12:12
		Time:	20:12:12
		Time:	

DB5 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	22:57	1,3,6,8-TCDF (F)	21:25
1,2,8,9-TCDD (L)	28:19	1,2,8,9-TCDF (L)	28:08
1,2,4,7,9-PECDD (F)	32:02	1,3,4,6,8-PECDF (F)	28:52
1,2,3,8,9-PECDD (L)	37:03	1,2,3,8,9-PECDF (L)	37:06
1,2,4,6,7,9-HXCDD (F)	40:02	1,2,3,4,6,8-HXCDF (F)	38:59
1,2,3,4,6,7-HXCDD (L)	42:41	1,2,3,4,8,9-HXCDF (L)	43:00
1,2,3,4,6,7,9-HPCDD (F)	45:47	1,2,3,4,6,7,8-HPCDF (F)	45:19
1,2,3,4,6,7,8-HPCDD (L)	46:42	1,2,3,4,7,8,9-HPCDF (L)	47:06

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	0	1,2,3,8-TCDD 2,3,7,8-TCDD	9.95
1,2,7,8-TCDD 1,4,7,8-TCDD	0	2,3,4,7-TCDF 2,3,7,8-TCDF	N/A
1,4,7,8-TCDD 1,2,3,7-TCDD	0	2,3,7,8-TCDF 1,2,3,9-TCDF	N/A
1,2,3,7-TCDD 1,2,3,8-TCDD	DB-5 column; co-elute as per Figure 6 in Method		

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

Signed: _____ Robert Tones _____

PCDD/PCDF 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: 15-Jan-2019

Instrument ID: HR GC/MS

GC Column ID: DB225

CS0 Data Filename: DB93_009D S: 7

CS1 Data Filename: DB93_009D S: 5

CS2 Data Filename: DB93_009D S: 3

CS3 Data Filename: DB93_009D S: 2

CS4 Data Filename: DB93_009D S: 9

CS5 Data Filename: DB93_009D S: 8

CS6 Data Filename: N/A

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)						MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5		
1,2,3,7,8,9-HxCDD		0.71	0.73	0.72	0.90	0.92	0.94	0.82	13.3
2,3,7,8-TCDF		0.67	0.70	0.77	0.81	0.83	0.86	0.77	9.62

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

(2) For contract CV specifications, see Section 10.5.4, Method 1613.

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

Signed: _____ David Nelson _____

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 Report Filename: 1613_DIOXINS_15-Jan-2019_DB93__Form3A_GS80129.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 3C

PCDD/PCDF INITIAL CALIBRATION ION ABUNDANCE 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: 15-Jan-2019

Instrument ID: HR GC/MS

GC Column ID: DB225

CS0 Data Filename: DB93_009D S: 7

CS1 Data Filename: DB93_009D S: 5

CS2 Data Filename: DB93_009D S: 3

CS3 Data Filename: DB93_009D S: 2

CS4 Data Filename: DB93_009D S: 9

CS5 Data Filename: DB93_009D S: 8

CS6 Data Filename: N/A

COMPOUND	LAB FLAG ¹	M/Z's FORMING RATIO ²	ION ABUNDANCE RATIO						QC LIMITS ³
			CS0	CS1	CS2	CS3	CS4	CS5	
1,2,3,7,8,9-HxCDD		M+2/M+4	1.13	1.19	1.19	1.22	1.23	1.20	1.05-1.43
2,3,7,8-TCDF		M/M+2	0.72	0.76	0.73	0.76	0.75	0.76	0.65-0.89

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits from Table 9, Method 1613.

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

Signed: _____David Nelson_____

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Report Filename: 1613_DIOXINS_15-Jan-2019_DB93__Form3C_GS80129.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	15-Jan-2019
RT Window Data Filename:		Analysis Date:	Time:
DB-5 IS Data Filename:		Analysis Date:	Time:
DB-225 IS Data Filename:	DB93_009D S: 1	Analysis Date:	15-Jan-2019
		Time:	08:10:30

DB225 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	N/A	1,3,6,8-TCDF (F)	N/A
1,2,8,9-TCDD (L)	N/A	1,2,8,9-TCDF (L)	N/A
1,2,4,7,9-PECDD (F)	N/A	1,3,4,6,8-PECDF (F)	N/A
1,2,3,8,9-PECDD (L)	N/A	1,2,3,8,9-PECDF (L)	N/A
1,2,4,6,7,9-HXCDD (F)	N/A	1,2,3,4,6,8-HXCDF (F)	N/A
1,2,3,4,6,7-HXCDD (L)	N/A	1,2,3,4,8,9-HXCDF (L)	N/A
1,2,3,4,6,7,9-HPCDD (F)	N/A	1,2,3,4,6,7,8-HPCDF (F)	N/A
1,2,3,4,6,7,8-HPCDD (L)	N/A	1,2,3,4,7,8,9-HPCDF (L)	N/A

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	N/A	1,2,3,8-TCDD 2,3,7,8-TCDD	N/A
1,2,7,8-TCDD 1,4,7,8-TCDD	N/A	2,3,4,7-TCDF 2,3,7,8-TCDF	4.5
1,4,7,8-TCDD 1,2,3,7-TCDD	N/A	2,3,7,8-TCDF 1,2,3,9-TCDF	6
1,2,3,7-TCDD 1,2,3,8-TCDD	N/A		

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

Signed: _____ Leanne Henley _____

For Axy Internal Use Only [XSL Template: DXForm5.xsl; Created: 14-Feb-2019 10:47:59; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS__DB93_009DS1_Form5_SJ2498528.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 15-Jan-2019

VER Data Filename: DB93_026 S: 2

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB225

Analysis Time: 08:17:38

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
1,2,3,7,8,9-HXCDD		M+2/M+4	1.21	1.05-1.43	53.2	41 - 61
2,3,7,8-TCDF		M/M+2	0.73	0.65-0.89	11.3	8.4 - 12

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form4A.xsl; Created: 14-Feb-2019 10:47:59; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DB93_026S2__Form4A_SJ2509628.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 15-Jan-2019

VER Data Filename: DB93_026 S: 2

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB225

Analysis Time: 08:17:38

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.059	1.052-1.075
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.002	0.999-1.003

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____Kristen Bowes_____

For Axs Internal Use Only [XSL Template: Form6A.xsl; Created: 14-Feb-2019 10:47:59; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DB93_026S2__Form6A_SJ2509628.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 15-Jan-2019

VER Data Filename: DB93_026 S: 14

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB225

Analysis Time: 17:10:20

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
1,2,3,7,8,9-HXCDD		M+2/M+4	1.23	1.05-1.43	56.4	41 - 61
2,3,7,8-TCDF		M/M+2	0.75	0.65-0.89	11.5	8.4 - 12

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

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

Signed: _____Kristen Bowes_____

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Report Filename: 1613_DIOXINS_DB93_026S14__Form4A_SJ2509632.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 15-Jan-2019

VER Data Filename: DB93_026 S: 14

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB225

Analysis Time: 17:10:20

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.058	1.052-1.075
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.002	0.999-1.003

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____**Kristen Bowes**_____

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Report Filename: 1613_DIOXINS_DB93_026S14__Form6A_SJ2509632.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	15-Jan-2019
RT Window Data Filename:		Analysis Date:	Time:
DB-5 IS Data Filename:		Analysis Date:	Time:
DB-225 IS Data Filename:	DB93_026 S: 1	Analysis Date:	05-Feb-2019
		Time:	07:33:33

DB225 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	N/A	1,3,6,8-TCDF (F)	N/A
1,2,8,9-TCDD (L)	N/A	1,2,8,9-TCDF (L)	N/A
1,2,4,7,9-PECDD (F)	N/A	1,3,4,6,8-PECDF (F)	N/A
1,2,3,8,9-PECDD (L)	N/A	1,2,3,8,9-PECDF (L)	N/A
1,2,4,6,7,9-HXCDD (F)	N/A	1,2,3,4,6,8-HXCDF (F)	N/A
1,2,3,4,6,7-HXCDD (L)	N/A	1,2,3,4,8,9-HXCDF (L)	N/A
1,2,3,4,6,7,9-HPCDD (F)	N/A	1,2,3,4,6,7,8-HPCDF (F)	N/A
1,2,3,4,6,7,8-HPCDD (L)	N/A	1,2,3,4,7,8,9-HPCDF (L)	N/A

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	N/A	1,2,3,8-TCDD 2,3,7,8-TCDD	N/A
1,2,7,8-TCDD 1,4,7,8-TCDD	N/A	2,3,4,7-TCDF 2,3,7,8-TCDF	13.7
1,4,7,8-TCDD 1,2,3,7-TCDD	N/A	2,3,7,8-TCDF 1,2,3,9-TCDF	12.9
1,2,3,7-TCDD 1,2,3,8-TCDD	N/A		

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

Signed: _____ **Kristen Bowes** _____

For Axy Internal Use Only [XSL Template: DXForm5.xsl; Created: 14-Feb-2019 10:47:59; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS__DB93_026S1_Form5_SJ2509633.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 2

Instrument ID: HR GC/MS

Analysis Date: 04-Feb-2019

GC Column ID: DB5

Analysis Time: 20:12:43

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
2,3,7,8-TCDD		M/M+2	0.77	0.65-0.89	11.2	7.8 - 12.9
1,2,3,7,8-PECDD ⁵		M/M+2	0.63	0.52-0.70	53.1	39 - 65
1,2,3,4,7,8-HXCDD		M+2/M+4	1.24	1.05-1.43	52.0	39 - 64
1,2,3,6,7,8-HXCDD		M+2/M+4	1.23	1.05-1.43	51.8	39 - 64
1,2,3,7,8,9-HXCDD		M+2/M+4	1.28	1.05-1.43	48.7	41 - 61
1,2,3,4,6,7,8-HPCDD		M+2/M+4	0.97	0.88-1.20	52.7	43 - 58
OCDD		M+2/M+4	0.89	0.76-1.02	103	79 - 126
2,3,7,8-TCDF		M/M+2	0.79	0.65-0.89	10.5	8.4 - 12
1,2,3,7,8-PECDF		M+2/M+4	1.56	1.32-1.78	54.4	41 - 60
2,3,4,7,8-PECDF		M+2/M+4	1.53	1.32-1.78	51.8	41 - 61
1,2,3,4,7,8-HXCDF		M+2/M+4	1.23	1.05-1.43	52.2	45 - 56
1,2,3,6,7,8-HXCDF		M+2/M+4	1.29	1.05-1.43	48.2	44 - 57
1,2,3,7,8,9-HXCDF		M+2/M+4	1.26	1.05-1.43	47.2	45 - 56
2,3,4,6,7,8-HXCDF		M+2/M+4	1.26	1.05-1.43	51.0	44 - 57
1,2,3,4,6,7,8-HPCDF		M+2/M+4	0.98	0.88-1.20	52.2	45 - 55
1,2,3,4,7,8,9-HPCDF		M+2/M+4	1.07	0.88-1.20	51.3	43 - 58
OCDF		M+2/M+4	0.92	0.76-1.02	108	63 - 159

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axy Internal Use Only [XSL Template: Form4A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS2__Form4A_SJ2508856.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4B
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 2

Instrument ID: HR GC/MS

Analysis Date: 04-Feb-2019

GC Column ID: DB5

Analysis Time: 20:12:43

LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
LABELED COMPOUND					
13C-2,3,7,8-TCDD	M/M+2	0.79	0.65-0.89	95.3	82 - 121
13C-1,2,3,7,8-PECDD ⁵	M/M+2	0.63	0.52-0.70	83.4	62 - 160
13C-1,2,3,4,7,8-HXCDD	M+2/M+4	1.26	1.05-1.43	97.3	85 - 117
13C-1,2,3,6,7,8-HXCDD	M+2/M+4	1.32	1.05-1.43	110	85 - 118
13C-1,2,3,4,6,7,8-HPCDD	M+2/M+4	1.05	0.88-1.20	80.8	72 - 138
13C-OCDD	M+2/M+4	0.86	0.76-1.02	136	96 - 415
13C-2,3,7,8-TCDF	M/M+2	0.79	0.65-0.89	97.6	71 - 140
13C-1,2,3,7,8-PECDF	M+2/M+4	1.59	1.32-1.78	85.7	76 - 130
13C-2,3,4,7,8-PECDF	M+2/M+4	1.57	1.32-1.78	88.3	77 - 130
13C-1,2,3,4,7,8-HXCDF	M/M+2	0.51	0.43-0.59	99.8	76 - 131
13C-1,2,3,6,7,8-HXCDF	M/M+2	0.51	0.43-0.59	116	70 - 143
13C-1,2,3,7,8,9-HXCDF	M/M+2	0.54	0.43-0.59	89.0	74 - 135
13C-2,3,4,6,7,8-HXCDF	M/M+2	0.50	0.43-0.59	106	73 - 137
13C-1,2,3,4,6,7,8-HPCDF	M/M+2	0.46	0.37-0.51	89.0	78 - 129
13C-1,2,3,4,7,8,9-HPCDF	M/M+2	0.43	0.37-0.51	77.6	77 - 129
CLEANUP STANDARD					
37CL-2,3,7,8-TCDD ⁶				9.51	7.9 - 12.7

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(6) No ion abundance ratio for 37Cl4-2,3,7,8-TCDD; concentration reported.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form4B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS2_Form4B_SJ2508856.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 2

Instrument ID: HR GC/MS

Analysis Date: 04-Feb-2019

GC Column ID: DB5

Analysis Time: 20:12:43

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
2,3,7,8-TCDD		13C-2,3,7,8-TCDD	1.001	0.999-1.002
1,2,3,7,8-PECDD ³		13C-1,2,3,7,8-PECDD	1.000	0.999-1.002
1,2,3,4,7,8-HXCDD		13C-1,2,3,4,7,8-HXCDD	1.000	0.999-1.001
1,2,3,6,7,8-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.000	0.998-1.004
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.010	1.000-1.019
1,2,3,4,6,7,8-HPCDD		13C-1,2,3,4,6,7,8-HPCDD	1.000	0.999-1.001
OCDD		13C-OCDD	1.000	0.999-1.001
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PECDF		13C-1,2,3,7,8-PECDF	1.001	0.999-1.002
2,3,4,7,8-PECDF		13C-2,3,4,7,8-PECDF	1.001	0.999-1.002
1,2,3,4,7,8-HXCDF		13C-1,2,3,4,7,8-HXCDF	1.001	0.999-1.001
1,2,3,6,7,8-HXCDF		13C-1,2,3,6,7,8-HXCDF	1.000	0.997-1.005
1,2,3,7,8,9-HXCDF		13C-1,2,3,7,8,9-HXCDF	1.001	0.999-1.001
2,3,4,6,7,8-HXCDF		13C-2,3,4,6,7,8-HXCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HPCDF		13C-1,2,3,4,6,7,8-HPCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HPCDF		13C-1,2,3,4,7,8,9-HPCDF	1.000	0.999-1.001
OCDF		13C-OCDD	1.002	0.999-1.008

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____ Kristen Bowes _____

For Axys Internal Use Only [XSL Template: Form6A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS2__Form6A_SJ2508856.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6B
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 2

Instrument ID: HR GC/MS

Analysis Date: 04-Feb-2019

GC Column ID: DB5

Analysis Time: 20:12:43

LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
LABELED COMPOUND			
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.013	0.976-1.043
13C-1,2,3,7,8-PECDD	13C-1,2,3,4-TCDD	1.380	1.000-1.567
13C-1,2,3,4,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.987	0.977-1.000
13C-1,2,3,6,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.990	0.981-1.003
13C-1,2,3,4,6,7,8-HPCDD	13C-1,2,3,7,8,9-HXCDD	1.095	1.086-1.110
13C-OCDD	13C-1,2,3,7,8,9-HXCDD	1.178	1.032-1.311
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	0.966	0.923-1.103
13C-1,2,3,7,8-PECDF	13C-1,2,3,4-TCDD	1.282	1.000-1.425
13C-2,3,4,7,8-PECDF	13C-1,2,3,4-TCDD	1.349	1.011-1.526
13C-1,2,3,4,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.954	0.944-0.970
13C-1,2,3,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.958	0.949-0.975
13C-1,2,3,7,8,9-HXCDF	13C-1,2,3,7,8,9-HXCDD	1.004	0.977-1.047
13C-2,3,4,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.980	0.959-1.021
13C-1,2,3,4,6,7,8-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.062	1.043-1.085
13C-1,2,3,4,7,8,9-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.104	1.057-1.151
CLEANUP STANDARD			
37CL-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.001	0.989-1.052

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____ **Kristen Bowes** _____For Axys Internal Use Only [XSL Template: Form6B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS2__Form6B_SJ2508856.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 3A

DIOXIN INITIAL CALIBRATION RELATIVE RESPONSES,
ION ABUNDANCE RATIOS, AND RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 04-Feb-2019

CAL Data Filename: DX9M_014A S: 2

Instrument ID: HR GC/MS

Analysis Date: 04-Feb-2019

GC Column ID: DB5

Analysis Time: 20:12:43

COMPOUND	LAB FLAG ¹	RRF	MZ's FORMING RATIO ²	ION ABUND. RATIO	RATIO QC LIMITS ³	RRT	RRT QC LIMITS
13C6-1,2,3,4-TCDD ⁴		1.06	M/M+2	0.77	0.65-0.89	0.987	0.975 - 1.000

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) RRF's based on 13C12-1,2,3,4-TCDD and 1,2,3,4,6,7,8-HPCDF for 13C6-1,2,3,4-TCDD and 13C6-1,2,3,4,6,7,8-HPCDF, respectively.

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

Signed: _____ Jason MacKenzie _____

For Axy Internal Use Only [XSL Template: Form346A.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS2__Form346A_SJ2508894_GS80101.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 12

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 05:27:03

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
2,3,7,8-TCDD		M/M+2	0.79	0.65-0.89	10.8	7.8 - 12.9
1,2,3,7,8-PECDD ⁵		M/M+2	0.61	0.52-0.70	52.1	39 - 65
1,2,3,4,7,8-HXCDD		M+2/M+4	1.24	1.05-1.43	51.0	39 - 64
1,2,3,6,7,8-HXCDD		M+2/M+4	1.29	1.05-1.43	51.7	39 - 64
1,2,3,7,8,9-HXCDD		M+2/M+4	1.31	1.05-1.43	52.4	41 - 61
1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.00	0.88-1.20	52.5	43 - 58
OCDD		M+2/M+4	0.89	0.76-1.02	105	79 - 126
2,3,7,8-TCDF		M/M+2	0.75	0.65-0.89	10.4	8.4 - 12
1,2,3,7,8-PECDF		M+2/M+4	1.54	1.32-1.78	53.0	41 - 60
2,3,4,7,8-PECDF		M+2/M+4	1.50	1.32-1.78	52.7	41 - 61
1,2,3,4,7,8-HXCDF		M+2/M+4	1.22	1.05-1.43	51.2	45 - 56
1,2,3,6,7,8-HXCDF		M+2/M+4	1.25	1.05-1.43	51.6	44 - 57
1,2,3,7,8,9-HXCDF		M+2/M+4	1.21	1.05-1.43	47.7	45 - 56
2,3,4,6,7,8-HXCDF		M+2/M+4	1.24	1.05-1.43	50.7	44 - 57
1,2,3,4,6,7,8-HPCDF		M+2/M+4	1.05	0.88-1.20	52.3	45 - 55
1,2,3,4,7,8,9-HPCDF		M+2/M+4	1.07	0.88-1.20	51.2	43 - 58
OCDF		M+2/M+4	0.89	0.76-1.02	105	63 - 159

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axy Internal Use Only [XSL Template: Form4A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS12_Form4A_SJ2508861.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4B
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 12

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 05:27:03

LABELLED COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
13C-2,3,7,8-TCDD		M/M+2	0.76	0.65-0.89	96.7	82 - 121
13C-1,2,3,7,8-PECDD ⁵		M/M+2	0.63	0.52-0.70	87.5	62 - 160
13C-1,2,3,4,7,8-HXCDD		M+2/M+4	1.26	1.05-1.43	92.2	85 - 117
13C-1,2,3,6,7,8-HXCDD		M+2/M+4	1.28	1.05-1.43	108	85 - 118
13C-1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.09	0.88-1.20	84.4	72 - 138
13C-OCDD		M+2/M+4	0.92	0.76-1.02	148	96 - 415
13C-2,3,7,8-TCDF		M/M+2	0.78	0.65-0.89	95.1	71 - 140
13C-1,2,3,7,8-PECDF		M+2/M+4	1.54	1.32-1.78	86.0	76 - 130
13C-2,3,4,7,8-PECDF		M+2/M+4	1.56	1.32-1.78	88.2	77 - 130
13C-1,2,3,4,7,8-HXCDF		M/M+2	0.51	0.43-0.59	96.2	76 - 131
13C-1,2,3,6,7,8-HXCDF		M/M+2	0.50	0.43-0.59	105	70 - 143
13C-1,2,3,7,8,9-HXCDF		M/M+2	0.50	0.43-0.59	87.5	74 - 135
13C-2,3,4,6,7,8-HXCDF		M/M+2	0.54	0.43-0.59	101	73 - 137
13C-1,2,3,4,6,7,8-HPCDF		M/M+2	0.45	0.37-0.51	87.3	78 - 129
13C-1,2,3,4,7,8,9-HPCDF		M/M+2	0.45	0.37-0.51	82.9	77 - 129
CLEANUP STANDARD						
37CL-2,3,7,8-TCDD ⁶					10.1	7.9 - 12.7

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(6) No ion abundance ratio for 37Cl4-2,3,7,8-TCDD; concentration reported.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form4B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS12_Form4B_SJ2508861.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 12

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 05:27:03

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
2,3,7,8-TCDD		13C-2,3,7,8-TCDD	1.001	0.999-1.002
1,2,3,7,8-PECDD ³		13C-1,2,3,7,8-PECDD	1.001	0.999-1.002
1,2,3,4,7,8-HXCDD		13C-1,2,3,4,7,8-HXCDD	1.000	0.999-1.001
1,2,3,6,7,8-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.000	0.998-1.004
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.011	1.000-1.019
1,2,3,4,6,7,8-HPCDD		13C-1,2,3,4,6,7,8-HPCDD	1.000	0.999-1.001
OCDD		13C-OCDD	1.000	0.999-1.001
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PECDF		13C-1,2,3,7,8-PECDF	1.001	0.999-1.002
2,3,4,7,8-PECDF		13C-2,3,4,7,8-PECDF	1.001	0.999-1.002
1,2,3,4,7,8-HXCDF		13C-1,2,3,4,7,8-HXCDF	1.000	0.999-1.001
1,2,3,6,7,8-HXCDF		13C-1,2,3,6,7,8-HXCDF	1.001	0.997-1.005
1,2,3,7,8,9-HXCDF		13C-1,2,3,7,8,9-HXCDF	1.000	0.999-1.001
2,3,4,6,7,8-HXCDF		13C-2,3,4,6,7,8-HXCDF	1.001	0.999-1.001
1,2,3,4,6,7,8-HPCDF		13C-1,2,3,4,6,7,8-HPCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HPCDF		13C-1,2,3,4,7,8,9-HPCDF	1.000	0.999-1.001
OCDF		13C-OCDD	1.002	0.999-1.008

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form6A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS12__Form6A_SJ2508861.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6B
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 12

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 05:27:03

LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
LABELED COMPOUND			
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.013	0.976-1.043
13C-1,2,3,7,8-PECDD	13C-1,2,3,4-TCDD	1.382	1.000-1.567
13C-1,2,3,4,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.987	0.977-1.000
13C-1,2,3,6,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.990	0.981-1.003
13C-1,2,3,4,6,7,8-HPCDD	13C-1,2,3,7,8,9-HXCDD	1.095	1.086-1.110
13C-OCDD	13C-1,2,3,7,8,9-HXCDD	1.179	1.032-1.311
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	0.965	0.923-1.103
13C-1,2,3,7,8-PECDF	13C-1,2,3,4-TCDD	1.282	1.000-1.425
13C-2,3,4,7,8-PECDF	13C-1,2,3,4-TCDD	1.350	1.011-1.526
13C-1,2,3,4,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.954	0.944-0.970
13C-1,2,3,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.958	0.949-0.975
13C-1,2,3,7,8,9-HXCDF	13C-1,2,3,7,8,9-HXCDD	1.004	0.977-1.047
13C-2,3,4,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.980	0.959-1.021
13C-1,2,3,4,6,7,8-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.062	1.043-1.085
13C-1,2,3,4,7,8,9-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.104	1.057-1.151
CLEANUP STANDARD			
37CL-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.001	0.989-1.052

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____ **Kristen Bowes** _____For Axys Internal Use Only [XSL Template: Form6B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS12_Form6B_SJ2508861.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 3A

DIOXIN INITIAL CALIBRATION RELATIVE RESPONSES,
ION ABUNDANCE RATIOS, AND RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date:	05-Feb-2019	CAL Data Filename:	DX9M_014A S: 12
Instrument ID:	HR GC/MS	Analysis Date:	05-Feb-2019
GC Column ID:	DB5	Analysis Time:	05:27:03

COMPOUND	LAB FLAG ¹	RRF	MZ's FORMING RATIO ²	ION ABUND. RATIO	RATIO QC LIMITS ³	RRT	RRT QC LIMITS
13C6-1,2,3,4-TCDD ⁴		1.02	M/M+2	0.76	0.65-0.89	0.987	0.975 - 1.000

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) RRF's based on 13C12-1,2,3,4-TCDD and 1,2,3,4,6,7,8-HPCDF for 13C6-1,2,3,4-TCDD and 13C6-1,2,3,4,6,7,8-HPCDF, respectively.

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

Signed: _____ Jason MacKenzie _____

For Axys Internal Use Only [XSL Template: Form346A.xsl; Created: 14-Feb-2019 10:48:32; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS12__Form346A_SJ2508902_GS80102.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 24

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 16:34:38

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
2,3,7,8-TCDD		M/M+2	0.78	0.65-0.89	11.1	7.8 - 12.9
1,2,3,7,8-PECDD ⁵		M/M+2	0.60	0.52-0.70	52.0	39 - 65
1,2,3,4,7,8-HXCDD		M+2/M+4	1.22	1.05-1.43	51.5	39 - 64
1,2,3,6,7,8-HXCDD		M+2/M+4	1.27	1.05-1.43	53.8	39 - 64
1,2,3,7,8,9-HXCDD		M+2/M+4	1.26	1.05-1.43	54.2	41 - 61
1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.13	0.88-1.20	51.3	43 - 58
OCDD		M+2/M+4	0.89	0.76-1.02	105	79 - 126
2,3,7,8-TCDF		M/M+2	0.76	0.65-0.89	10.3	8.4 - 12
1,2,3,7,8-PECDF		M+2/M+4	1.58	1.32-1.78	53.0	41 - 60
2,3,4,7,8-PECDF		M+2/M+4	1.59	1.32-1.78	52.5	41 - 61
1,2,3,4,7,8-HXCDF		M+2/M+4	1.21	1.05-1.43	52.0	45 - 56
1,2,3,6,7,8-HXCDF		M+2/M+4	1.23	1.05-1.43	49.1	44 - 57
1,2,3,7,8,9-HXCDF		M+2/M+4	1.22	1.05-1.43	48.3	45 - 56
2,3,4,6,7,8-HXCDF		M+2/M+4	1.26	1.05-1.43	49.8	44 - 57
1,2,3,4,6,7,8-HPCDF		M+2/M+4	1.03	0.88-1.20	49.9	45 - 55
1,2,3,4,7,8,9-HPCDF		M+2/M+4	1.02	0.88-1.20	51.3	43 - 58
OCDF		M+2/M+4	0.91	0.76-1.02	101	63 - 159

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axy Internal Use Only [XSL Template: Form4A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS24__Form4A_SJ2508867.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4B
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 24

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 16:34:38

LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
LABELED COMPOUND					
13C-2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	97.8	82 - 121
13C-1,2,3,7,8-PECDD ⁵	M/M+2	0.63	0.52-0.70	91.6	62 - 160
13C-1,2,3,4,7,8-HXCDD	M+2/M+4	1.26	1.05-1.43	95.2	85 - 117
13C-1,2,3,6,7,8-HXCDD	M+2/M+4	1.28	1.05-1.43	106	85 - 118
13C-1,2,3,4,6,7,8-HPCDD	M+2/M+4	1.03	0.88-1.20	91.3	72 - 138
13C-OCDD	M+2/M+4	0.87	0.76-1.02	165	96 - 415
13C-2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	99.3	71 - 140
13C-1,2,3,7,8-PECDF	M+2/M+4	1.52	1.32-1.78	89.5	76 - 130
13C-2,3,4,7,8-PECDF	M+2/M+4	1.56	1.32-1.78	90.0	77 - 130
13C-1,2,3,4,7,8-HXCDF	M/M+2	0.51	0.43-0.59	97.3	76 - 131
13C-1,2,3,6,7,8-HXCDF	M/M+2	0.52	0.43-0.59	109	70 - 143
13C-1,2,3,7,8,9-HXCDF	M/M+2	0.53	0.43-0.59	90.1	74 - 135
13C-2,3,4,6,7,8-HXCDF	M/M+2	0.51	0.43-0.59	101	73 - 137
13C-1,2,3,4,6,7,8-HPCDF	M/M+2	0.45	0.37-0.51	92.5	78 - 129
13C-1,2,3,4,7,8,9-HPCDF	M/M+2	0.42	0.37-0.51	88.3	77 - 129
CLEANUP STANDARD					
37CL-2,3,7,8-TCDD ⁶				9.82	7.9 - 12.7

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(6) No ion abundance ratio for 37Cl4-2,3,7,8-TCDD; concentration reported.

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

Signed: _____Kristen Bowes_____

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Report Filename: 1613_DIOXINS_DX9M_014AS24_Form4B_SJ2508867.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 24

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 16:34:38

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
2,3,7,8-TCDD		13C-2,3,7,8-TCDD	1.001	0.999-1.002
1,2,3,7,8-PECDD ³		13C-1,2,3,7,8-PECDD	1.001	0.999-1.002
1,2,3,4,7,8-HXCDD		13C-1,2,3,4,7,8-HXCDD	1.000	0.999-1.001
1,2,3,6,7,8-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.000	0.998-1.004
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.011	1.000-1.019
1,2,3,4,6,7,8-HPCDD		13C-1,2,3,4,6,7,8-HPCDD	1.000	0.999-1.001
OCDD		13C-OCDD	1.000	0.999-1.001
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PECDF		13C-1,2,3,7,8-PECDF	1.001	0.999-1.002
2,3,4,7,8-PECDF		13C-2,3,4,7,8-PECDF	1.000	0.999-1.002
1,2,3,4,7,8-HXCDF		13C-1,2,3,4,7,8-HXCDF	1.000	0.999-1.001
1,2,3,6,7,8-HXCDF		13C-1,2,3,6,7,8-HXCDF	1.000	0.997-1.005
1,2,3,7,8,9-HXCDF		13C-1,2,3,7,8,9-HXCDF	1.000	0.999-1.001
2,3,4,6,7,8-HXCDF		13C-2,3,4,6,7,8-HXCDF	1.001	0.999-1.001
1,2,3,4,6,7,8-HPCDF		13C-1,2,3,4,6,7,8-HPCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HPCDF		13C-1,2,3,4,7,8,9-HPCDF	1.000	0.999-1.001
OCDF		13C-OCDD	1.002	0.999-1.008

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form6A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS24__Form6A_SJ2508867.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6B
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 24

Instrument ID: HR GC/MS

Analysis Date: 05-Feb-2019

GC Column ID: DB5

Analysis Time: 16:34:38

LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
LABELED COMPOUND			
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.013	0.976-1.043
13C-1,2,3,7,8-PECDD	13C-1,2,3,4-TCDD	1.383	1.000-1.567
13C-1,2,3,4,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.987	0.977-1.000
13C-1,2,3,6,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.990	0.981-1.003
13C-1,2,3,4,6,7,8-HPCDD	13C-1,2,3,7,8,9-HXCDD	1.095	1.086-1.110
13C-OCDD	13C-1,2,3,7,8,9-HXCDD	1.179	1.032-1.311
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	0.966	0.923-1.103
13C-1,2,3,7,8-PECDF	13C-1,2,3,4-TCDD	1.283	1.000-1.425
13C-2,3,4,7,8-PECDF	13C-1,2,3,4-TCDD	1.351	1.011-1.526
13C-1,2,3,4,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.954	0.944-0.970
13C-1,2,3,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.958	0.949-0.975
13C-1,2,3,7,8,9-HXCDF	13C-1,2,3,7,8,9-HXCDD	1.005	0.977-1.047
13C-2,3,4,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.980	0.959-1.021
13C-1,2,3,4,6,7,8-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.062	1.043-1.085
13C-1,2,3,4,7,8,9-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.105	1.057-1.151
CLEANUP STANDARD			
37CL-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.001	0.989-1.052

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____ **Kristen Bowes** _____For Axys Internal Use Only [XSL Template: Form6B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS24_Form6B_SJ2508867.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 42

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 09:26:28

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
2,3,7,8-TCDD		M/M+2	0.78	0.65-0.89	10.5	7.8 - 12.9
1,2,3,7,8-PECDD ⁵		M/M+2	0.62	0.52-0.70	51.5	39 - 65
1,2,3,4,7,8-HXCDD		M+2/M+4	1.22	1.05-1.43	51.4	39 - 64
1,2,3,6,7,8-HXCDD		M+2/M+4	1.24	1.05-1.43	52.8	39 - 64
1,2,3,7,8,9-HXCDD		M+2/M+4	1.21	1.05-1.43	51.8	41 - 61
1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.05	0.88-1.20	52.3	43 - 58
OCDD		M+2/M+4	0.85	0.76-1.02	103	79 - 126
2,3,7,8-TCDF		M/M+2	0.76	0.65-0.89	10.4	8.4 - 12
1,2,3,7,8-PECDF		M+2/M+4	1.55	1.32-1.78	53.0	41 - 60
2,3,4,7,8-PECDF		M+2/M+4	1.55	1.32-1.78	52.2	41 - 61
1,2,3,4,7,8-HXCDF		M+2/M+4	1.22	1.05-1.43	53.2	45 - 56
1,2,3,6,7,8-HXCDF		M+2/M+4	1.20	1.05-1.43	49.3	44 - 57
1,2,3,7,8,9-HXCDF		M+2/M+4	1.23	1.05-1.43	46.6	45 - 56
2,3,4,6,7,8-HXCDF		M+2/M+4	1.25	1.05-1.43	49.7	44 - 57
1,2,3,4,6,7,8-HPCDF		M+2/M+4	1.03	0.88-1.20	51.0	45 - 55
1,2,3,4,7,8,9-HPCDF		M+2/M+4	1.04	0.88-1.20	50.3	43 - 58
OCDF		M+2/M+4	0.93	0.76-1.02	100	63 - 159

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

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Report Filename: 1613_DIOXINS_DX9M_014AS42_Form4A_SJ2509594.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4B
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 42

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 09:26:28

LABELLED COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
13C-2,3,7,8-TCDD		M/M+2	0.77	0.65-0.89	98.2	82 - 121
13C-1,2,3,7,8-PECDD ⁵		M/M+2	0.62	0.52-0.70	94.2	62 - 160
13C-1,2,3,4,7,8-HXCDD		M+2/M+4	1.26	1.05-1.43	98.7	85 - 117
13C-1,2,3,6,7,8-HXCDD		M+2/M+4	1.27	1.05-1.43	105	85 - 118
13C-1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.03	0.88-1.20	86.4	72 - 138
13C-OCDD		M+2/M+4	0.90	0.76-1.02	147	96 - 415
13C-2,3,7,8-TCDF		M/M+2	0.79	0.65-0.89	98.2	71 - 140
13C-1,2,3,7,8-PECDF		M+2/M+4	1.56	1.32-1.78	88.9	76 - 130
13C-2,3,4,7,8-PECDF		M+2/M+4	1.56	1.32-1.78	90.6	77 - 130
13C-1,2,3,4,7,8-HXCDF		M/M+2	0.52	0.43-0.59	107	76 - 131
13C-1,2,3,6,7,8-HXCDF		M/M+2	0.51	0.43-0.59	130	70 - 143
13C-1,2,3,7,8,9-HXCDF		M/M+2	0.52	0.43-0.59	86.3	74 - 135
13C-2,3,4,6,7,8-HXCDF		M/M+2	0.52	0.43-0.59	97.6	73 - 137
13C-1,2,3,4,6,7,8-HPCDF		M/M+2	0.45	0.37-0.51	87.5	78 - 129
13C-1,2,3,4,7,8,9-HPCDF		M/M+2	0.45	0.37-0.51	83.1	77 - 129
CLEANUP STANDARD						
37CL-2,3,7,8-TCDD ⁶					9.80	7.9 - 12.7

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(6) No ion abundance ratio for 37Cl4-2,3,7,8-TCDD; concentration reported.

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

Signed: _____ Kristen Bowes _____

For Axys Internal Use Only [XSL Template: Form4B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS42__Form4B_SJ2509594.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 42

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 09:26:28

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
2,3,7,8-TCDD		13C-2,3,7,8-TCDD	1.001	0.999-1.002
1,2,3,7,8-PECDD ³		13C-1,2,3,7,8-PECDD	1.001	0.999-1.002
1,2,3,4,7,8-HXCDD		13C-1,2,3,4,7,8-HXCDD	1.000	0.999-1.001
1,2,3,6,7,8-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.000	0.998-1.004
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.010	1.000-1.019
1,2,3,4,6,7,8-HPCDD		13C-1,2,3,4,6,7,8-HPCDD	1.000	0.999-1.001
OCDD		13C-OCDD	1.000	0.999-1.001
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PECDF		13C-1,2,3,7,8-PECDF	1.001	0.999-1.002
2,3,4,7,8-PECDF		13C-2,3,4,7,8-PECDF	1.001	0.999-1.002
1,2,3,4,7,8-HXCDF		13C-1,2,3,4,7,8-HXCDF	1.001	0.999-1.001
1,2,3,6,7,8-HXCDF		13C-1,2,3,6,7,8-HXCDF	1.000	0.997-1.005
1,2,3,7,8,9-HXCDF		13C-1,2,3,7,8,9-HXCDF	1.000	0.999-1.001
2,3,4,6,7,8-HXCDF		13C-2,3,4,6,7,8-HXCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HPCDF		13C-1,2,3,4,6,7,8-HPCDF	1.001	0.999-1.001
1,2,3,4,7,8,9-HPCDF		13C-1,2,3,4,7,8,9-HPCDF	1.000	0.999-1.001
OCDF		13C-OCDD	1.002	0.999-1.008

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

For Axys Internal Use Only [XSL Template: Form6A.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS42__Form6A_SJ2509594.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 6B
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 42

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 09:26:28

LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
LABELED COMPOUND			
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.013	0.976-1.043
13C-1,2,3,7,8-PECDD	13C-1,2,3,4-TCDD	1.384	1.000-1.567
13C-1,2,3,4,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.987	0.977-1.000
13C-1,2,3,6,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.990	0.981-1.003
13C-1,2,3,4,6,7,8-HPCDD	13C-1,2,3,7,8,9-HXCDD	1.095	1.086-1.110
13C-OCDD	13C-1,2,3,7,8,9-HXCDD	1.179	1.032-1.311
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	0.966	0.923-1.103
13C-1,2,3,7,8-PECDF	13C-1,2,3,4-TCDD	1.283	1.000-1.425
13C-2,3,4,7,8-PECDF	13C-1,2,3,4-TCDD	1.352	1.011-1.526
13C-1,2,3,4,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.954	0.944-0.970
13C-1,2,3,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.958	0.949-0.975
13C-1,2,3,7,8,9-HXCDF	13C-1,2,3,7,8,9-HXCDD	1.005	0.977-1.047
13C-2,3,4,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.980	0.959-1.021
13C-1,2,3,4,6,7,8-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.062	1.043-1.085
13C-1,2,3,4,7,8,9-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.105	1.057-1.151
CLEANUP STANDARD			
37CL-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.001	0.989-1.052

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____ **Kristen Bowes** _____

For Axys Internal Use Only [XSL Template: Form6B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS42_Form6B_SJ2509594.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4A
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 47

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 14:35:50

COMPOUND	LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
2,3,7,8-TCDD		M/M+2	0.75	0.65-0.89	11.0	7.8 - 12.9
1,2,3,7,8-PECDD ⁵		M/M+2	0.62	0.52-0.70	52.6	39 - 65
1,2,3,4,7,8-HXCDD		M+2/M+4	1.23	1.05-1.43	51.3	39 - 64
1,2,3,6,7,8-HXCDD		M+2/M+4	1.30	1.05-1.43	53.0	39 - 64
1,2,3,7,8,9-HXCDD		M+2/M+4	1.20	1.05-1.43	52.9	41 - 61
1,2,3,4,6,7,8-HPCDD		M+2/M+4	1.07	0.88-1.20	51.8	43 - 58
OCDD		M+2/M+4	0.87	0.76-1.02	104	79 - 126
2,3,7,8-TCDF		M/M+2	0.78	0.65-0.89	10.4	8.4 - 12
1,2,3,7,8-PECDF		M+2/M+4	1.58	1.32-1.78	53.2	41 - 60
2,3,4,7,8-PECDF		M+2/M+4	1.44	1.32-1.78	49.7	41 - 61
1,2,3,4,7,8-HXCDF		M+2/M+4	1.22	1.05-1.43	50.8	45 - 56
1,2,3,6,7,8-HXCDF		M+2/M+4	1.23	1.05-1.43	49.3	44 - 57
1,2,3,7,8,9-HXCDF		M+2/M+4	1.23	1.05-1.43	46.4	45 - 56
2,3,4,6,7,8-HXCDF		M+2/M+4	1.24	1.05-1.43	51.1	44 - 57
1,2,3,4,6,7,8-HPCDF		M+2/M+4	0.99	0.88-1.20	51.3	45 - 55
1,2,3,4,7,8,9-HPCDF		M+2/M+4	1.04	0.88-1.20	52.0	43 - 58
OCDF		M+2/M+4	0.86	0.76-1.02	98.9	63 - 159

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

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Report Filename: 1613_DIOXINS_DX9M_014AS47__Form4A_SJ2509598.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 4B
PCDD/PCDF 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: 03-Dec-2018

VER Data Filename: DX9M_014A S: 47

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 14:35:50

LAB FLAG ¹	MZ's FORMING RATIO ²	ION ABUND. RATIO	QC LIMITS ³	CONC. FOUND (ng/mL)	CONC. RANGE (ng/mL) ⁴
LABELED COMPOUND					
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	103	82 - 121
13C-1,2,3,7,8-PECDD ⁵	M/M+2	0.61	0.52-0.70	93.4	62 - 160
13C-1,2,3,4,7,8-HXCDD	M+2/M+4	1.29	1.05-1.43	97.0	85 - 117
13C-1,2,3,6,7,8-HXCDD	M+2/M+4	1.24	1.05-1.43	105	85 - 118
13C-1,2,3,4,6,7,8-HPCDD	M+2/M+4	1.00	0.88-1.20	88.7	72 - 138
13C-OCDD	M+2/M+4	0.92	0.76-1.02	150	96 - 415
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	97.2	71 - 140
13C-1,2,3,7,8-PECDF	M+2/M+4	1.59	1.32-1.78	90.6	76 - 130
13C-2,3,4,7,8-PECDF	M+2/M+4	1.57	1.32-1.78	94.0	77 - 130
13C-1,2,3,4,7,8-HXCDF	M/M+2	0.52	0.43-0.59	96.7	76 - 131
13C-1,2,3,6,7,8-HXCDF	M/M+2	0.52	0.43-0.59	106	70 - 143
13C-1,2,3,7,8,9-HXCDF	M/M+2	0.51	0.43-0.59	90.1	74 - 135
13C-2,3,4,6,7,8-HXCDF	M/M+2	0.51	0.43-0.59	101	73 - 137
13C-1,2,3,4,6,7,8-HPCDF	M/M+2	0.44	0.37-0.51	88.8	78 - 129
13C-1,2,3,4,7,8,9-HPCDF	M/M+2	0.44	0.37-0.51	83.8	77 - 129
CLEANUP STANDARD					
37CL-2,3,7,8-TCDD ⁶				10.5	7.9 - 12.7

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

(2) See Table 8, Method 1613, for m/z specifications.

(3) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613.

(4) Contract-required concentration range as determined from the percent of the test concentration in Table 6, Method 1613, under VER.

(5) Alternate confirmation and quantitation ions used for native and labeled PECDD.

(6) No ion abundance ratio for 37Cl4-2,3,7,8-TCDD; concentration reported.

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

Signed: _____Kristen Bowes_____

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SGS AXYS METHOD MLA-017 Rev 20

Form 6A
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 47

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 14:35:50

COMPOUND	LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
2,3,7,8-TCDD		13C-2,3,7,8-TCDD	1.001	0.999-1.002
1,2,3,7,8-PECDD ³		13C-1,2,3,7,8-PECDD	1.001	0.999-1.002
1,2,3,4,7,8-HXCDD		13C-1,2,3,4,7,8-HXCDD	1.001	0.999-1.001
1,2,3,6,7,8-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.000	0.998-1.004
1,2,3,7,8,9-HXCDD		13C-1,2,3,6,7,8-HXCDD	1.010	1.000-1.019
1,2,3,4,6,7,8-HPCDD		13C-1,2,3,4,6,7,8-HPCDD	1.000	0.999-1.001
OCDD		13C-OCDD	1.000	0.999-1.001
2,3,7,8-TCDF		13C-2,3,7,8-TCDF	1.001	0.999-1.003
1,2,3,7,8-PECDF		13C-1,2,3,7,8-PECDF	1.001	0.999-1.002
2,3,4,7,8-PECDF		13C-2,3,4,7,8-PECDF	1.001	0.999-1.002
1,2,3,4,7,8-HXCDF		13C-1,2,3,4,7,8-HXCDF	1.000	0.999-1.001
1,2,3,6,7,8-HXCDF		13C-1,2,3,6,7,8-HXCDF	1.001	0.997-1.005
1,2,3,7,8,9-HXCDF		13C-1,2,3,7,8,9-HXCDF	1.000	0.999-1.001
2,3,4,6,7,8-HXCDF		13C-2,3,4,6,7,8-HXCDF	1.000	0.999-1.001
1,2,3,4,6,7,8-HPCDF		13C-1,2,3,4,6,7,8-HPCDF	1.000	0.999-1.001
1,2,3,4,7,8,9-HPCDF		13C-1,2,3,4,7,8,9-HPCDF	1.000	0.999-1.001
OCDF		13C-OCDD	1.002	0.999-1.008

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

(3) Alternate confirmation and quantitation ions used for native and labeled PECDD.

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

Signed: _____Kristen Bowes_____

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SGS AXYS METHOD MLA-017 Rev 20

Form 6B
PCDD/PCDF RELATIVE RETENTION TIMES

SGS AXYS ANALYTICAL SERVICES

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

Initial Calibration Date: 03-Dec-2018

VER Data Filename: DX9M_014A S: 47

Instrument ID: HR GC/MS

Analysis Date: 06-Feb-2019

GC Column ID: DB5

Analysis Time: 14:35:50

LAB FLAG ¹	RETENTION TIME REFERENCE	RRT	RRT QC LIMITS ²
LABELED COMPOUND			
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.013	0.976-1.043
13C-1,2,3,7,8-PECDD	13C-1,2,3,4-TCDD	1.384	1.000-1.567
13C-1,2,3,4,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.986	0.977-1.000
13C-1,2,3,6,7,8-HXCDD	13C-1,2,3,7,8,9-HXCDD	0.990	0.981-1.003
13C-1,2,3,4,6,7,8-HPCDD	13C-1,2,3,7,8,9-HXCDD	1.095	1.086-1.110
13C-OCDD	13C-1,2,3,7,8,9-HXCDD	1.179	1.032-1.311
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	0.966	0.923-1.103
13C-1,2,3,7,8-PECDF	13C-1,2,3,4-TCDD	1.283	1.000-1.425
13C-2,3,4,7,8-PECDF	13C-1,2,3,4-TCDD	1.351	1.011-1.526
13C-1,2,3,4,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.954	0.944-0.970
13C-1,2,3,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.957	0.949-0.975
13C-1,2,3,7,8,9-HXCDF	13C-1,2,3,7,8,9-HXCDD	1.005	0.977-1.047
13C-2,3,4,6,7,8-HXCDF	13C-1,2,3,7,8,9-HXCDD	0.980	0.959-1.021
13C-1,2,3,4,6,7,8-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.062	1.043-1.085
13C-1,2,3,4,7,8,9-HPCDF	13C-1,2,3,7,8,9-HXCDD	1.105	1.057-1.151
CLEANUP STANDARD			
37CL-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	1.001	0.989-1.052

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

(2) Contract-required limits for Relative Retention Times (RRT) as specified in Table 2, Method 1613.

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

Signed: _____ **Kristen Bowes** _____For Axys Internal Use Only [XSL Template: Form6B.xsl; Created: 14-Feb-2019 10:46:40; Application: XMLTransformer-1.17.6;
Report Filename: 1613_DIOXINS_DX9M_014AS47_Form6B_SJ2509598.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	03-Dec-2018
RT Window Data Filename:	DX9M_014A S: 2	Analysis Date:	04-Feb-2019
DB-5 IS Data Filename:	DX9M_014A S: 2	Analysis Date:	04-Feb-2019
DB-225 IS Data Filename:		Analysis Date:	
		Time:	20:12:43
		Time:	20:12:43
		Time:	

DB5 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	23:05	1,3,6,8-TCDF (F)	21:33
1,2,8,9-TCDD (L)	28:28	1,2,8,9-TCDF (L)	28:19
1,2,4,7,9-PECDD (F)	32:10	1,3,4,6,8-PECDF (F)	29:00
1,2,3,8,9-PECDD (L)	37:09	1,2,3,8,9-PECDF (L)	37:12
1,2,4,6,7,9-HXCDD (F)	40:07	1,2,3,4,6,8-HXCDF (F)	39:04
1,2,3,4,6,7-HXCDD (L)	42:46	1,2,3,4,8,9-HXCDF (L)	43:06
1,2,3,4,6,7,9-HPCDD (F)	45:53	1,2,3,4,6,7,8-HPCDF (F)	45:24
1,2,3,4,6,7,8-HPCDD (L)	46:47	1,2,3,4,7,8,9-HPCDF (L)	47:13

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	0	1,2,3,8-TCDD 2,3,7,8-TCDD	N/A
1,2,7,8-TCDD 1,4,7,8-TCDD	0	2,3,4,7-TCDF 2,3,7,8-TCDF	N/A
1,4,7,8-TCDD 1,2,3,7-TCDD	0	2,3,7,8-TCDF 1,2,3,9-TCDF	N/A
1,2,3,7-TCDD 1,2,3,8-TCDD	DB-5 column; co-elute as per Figure 6 in Method		

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

Signed: Kristen Bowes

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Report Filename: 1613_DIOXINS__DX9M_014AS2_Form5_SJ2509066.html; Workgroup: WG66477; Design ID: 3359]

SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	03-Dec-2018
RT Window Data Filename:	DX9M_014A S: 12	Analysis Date:	05-Feb-2019
DB-5 IS Data Filename:	DX9M_014A S: 12	Analysis Date:	05-Feb-2019
DB-225 IS Data Filename:		Analysis Date:	
		Time:	05:27:03
		Time:	05:27:03
		Time:	

DB5 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	22:59	1,3,6,8-TCDF (F)	21:28
1,2,8,9-TCDD (L)	28:21	1,2,8,9-TCDF (L)	28:11
1,2,4,7,9-PECDD (F)	32:02	1,3,4,6,8-PECDF (F)	28:51
1,2,3,8,9-PECDD (L)	37:04	1,2,3,8,9-PECDF (L)	37:08
1,2,4,6,7,9-HXCDD (F)	40:03	1,2,3,4,6,8-HXCDF (F)	39:00
1,2,3,4,6,7-HXCDD (L)	42:43	1,2,3,4,8,9-HXCDF (L)	43:03
1,2,3,4,6,7,9-HPCDD (F)	45:50	1,2,3,4,6,7,8-HPCDF (F)	45:21
1,2,3,4,6,7,8-HPCDD (L)	46:45	1,2,3,4,7,8,9-HPCDF (L)	47:10

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	0	1,2,3,8-TCDD 2,3,7,8-TCDD	21.6
1,2,7,8-TCDD 1,4,7,8-TCDD	0	2,3,4,7-TCDF 2,3,7,8-TCDF	N/A
1,4,7,8-TCDD 1,2,3,7-TCDD	0	2,3,7,8-TCDF 1,2,3,9-TCDF	N/A
1,2,3,7-TCDD 1,2,3,8-TCDD	DB-5 column; co-elute as per Figure 6 in Method		

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

Signed: Kristen Bowes

SGS AXYS METHOD MLA-017 Rev 20

Form 5

PCDD/PCDF RT WINDOW AND ISOMER SPECIFICITY STANDARDS

SGS AXYS ANALYTICAL SERVICES

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

Instrument ID:	HR GC/MS	Initial Calibration Date:	03-Dec-2018
RT Window Data Filename:	DX9M_014A S: 42	Analysis Date:	06-Feb-2019
DB-5 IS Data Filename:	DX9M_014A S: 42	Analysis Date:	06-Feb-2019
DB-225 IS Data Filename:		Analysis Date:	
		Time:	09:26:28
		Time:	09:26:28
		Time:	

DB5 RT WINDOW DEFINING STANDARDS RESULT

ISOMERS	ABSOLUTE RT	ISOMERS	ABSOLUTE RT
1,3,6,8-TCDD (F)	22:55	1,3,6,8-TCDF (F)	21:24
1,2,8,9-TCDD (L)	28:15	1,2,8,9-TCDF (L)	28:05
1,2,4,7,9-PECDD (F)	31:55	1,3,4,6,8-PECDF (F)	28:47
1,2,3,8,9-PECDD (L)	37:00	1,2,3,8,9-PECDF (L)	37:03
1,2,4,6,7,9-HXCDD (F)	39:59	1,2,3,4,6,8-HXCDF (F)	38:56
1,2,3,4,6,7-HXCDD (L)	42:39	1,2,3,4,8,9-HXCDF (L)	42:59
1,2,3,4,6,7,9-HPCDD (F)	45:46	1,2,3,4,6,7,8-HPCDF (F)	45:19
1,2,3,4,6,7,8-HPCDD (L)	46:42	1,2,3,4,7,8,9-HPCDF (L)	47:06

(F) = First eluting isomer (DB-5); (L) = Last eluting isomer (DB-5)

ISOMER SPECIFICITY (IS) TEST STANDARDS RESULT

Isomers	% Valley Height Between Compared Peaks	Isomers	% Valley Height Between Compared Peaks
1,2,3,4-TCDD 1,2,7,8-TCDD	0	1,2,3,8-TCDD 2,3,7,8-TCDD	16.9
1,2,7,8-TCDD 1,4,7,8-TCDD	0	2,3,4,7-TCDF 2,3,7,8-TCDF	N/A
1,4,7,8-TCDD 1,2,3,7-TCDD	0	2,3,7,8-TCDF 1,2,3,9-TCDF	N/A
1,2,3,7-TCDD 1,2,3,8-TCDD	DB-5 column; co-elute as per Figure 6 in Method		

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

Signed: Kristen Bowes

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Report Filename: 1613_DIOXINS__DX9M_014AS42_Form5_SJ2509599.html; Workgroup: WG66477; Design ID: 3359]

Accreditation Scope																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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																				CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID																																																
	4,4'-DDT	EPA 1699	MLA-028			Y																													Y																
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y																Y																
		SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y															Y															
		EPA 625	MLA-007																																		Y														
		EPA 8270	MLA-007				Y				Y	Y	Y	Y	Y	Y																																			
		EPA 1699	MLA-028				Y												Y																		Y														
	Aldrin	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y									Y															
		SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y															
		EPA 625	MLA-007																																		Y														
		EPA 8270	MLA-007				Y				Y	Y	Y	Y	Y	Y																				Y															
		EPA 1699	MLA-028				Y												Y																		Y														
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y									Y															
	Alpha-HCH	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y															
		EPA 625	MLA-007																																		Y														
		EPA 8270	MLA-007				Y				Y	Y	Y	Y	Y	Y																																			
		EPA 1699	MLA-028				Y												Y																		Y														
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																
		SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y															
	Beta-HCH	EPA 625	MLA-007																																		Y														
		EPA 8270	MLA-007				Y				Y	Y	Y	Y	Y	Y																																			
		EPA 1699	MLA-028				Y												Y																		Y														
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																
		SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y															
	Chlordane, technical	EPA 8270	MLA-007				Y				Y	Y		Y	Y																					Y															
		SGS AXYS MLA-007	MLA-007				Y												Y																		Y														
		EPA 1699	MLA-028				Y												Y																		Y														
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																
	cis-Chlordane (alpha-Chlordane)	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y															
EPA 8270		MLA-007				Y				Y			Y	Y	Y																				Y																
EPA 1699		MLA-028				Y												Y																		Y															
SGS AXYS MLA-028		MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																	
cis-Nonachlor	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y																
	EPA 8270	MLA-007				Y								Y		Y																				Y															
	EPA 1699	MLA-028				Y												Y																		Y															
	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																	
Delta-HCH	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y																
	EPA 608	MLA-007																																			Y														
	EPA 8081	MLA-007				Y				Y	Y	Y	Y	Y	Y																																				
	EPA 1699	MLA-028				Y												Y																		Y															
	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																	
Dieldrin	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y																
	EPA 608	MLA-007																																			Y														
	EPA 8081	MLA-007				Y				Y	Y	Y	Y	Y	Y																																				
	EPA 1699	MLA-028				Y												Y																		Y															
	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																	
Endosulphan I	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y																
	EPA 608	MLA-007																																			Y														
	EPA 8081	MLA-007				Y				Y	Y	Y	Y	Y	Y																				Y																
	EPA 1699	MLA-028				Y												Y																		Y															
	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y		Y				Y								Y																	
Endosulphan II	SGS AXYS MLA-007	MLA-007	Y	Y	Y													Y		Y		Y				Y									Y																
	EPA 608	MLA-007																																			Y														
	EPA 8081	MLA-007				Y				Y	Y	Y	Y	Y	Y																																				

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																CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID																																											
	Endosulphan sulphate	EPA 1699	MLA-028				Y																												Y											
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y									Y							Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																				Y								Y		Y										
		EPA 608	MLA-007																																Y		Y									
		EPA 8081	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y																			Y									Y											
	Endrin	SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y				Y								Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																			Y									Y		Y										
		EPA 608	MLA-007																															Y		Y										
		EPA 8081	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y																			Y									Y											
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y				Y								Y		Y											
	Endrin aldehyde	SGS AXYS MLA-007	MLA-007	Y	Y	Y																			Y									Y		Y										
		EPA 608	MLA-007																															Y		Y										
		EPA 8081	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y																												Y											
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y				Y								Y		Y											
		SGS AXYS MLA-007	MLA-007				Y																		Y										Y											
	Endrin ketone	EPA 8081	MLA-007				Y			Y		Y	Y	Y																																
		EPA 1699	MLA-028				Y								Y																				Y											
		SGS AXYS MLA-028	MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																		Y											Y											
	Gamma-HCH (Lindane)	EPA 625	MLA-007																															Y		Y										
		EPA 8270	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y																													Y										
		SGS AXYS MLA-028	MLA-028	Y	Y	Y									Y		Y		Y		Y				Y								Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																		Y											Y											
		Heptachlor	EPA 625	MLA-007																															Y		Y									
	EPA 8270		MLA-007				Y			Y	Y	Y	Y	Y	Y																															
	EPA 1699		MLA-028				Y																												Y											
	SGS AXYS MLA-028		MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
	SGS AXYS MLA-007		MLA-007	Y	Y	Y																		Y											Y											
	Heptachlor epoxide		EPA 608	MLA-007																															Y		Y									
		EPA 8081	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y								Y																			Y		Y										
		SGS AXYS MLA-028	MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																		Y											Y											
		Hexachlorobenzene	EPA 1625	MLA-007																															Y		Y									
	EPA 8270		MLA-007				Y			Y	Y	Y	Y	Y	Y																															
	EPA 1699		MLA-028				Y																												Y											
	SGS AXYS MLA-028		MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
	SGS AXYS MLA-007		MLA-007	Y	Y	Y																		Y											Y											
	Methoxychlor		EPA 608	MLA-007																															Y		Y									
		EPA 8081	MLA-007				Y			Y	Y	Y	Y	Y	Y																															
		EPA 1699	MLA-028				Y								Y																				Y											
		SGS AXYS MLA-028	MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
		SGS AXYS MLA-007	MLA-007	Y	Y	Y																		Y											Y											
		Mirex	EPA 8270	MLA-007				Y			Y		Y	Y	Y																				Y		Y									
	EPA 1699		MLA-028				Y																											Y		Y										
	SGS AXYS MLA-028		MLA-028	Y	Y	Y								Y		Y		Y		Y				Y									Y		Y											
	SGS AXYS MLA-007		MLA-007	Y	Y	Y																		Y											Y											

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				Serum	Solids											Tissue						Urine	Water	Water, Non-Potable										
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	Oxychlordane	SGS AXYS MLA-007	MLA-007	Y	Y	Y								Y		Y							Y	Y	Y							Y		
		EPA 8270	MLA-007			Y						Y													Y							Y		
		EPA 1699	MLA-028			Y							Y												Y							Y		
		SGS AXYS MLA-028	MLA-028	Y	Y	Y						Y	Y		Y		Y						Y	Y				Y			Y			
		SGS AXYS MLA-007	MLA-007	Y	Y	Y											Y						Y	Y							Y			
	Toxaphene	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y										
		EPA 8270	MLA-007			Y						Y	Y	Y	Y										Y		Y				Y			
	trans-Chlordane (gamma-Chlordane)	EPA 8270	MLA-007				Y				Y		Y	Y	Y											Y		Y			Y			
		EPA 1699	MLA-028				Y								Y										Y									
		SGS AXYS MLA-028	MLA-028	Y	Y	Y						Y		Y		Y		Y					Y	Y				Y			Y			
		SGS AXYS MLA-007	MLA-007	Y	Y	Y									Y		Y						Y	Y							Y			
	trans-Nonachlor	EPA 8270	MLA-007				Y					Y		Y											Y							Y		
		EPA 1699	MLA-028				Y							Y											Y							Y		
		SGS AXYS MLA-028	MLA-028	Y	Y	Y						Y	Y		Y		Y						Y	Y				Y			Y			
SGS AXYS MLA-007		MLA-007	Y	Y	Y									Y		Y							Y				Y			Y				
PAH	1,2,6-Trimethylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																	Y												
	1,2-Dimethylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1,4,6,7-Tetramethylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1,7-Dimethylfluorene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1,7-Dimethylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1,8-Dimethylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1-Methylchrysene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1-Methylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	1-Methylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2,3,5-Trimethylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2,3,6-Trimethylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2,4-Dimethyldibenzothiophene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2,6-Dimethylnaphthalene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2,6-Dimethylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2-Methylantracene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2-Methyldibenzothiophene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2-Methylfluorene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	2-Methylnaphthalene	EPA 1625	MLA-021																														Y	
		EPA 8270	MLA-021				Y				Y				Y										Y									
		SGS AXYS MLA-021	MLA-021		Y	Y									Y								Y									Y		
	2-Methylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	3,6-Dimethylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																		Y											
	3-Methyldibenzothiophene	SGS AXYS MLA-021	MLA-021		Y																			Y										
	3-Methylfluoranthene/ Benzo(a)fluorene	SGS AXYS MLA-021	MLA-021		Y																			Y										
	3-Methylphenanthrene	SGS AXYS MLA-021	MLA-021		Y																			Y										
	5,9-Dimethylchrysene	SGS AXYS MLA-021	MLA-021		Y																			Y										
	5/6-Methylchrysenes	SGS AXYS MLA-021	MLA-021		Y																			Y										
	7-Methylbenzo(a)pyrene	SGS AXYS MLA-021	MLA-021		Y																			Y										
	9/4-Methylphenanthrenes	SGS AXYS MLA-021	MLA-021		Y																			Y										
	Acenaphthene	EPA 1625	MLA-021																						Y		Y	Y				Y		
		EPA 8270	MLA-021				Y				Y	Y		Y	Y																			
		SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y						Y		Y						Y			
	Acenaphthylene	EPA 1625	MLA-021																						Y		Y	Y				Y		
		EPA 8270	MLA-021				Y				Y	Y		Y	Y																			
		SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y						Y		Y						Y			

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Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **														
	Dibenz[a,h]anthracene	EPA 8270	MLA-021			Y				Y	Y		Y	Y		Y									Y								Y															
		SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y							Y		Y							Y															
		EPA 1625	MLA-021																							Y		Y	Y				Y															
		EPA 8270	MLA-021			Y				Y	Y			Y	Y																																	
	SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y							Y		Y							Y																
	Dibenzothiophene	SGS AXYS MLA-021	MLA-021		Y																			Y																								
	Fluoranthene	EPA 1625	MLA-021																							Y		Y	Y				Y															
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y						Y		Y								Y																
	Fluorene	EPA 1625	MLA-021																						Y			Y	Y				Y															
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y									Y		Y						Y		Y									Y															
	Indeno[1,2,3-cd]pyrene	EPA 1625	MLA-021																							Y			Y	Y				Y														
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y										Y		Y						Y		Y									Y														
	Naphthalene	EPA 1625	MLA-021																							Y			Y	Y				Y														
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y										Y		Y							Y		Y								Y														
	Perylene	SGS AXYS MLA-021	MLA-021		Y																				Y																							
	Phenanthrene	EPA 1625	MLA-021																							Y			Y	Y				Y														
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y										Y		Y							Y		Y								Y														
	Pyrene	EPA 1625	MLA-021																							Y			Y	Y				Y														
	EPA 8270	MLA-021			Y				Y	Y			Y	Y																																		
	SGS AXYS MLA-021	MLA-021		Y	Y										Y		Y							Y		Y								Y														
	Retene	SGS AXYS MLA-021	MLA-021		Y																				Y																							
	PBDPE	BDE 10 2,6-dibromodiphenylether	EPA 1614	MLA-033											Y																		Y															
			SGS AXYS MLA-033	MLA-033		Y	Y											Y							Y																							
		BDE 100 2,2',4,4',6-pentabromodiphenylether	EPA 1614	MLA-033											Y																		Y															
			SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																							
		BDE 105 2,3,3',4,4'-pentabromodiphenylether	EPA 1614	MLA-033											Y																		Y															
SGS AXYS MLA-033			MLA-033		Y	Y												Y						Y																								
BDE 11 3,3'-dibromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 116 2,3,4,5,6-pentabromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 119 2,3',4,4',6-pentabromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 12 3,4-dibromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 126 3,3',4,4',5-pentabromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 13 3,4'-dibromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 140 2,2',3,4,4',6'-hexabromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 15 4,4'-dibromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								
BDE 153 2,2',4,4',5,5'-hexabromodiphenylether		EPA 1614	MLA-033											Y																		Y																
		SGS AXYS MLA-033	MLA-033		Y	Y												Y						Y																								

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Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **																																									
		SGS AXYS MLA-010	MLA-010	Y	Y									Y		Y					Y	Y	Y	Y								Y																																											
	PCB 101/90/89	EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-007	MLA-007		Y											Y							Y																																																				
	PCB 102 2,2',4,5,6'-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 103 2,2',4,5',6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 104 2,2',4,6,6'-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 105 2,3,3',4,4'-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y			Y		Y		Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 105/127	EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-007	MLA-007		Y											Y							Y																																																				
	PCB 106 2,3,3',4,5-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 107 2,3,3',4',5-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y			Y		Y		Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 107/109	EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-007	MLA-007		Y											Y							Y			Y																																																	
	PCB 108 2,3,3',4,5'-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 109 2,3,3',4,6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y			Y		Y		Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 11 3,3'-Dichlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 110 2,3,3',4',6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
		SGS AXYS MLA-007	MLA-007		Y											Y							Y			Y																																																	
	PCB 111 2,3,3',5,5'-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 111/117	EPA 8270	MLA-007									Y																																																															
	PCB 112 2,3,3',5,6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 113 2,3,3',5',6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 114 2,3,4,4',5-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y		Y	Y			Y	Y																																									
		EPA 8270	MLA-007									Y																																																															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 115 2,3,4,4',6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y		Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 116 2,3,4,5,6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										
	PCB 117 2,3,4',5,6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y			Y	Y																																									
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y																																										

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SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																		California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **		California DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025		CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **													
		SGS AXYS MLA-007	MLA-007		Y											Y						Y	Y																								
	PCB 132 2,2',3,3',4,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 132/168	EPA 8270	MLA-007									Y																																			
	PCB 133 2,2',3,3',5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 134 2,2',3,3',5,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y			Y	Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 134/143	EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-007	MLA-007		Y											Y								Y																							
	PCB 135 2,2',3,3',5,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 136 2,2',3,3',6,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
		SGS AXYS MLA-007	MLA-007		Y											Y						Y																									
	PCB 137 2,2',3,4,4',5-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
		SGS AXYS MLA-007	MLA-007		Y											Y						Y																									
	PCB 138 2,2',3,4,4',5'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
		SGS AXYS MLA-901	MLA-901	Y																																											
	PCB 138/163/164	EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-007	MLA-007		Y											Y																															
	PCB 139 2,2',3,4,4',6-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 14 3,5-Dichlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y					Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y									Y															
	PCB 140 2,2',3,4,4',6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 141 2,2',3,4,5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 142 2,2',3,4,5,6-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 143 2,2',3,4,5,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 144 2,2',3,4,5',6-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 144/135	EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-007	MLA-007		Y											Y								Y																							
	PCB 145 2,2',3,4,6,6'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y				Y		Y	Y										Y														
	PCB 146 2,2',3,4',5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y															
		EPA 8270	MLA-007									Y																																			

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SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41														Serum	Solids											Tissue		Urine	Water	Water, Non-Potable									
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **					
	PCB 159 2,3,3',4,5,5'-Hexachlorobiphenyl	SGS AXYS MLA-007	MLA-007		Y											Y					Y		Y		Y	Y	Y	Y	Y		Y	Y							
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y		Y	Y							
		EPA 8270	MLA-007									Y																											
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y									Y						
	PCB 16 2,2',3-Trichlorobiphenyl	SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y													
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
	PCB 16/32	EPA 8270	MLA-007									Y																											
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y													
	PCB 160 2,3,3',4,5,6-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y													
	PCB 161 2,3,3',4,5',6-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y					
		EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y													
	PCB 162 2,3,3',4',5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y					
		EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-010	MLA-010	Y	Y	Y										Y		Y			Y		Y		Y								Y						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y													
	PCB 163 2,3,3',4',5,6-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
	PCB 164 2,3,3',4',5',6-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
	PCB 165 2,3,3',5,5',6-Hexachlorobiphenyl	EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y										Y		Y			Y		Y		Y		Y						Y						
	PCB 166 2,3,4,4',5,6-Hexachlorobiphenyl	EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y										Y		Y			Y		Y		Y		Y						Y						
	PCB 167 2,3',4,4',5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-010	MLA-010	Y	Y	Y										Y		Y			Y		Y		Y								Y						
		SGS AXYS MLA-007	MLA-007		Y																			Y		Y													
	PCB 168 2,3',4,4',5',6-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y						
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		EPA 8270	MLA-007										Y																										
		SGS AXYS MLA-007	MLA-007		Y																			Y		Y													
	PCB 169 3,3',4,4',5,5'-Hexachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y					
		EPA 8270	MLA-007										Y																										
SGS AXYS MLA-010		MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y							
SGS AXYS MLA-007		MLA-007		Y																			Y		Y														
EPA 1668		MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y						
PCB 170 2,2',3,3',4,4',5-Heptachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y		Y		Y							Y							
	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y				Y		Y		Y	Y	Y		Y	Y						
	SGS AXYS MLA-901	MLA-901	Y																																				
	EPA 8270	MLA-007										Y																											
	SGS AXYS MLA-007	MLA-007		Y																			Y		Y														
PCB 171 2,2',3,3',4,4',6-Heptachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y						
	EPA 8270	MLA-007										Y																											
	SGS AXYS MLA-010	MLA-010	Y	Y	Y										Y		Y			Y		Y		Y		Y						Y							

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SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																																		
				Serum	Solids										Tissue					Urine	Water	Water, Non-Potable												
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
		SGS AXYS MLA-007	MLA-007		Y									Y		Y					Y	Y		Y	Y	Y	Y	Y	Y		Y	Y		
	PCB 172 2,2',3,3',4,5,5'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y				Y	Y	Y	Y	Y	Y		Y	Y		
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y			Y						Y		
	PCB 172/192	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y								Y									
	PCB 173 2,2',3,3',4,5,6-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y						Y					Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
	PCB 174 2,2',3,3',4,5,6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y	Y						Y		
	PCB 174/181	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 175 2,2',3,3',4,5',6-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y	Y						Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 176 2,2',3,3',4,6,6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y	Y						Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 177 2,2',3,3',4,5',6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 178 2,2',3,3',5,5',6-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y	Y						Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 179 2,2',3,3',5,6,6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y	Y						Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 18 2,2',5-Trichlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 180 2,2',3,4,4',5,5'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
		SGS AXYS MLA-901	MLA-901	Y																														
	PCB 181 2,2',3,4,4',5,6-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
	PCB 182 2,2',3,4,4',5,6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
	PCB 183 2,2',3,4,4',5',6-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y			Y		Y	Y		Y							Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y	Y									
	PCB 184 2,2',3,4,4',6,6'-Heptachlorobiphenyl	EPA 1668	MLA-010			Y		Y	Y	Y	Y	Y	Y	Y	Y					Y				Y	Y	Y	Y	Y	Y		Y	Y		

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SGS AXYS Analytical Services Ltd.
file ref.: ACC-101 Rev. 41

ACC-103, Rev. 44, 17-Jan-2019

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SGS AXYS Analytical Services Ltd.
file ref.: ACC-101 Rev. 41

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y					Y		Y	Y									Y	
	PCB 49/43	EPA 8270	MLA-007								Y																							
		SGS AXYS MLA-007	MLA-007		Y												Y							Y										
	PCB 5 2,3-Dichlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y	Y								Y	
	PCB 50 2,2',4,6-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y							Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y									Y	
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y								
	PCB 51 2,2',4,6'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y							Y	
	PCB 52 2,2',5,5'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y		Y	Y	Y			Y	
	PCB 52/73	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y								
	PCB 53 2,2',5,6'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 54 2,2',6,6'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 55 2,3,3',4-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 56 2,3,3',4'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 56/60	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y		Y								
	PCB 57 2,3,3',5-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 58 2,3,3',5'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y			Y						Y		Y				Y		Y	Y		Y								Y
	PCB 59 2,3,3',6-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 6 2,3'-Dichlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 60 2,3,4,4'-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 61 2,3,4,5-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 62 2,3,4,6-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y
	PCB 62/65	EPA 8270	MLA-007									Y																						
	PCB 63 2,3,4',5-Tetrachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y	Y						Y				Y		Y	Y	Y	Y		Y	Y	
	EPA 8270	MLA-007									Y																							
	SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y		Y								Y	

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Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	PCB 64 2,3,4',6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y				Y		
	PCB 65 2,3,5,6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y	Y			Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y				Y		
	PCB 66 2,3',4,4'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y	Y			Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y				Y		
	PCB 66/80	EPA 8270	MLA-007										Y								Y				Y	Y	Y						Y	
		SGS AXYS MLA-007	MLA-007		Y													Y						Y										
	PCB 67 2,3',4,5-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 68 2,3',4,5'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y	Y			Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 69 2,3',4,6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y	Y			Y	Y
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 7 2,4-Dichlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 7/9	EPA 8270	MLA-007										Y																					
		EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
	PCB 70 2,3',4',5-Tetrachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		EPA 8270	MLA-007										Y																					
	PCB 70/76	EPA 8270	MLA-007										Y								Y													
		SGS AXYS MLA-007	MLA-007		Y													Y						Y										
	PCB 71 2,3',4',6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 72 2,3',5,5'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 73 2,3',5',6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 74 2,4,4',5-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		SGS AXYS MLA-901	MLA-901	Y																														
		EPA 8270	MLA-007										Y																					
	PCB 74/61	EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-007	MLA-007		Y													Y						Y										
	PCB 75 2,4,4',6-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 76 2,3',4',5'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y				Y	Y	Y	Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
	PCB 77 3,3',4,4'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y	
		SGS AXYS MLA-007	MLA-007		Y													Y						Y										
PCB 78 3,3',4,5-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y	
	EPA 8270	MLA-007										Y																						
	SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y		
PCB 79 3,3',4,5'-Tetrachlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y	
	EPA 8270	MLA-007										Y																						
	SGS AXYS MLA-010	MLA-010	Y	Y	Y								Y		Y		Y					Y	Y	Y	Y	Y	Y					Y		
PCB 8 2,4'-Dichlorobiphenyl	EPA 1668	MLA-010				Y		Y	Y	Y	Y	Y	Y							Y					Y	Y	Y	Y	Y			Y	Y	

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SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																																		
				Serum	Solids									Tissue					Urine	Water	Water, Non-Potable													
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	PCB 95 2,2',3,5',6-Pentachlorobiphenyl	EPA 1668	MLA-010			Y			Y	Y	Y	Y	Y	Y		Y					Y			Y		Y		Y	Y			Y	Y	
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y	Y			Y					Y		
	PCB 95/93	EPA 8270	MLA-007									Y					Y																	
		SGS AXYS MLA-007	MLA-007		Y												Y							Y										
	PCB 96 2,2',3,6,6'-Pentachlorobiphenyl	EPA 1668	MLA-010				Y			Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y		Y							Y		
	PCB 97 2,2',3,4',5'-Pentachlorobiphenyl	EPA 1668	MLA-010				Y			Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y		Y		Y					Y		
	PCB 97/86	EPA 8270	MLA-007									Y																						
		SGS AXYS MLA-007	MLA-007		Y												Y							Y										
	PCB 98 2,2',3,4',6'-Pentachlorobiphenyl	EPA 1668	MLA-010				Y			Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y		Y		Y					Y		
	PCB 98/102	EPA 8270	MLA-007									Y																						
		EPA 1668	MLA-010				Y			Y	Y	Y	Y	Y	Y						Y					Y		Y	Y	Y	Y		Y	Y
	PCB 99 2,2',4,4',5-Pentachlorobiphenyl	EPA 8270	MLA-007										Y																					
		EPA 1668	MLA-010				Y			Y	Y	Y	Y	Y	Y											Y		Y	Y	Y	Y		Y	Y
		EPA 8270	MLA-007										Y																					
		SGS AXYS MLA-010	MLA-010	Y	Y	Y									Y		Y				Y		Y		Y		Y					Y		
		SGS AXYS MLA-007	MLA-007		Y												Y							Y										
	SGS AXYS MLA-901	MLA-901	Y																															
	PCB congeners, total	EPA 1668	MLA-010							Y																			Y					
	Sum - Dichlorobiphenyls (BZ-12+ BZ-13)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Heptachlorobiphenyls (BZ-171 + BZ-173)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Heptachlorobiphenyls (BZ-180 + BZ-193)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Heptachlorobiphenyls (BZ-183 + BZ-185)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-128 + BZ-166)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-129 + BZ-138 + BZ-160 + BZ-163)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-134 + BZ-143)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-135 + BZ-151 + BZ-154)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-139 + BZ-140)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-147 + BZ-149)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-153 + BZ-168)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Hexachlorobiphenyls (BZ-156 + BZ-157)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Pentachlorobiphenyls (BZ-107 + BZ-124)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
	Sum - Pentachlorobiphenyls (BZ-108 + BZ-124)	EPA 1668	MLA-010												Y						Y												Y	
		SGS AXYS MLA-010	MLA-010												Y						Y												Y	
Sum - Pentachlorobiphenyls (BZ-110 + BZ-115)	EPA 1668	MLA-010												Y						Y												Y		
	SGS AXYS MLA-010	MLA-010												Y						Y												Y		

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Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-101 Rev. 41

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **			
	1,2,3,7,8-PeCDD	EPA 8290	MLA-017				Y		Y	Y	Y		Y	Y			Y		Y	Y	Y		Y		Y		Y		Y				Y				
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y							Y					
		EPA 1613	MLA-017									Y	Y							Y	Y					Y		Y		Y	Y	Y	Y				
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y				Y			
	1,2,3,7,8-PeCDF	SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y		Y		
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y				Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	2,3,4,6,7,8-HxCDF	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y		Y		
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y	Y	Y	Y		Y		
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	2,3,4,7,8-PeCDF	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y		Y		
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y				Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	2,3,7,8-TCDD	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y		Y		
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y	Y	Y	Y		Y		
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	2,3,7,8-TCDF	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y		Y		
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y				Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	OCDD	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y	Y		Y	
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y	Y			Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	OCDF	EPA 1613	MLA-017									Y	Y							Y						Y		Y		Y	Y	Y	Y	Y		Y	
		EPA 8290	MLA-017				Y			Y	Y	Y		Y	Y			Y		Y	Y	Y				Y		Y		Y	Y			Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017	Y	Y		Y								Y		Y	Y			Y		Y		Y									Y			
	Total HpCDD	EPA 1613	MLA-017										Y							Y						Y							Y		Y		
		EPA 8290	MLA-017				Y			Y		Y		Y	Y			Y		Y	Y	Y				Y				Y					Y		
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
	Total HpCDF	EPA 1613	MLA-017										Y							Y						Y							Y		Y		
		EPA 8290	MLA-017				Y			Y		Y		Y	Y			Y		Y	Y	Y				Y				Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
	Total HxCDD	EPA 1613	MLA-017										Y							Y						Y							Y		Y		
		EPA 8290	MLA-017				Y			Y		Y		Y	Y			Y		Y	Y	Y				Y				Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
	Total HxCDF	EPA 1613	MLA-017										Y							Y						Y							Y		Y		
		EPA 8290	MLA-017				Y			Y		Y		Y	Y			Y		Y	Y	Y				Y				Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
		SGS AXYS MLA-017	MLA-017				Y								Y		Y	Y			Y		Y		Y									Y			
Total PCDD	EPA 1613	MLA-017										Y							Y														Y				
	EPA 8290	MLA-017										Y							Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				
Total PCDD+PCDF	EPA 1613	MLA-017										Y							Y														Y				
	EPA 8290	MLA-017										Y							Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				
Total PCDF	EPA 1613	MLA-017										Y							Y														Y				
	EPA 8290	MLA-017										Y							Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				
	SGS AXYS MLA-017	MLA-017												Y					Y														Y				

Accreditation Scope																																			
SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																					Serum	Solids	Tissue	Urine	Water	Water, Non-Potable									
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **	
	Total PeCDF	EPA 1613	MLA-017											Y							Y				Y					Y		Y			
		EPA 8290	MLA-017				Y		Y		Y		Y	Y				Y		Y	Y	Y				Y		Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y			Y			Y				Y								Y		
	Total TCDD	EPA 1613	MLA-017												Y						Y				Y							Y			
		EPA 8290	MLA-017				Y		Y		Y		Y	Y				Y		Y	Y	Y				Y		Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y			Y			Y				Y								Y		
	Total TCDF	EPA 1613	MLA-017												Y						Y				Y						Y		Y		
		EPA 8290	MLA-017				Y		Y		Y		Y	Y				Y		Y	Y	Y				Y		Y				Y			
		SGS AXYS MLA-017	MLA-017				Y								Y			Y			Y				Y								Y		
PFAS	4:2 Fluorotelomersulfonate (4:2 FTS)	SGS AXYS MLA-081	MLA-081																														Y		
		SGS AXYS MLA-089	MLA-089												Y																				
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y			Y	Y		
	6:2 Fluorotelomersulfonate (6:2 FTS)	SGS AXYS MLA-081	MLA-081																															Y	
		SGS AXYS MLA-089	MLA-089												Y																				
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y			Y	Y		
	8:2 Fluorotelomersulfonate (8:2 FTS)	SGS AXYS MLA-081	MLA-081																															Y	
		SGS AXYS MLA-089	MLA-089												Y																				
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y			Y	Y		
	N-Ethylperfluorooctanesulfonamide (N-EtFOSA)	SGS AXYS MLA-110	MLA-110		Y						Y													Y					Y						
	N-Ethylperfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	SGS AXYS MLA-110	MLA-110		Y		Y	Y			Y		Y	Y										Y		Y	Y		Y			Y	Y		
	N-Ethylperfluorooctanesulfonamidoethanol (N-EtFOSE)	SGS AXYS MLA-110	MLA-110		Y							Y												Y					Y						
	N-Methylperfluorooctanesulfonamide (N-MeFOSA)	SGS AXYS MLA-110	MLA-110		Y							Y												Y					Y						
	N-Methylperfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y			Y	Y		
	N-Methylperfluorooctanesulfonamidoethanol (N-MeFOSE)	SGS AXYS MLA-110	MLA-110		Y								Y											Y					Y						
	Perfluorobutanesulfonate (PFBS)	SGS AXYS MLA-060	MLA-060																					Y		Y	Y	Y					Y		
		SGS AXYS MLA-041	MLA-041		Y		Y	Y	Y						Y																				
		SGS AXYS MLA-043	MLA-043														Y	Y	Y	Y		Y													
		SGS AXYS MLA-042	MLA-042	Y																															
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y			Y	Y		
	Perfluorobutanoate (PFBA)	SGS AXYS MLA-060	MLA-060																					Y		Y	Y	Y					Y		
		SGS AXYS MLA-041	MLA-041		Y		Y	Y	Y						Y																				
		SGS AXYS MLA-043	MLA-043														Y	Y	Y	Y		Y													
		SGS AXYS MLA-042	MLA-042	Y																															
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y				Y	Y	
	Perfluorodecanesulfonate (PFDS)	SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y				Y	Y	
	Perfluorodecanoate (PFDA)	SGS AXYS MLA-060	MLA-060																					Y		Y	Y	Y					Y		
		SGS AXYS MLA-041	MLA-041		Y		Y	Y	Y						Y																				
		SGS AXYS MLA-043	MLA-043														Y	Y	Y	Y		Y													
		SGS AXYS MLA-042	MLA-042	Y																															
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y				Y	Y	
	Perfluorododecanesulfonate (PFDoS)	SGS AXYS MLA-110	MLA-110		Y							Y												Y					Y						
	Perfluorododecanoate (PFDoA)	SGS AXYS MLA-060	MLA-060																					Y		Y	Y	Y					Y		
		SGS AXYS MLA-041	MLA-041		Y		Y	Y	Y						Y																				
		SGS AXYS MLA-043	MLA-043														Y	Y	Y	Y		Y													
		SGS AXYS MLA-042	MLA-042	Y																															
		SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y				Y	Y	
	Perfluoroheptanesulfonate (PFHpS)	SGS AXYS MLA-110	MLA-110		Y		Y	Y				Y		Y	Y									Y		Y	Y		Y				Y	Y	
	Perfluoroheptanoate (PFHpA)	SGS AXYS MLA-060	MLA-060																					Y		Y	Y	Y					Y		
		SGS AXYS MLA-041	MLA-041		Y		Y	Y	Y						Y																				
		SGS AXYS MLA-043	MLA-043														Y	Y	Y	Y		Y													

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SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																																		
				Serum	Solids										Tissue					Urine	Water	Water, Non-Potable												
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	4-Epianhydrochlortetracycline (EACTC)	EPA 1694	MLA-075										Y																		Y			
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	4-Epianhydrotetracycline (EATC)	EPA 1694	MLA-075										Y																		Y			
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	4-Epichlortetracycline (ECTC)	EPA 1694	MLA-075										Y																		Y			
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	4-Epioxytetracycline (EOTC)	EPA 1694	MLA-075										Y																		Y			
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	4-Epitetracycline (ETC)	EPA 1694	MLA-075										Y																		Y			
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Acetaminophen	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Albuterol	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Alprazolam	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Amitriptyline	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Amlodipine	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Amphetamine	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Anhydrochlortetracycline (ACTC)	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Anhydrotetracycline (ATC)	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Atenolol	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Atorvastatin	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Azithromycin	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Benzoyllecgonine	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Benztropine	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Betamethasone	SGS AXYS MLA-075	MLA-075		Y																		Y											
	Bisphenol A	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Caffeine	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Carbadox	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Carbamazepine	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Cefotaxime	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Chlortetracycline (CTC)	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Cimetidine	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Ciprofloxacin	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Clarithromycin	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Clinafloxacin	EPA 1694	MLA-075											Y																		Y		
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Clonidine	SGS AXYS MLA-075	MLA-075		Y																		Y											

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Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum																	Tissue					Urine		Water		Water, Non-Potable			
				CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025
	Cloxacillin	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																	Y											
	Cocaine	SGS AXYS MLA-075	MLA-075		Y																	Y											
	Codeine	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Cotinine	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																	Y											
	DEET (N,N-diethyl-m-toluamide)	SGS AXYS MLA-075	MLA-075		Y																		Y										
	Dehydronifedipine	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																	Y											
	Demeclocycline	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																	Y											
	Desmethyldiltiazem	SGS AXYS MLA-075	MLA-075		Y																		Y										
	Diazepam	SGS AXYS MLA-075	MLA-075		Y																		Y										
	Digoxigenin	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Digoxin	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Diltiazem	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Diphenhydramine	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Doxycycline	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Enalapril	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Enrofloxacin	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
	Erythromycin	SGS AXYS MLA-075	MLA-075		Y																		Y										
	Erythromycin anhydrate	EPA 1694	MLA-075											Y																		Y	
	Flumequine	EPA 1694	MLA-075											Y																		Y	
		SGS AXYS MLA-075	MLA-075		Y																		Y										
Fluocinonide	SGS AXYS MLA-075	MLA-075		Y																		Y											
Fluoxetine	EPA 1694	MLA-075											Y																		Y		
	SGS AXYS MLA-075	MLA-075		Y																		Y											
Fluticasone propionate	SGS AXYS MLA-075	MLA-075		Y																		Y											
Furosemide	SGS AXYS MLA-075	MLA-075		Y																		Y											
Gemfibrozil	EPA 1694	MLA-075											Y																		Y		
	SGS AXYS MLA-075	MLA-075		Y																		Y											
Glipizide	SGS AXYS MLA-075	MLA-075		Y																		Y											
Glyburide	SGS AXYS MLA-075	MLA-075		Y																		Y											
Hydrochlorothiazide	SGS AXYS MLA-075	MLA-075		Y																		Y											
Hydrocodone	SGS AXYS MLA-075	MLA-075		Y																		Y											
Hydrocortisone	SGS AXYS MLA-075	MLA-075		Y																		Y											
Ibuprofen	EPA 1694	MLA-075											Y																		Y		
	SGS AXYS MLA-075	MLA-075		Y																		Y											
Isochlortetracycline (ICTC)	EPA 1694	MLA-075											Y																		Y		
	SGS AXYS MLA-075	MLA-075		Y																		Y											
Lincomycin	EPA 1694	MLA-075											Y																		Y		
	SGS AXYS MLA-075	MLA-075		Y																		Y											

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				Serum	Solids							Tissue					Urine	Water	Water, Non-Potable															
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
		SGS AXYS MLA-075	MLA-075		Y																		Y											
	Sulfamethazine	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Sulfamethizole	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Sulfamethoxazole	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Sulfanilamide	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Sulfathiazole	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Tetracycline (TC)	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Theophylline	SGS AXYS MLA-075	MLA-075		Y																			Y										
	Thiabendazole	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Trenbolone	SGS AXYS MLA-075	MLA-075			Y																		Y										
	Trenbolone acetate	SGS AXYS MLA-075	MLA-075			Y																		Y										
	Triamterene	SGS AXYS MLA-075	MLA-075			Y																		Y										
	Triclocarban	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Triclosan	EPA 1694	MLA-075										Y																			Y		
		SGS AXYS MLA-075	MLA-075		Y																			Y										
	Trimethoprim	EPA 1694	MLA-075										Y																			Y		
	SGS AXYS MLA-075	MLA-075		Y																			Y											
Tylosin	EPA 1694	MLA-075										Y																			Y			
	SGS AXYS MLA-075	MLA-075		Y																			Y											
Valsartan	SGS AXYS MLA-075	MLA-075			Y																		Y											
Verapamil	SGS AXYS MLA-075	MLA-075			Y																		Y											
Virginiamycin	EPA 1694	MLA-075										Y																			Y			
	SGS AXYS MLA-075	MLA-075		Y																			Y											
Warfarin	EPA 1694	MLA-075										Y																			Y			
	SGS AXYS MLA-075	MLA-075		Y																				Y										
Targeted Metabolites	11, 14, 17-eicosatrienoic acid (eicosatrienoic acid)	SGS AXYS MLM-001	MLM-001											Y																				
	11, 14-eicosadienoic acid	SGS AXYS MLM-001	MLM-001											Y																				
	3-hydroxytyrosine	SGS AXYS MLM-001	MLM-001	Y										Y						Y														
	Acetylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Acetylmethionine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Alanine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	alpha-Aminoadipic acid	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Arginine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Asparagine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Aspartate	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Asymmetric dimethylarginine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Butenylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Butyrylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	C22:5 ISOMER 1 (tentatively all-cis-4, 8, 12, 15, 19-docosapentaenoic acid)	SGS AXYS MLM-001	MLM-001											Y																				
	C22:5 ISOMER 2 (all-cis-7,10,13,16,19-docosapentaenoic acid (DPA))	SGS AXYS MLM-001	MLM-001											Y																				
	C22:5 ISOMER 3 (tentatively all-cis-4, 7, 10, 13, 16-docosapentaenoic acid)	SGS AXYS MLM-001	MLM-001											Y																				
	Carnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Carnosine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	chenodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	cholic acid	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Citrulline	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Creatinine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	Decadienylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												
	decanoic acid (capric acid)	SGS AXYS MLM-001	MLM-001											Y																				
	Decanoylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y								Y												

Accreditation Scope																																		
SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																																		
				Serum	Solids							Tissue	Urine	Water	Water, Non-Potable																			
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	Decenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	deoxycholic acid	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	docosahexaenoic acid (DHA)	SGS AXYS MLM-001	MLM-001													Y																		
	docosatetraenoic acid (adrenic acid)	SGS AXYS MLM-001	MLM-001													Y																		
	Dodecanedioylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Dodecanoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Dodecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Dopamine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	eicosapentaenoic acid (EPA)	SGS AXYS MLM-001	MLM-001													Y																		
	Eicosatetraenoic acid (arachidonic acid)	SGS AXYS MLM-001	MLM-001													Y																		
	eicosatrienoic acid (dihomo-γ-linolenic acid)	SGS AXYS MLM-001	MLM-001													Y																		
	Glutaconylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y							Y											
	Glutamate	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Glutamine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Glutaryl carnitine (Hydroxyhexanoylcarnitine)	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Glycine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	glycochenodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	glycocholic acid	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	glycodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hexadecadienylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	hexadecanoic acid (palmitic acid)	SGS AXYS MLM-001	MLM-001													Y																		
	Hexadecanoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	hexadecenoic acid (palmitoleic acid)	SGS AXYS MLM-001	MLM-001													Y																		
	Hexadecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hexanoylcarnitine (Fumaryl carnitine)	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hexenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hexose (sum isomers)	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Histamine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Histidine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyhexadecadienylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyhexadecanoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyhexadecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxylbutyrylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyoctadecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyproline	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxypropionylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxysphingomyeline C14:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxysphingomyeline C16:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxysphingomyeline C22:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxysphingomyeline C22:2	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxysphingomyeline C24:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxytetradecadienylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxytetradecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Hydroxyvaleryl carnitine (Methylmalonylcarnitine)	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Isoleucine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Kynurenine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Leucine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lithocholic acid	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Lysine	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C14:0	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C16:0	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C16:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C17:0	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C18:0	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C18:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C18:2	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C20:3	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	lysoPhosphatidylcholine acyl C20:4	SGS AXYS MLM-001	MLM-001	Y												Y						Y												

Accreditation Scope																												
SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																												
				Serum	Solids					Tissue			Urine	Water	Water, Non-Potable													
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	lysoPhosphatidylcholine acyl C24:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	lysoPhosphatidylcholine acyl C26:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	lysoPhosphatidylcholine acyl C28:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	lysoPhosphatidylcholine acyl C28:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Methionine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Methioninesulfoxide	SGS AXYS MLM-001	MLM-001	Y												Y												
	Methylglutaryl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Nitrotyrosine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Nonacyl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	octadecadienoic acid (linoleic acid)	SGS AXYS MLM-001	MLM-001													Y												
	Octadecadienyl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	octadecanoic acid (stearic acid)	SGS AXYS MLM-001	MLM-001													Y												
	Octadecanoyl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	octadecatrienoic acid (γ-linolenic acid)	SGS AXYS MLM-001	MLM-001													Y												
	Octadecenoyl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Octanoyl carnitine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Ornithine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phenylalanine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phenylethylamine	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C30:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C30:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C30:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C32:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C32:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C34:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C34:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C34:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C34:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:4	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C36:5	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:5	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C38:6	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:4	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:5	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C40:6	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:1	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:2	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:4	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C42:5	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C44:3	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C44:4	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C44:5	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine acyl-alkyl C44:6	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine diacyl C24:0	SGS AXYS MLM-001	MLM-001	Y												Y												
	Phosphatidylcholine diacyl C26:0	SGS AXYS MLM-001	MLM-001	Y												Y												

Accreditation Scope																																		
SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																																		
				Serum	Solids					Tissue			Urine	Water	Water, Non-Potable																			
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP	ANAB ISO 17025	ANAB DoD **
	Phosphatidylcholine diacyl C28:1	SGS AXYS MLM-001	MLM-001	Y												Y						Y												
	Phosphatidylcholine diacyl C30:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C30:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C32:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C32:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C32:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C32:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C34:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C34:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C34:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C34:4	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:4	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:5	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C36:6	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:4	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:5	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C38:6	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:4	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:5	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C40:6	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:4	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:5	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Phosphatidylcholine diacyl C42:6	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Pimelylcarnitine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Proline	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Propenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Propionylcarnitine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Putrescine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sarcosine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Serine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Serotonin	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Spermidine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Spermine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C16:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C16:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C18:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C18:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C20:2	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C22:3	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C24:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C24:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C26:0	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Sphingomyeline C26:1	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Symmetric dimethylarginine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												
	Taurine	SGS AXYS MLM-001	MLM-001	Y													Y					Y												

Accreditation Scope				SGS AXYS Analytical Services Ltd. file ref.: ACC-101 Rev. 41																												
Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum	Solids								Tissue	Urine	Water	Water, Non-Potable																
				CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	Maine DOH	ANAB ISO 17025	ANAB DoD **	CALA	Florida DOH	Minnesota DOH	New Jersey DEP	Virginia DGS	ANAB ISO 17025	CALA	CALA	California DPH	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE *	Maine DOH	Pennsylvania DEP
	taurochenodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	taurocholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	taurodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	tauroolithocholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	taurooursodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Tetradecadienylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	tetradecanoic acid (myristic acid)	SGS AXYS MLM-001	MLM-001											Y						Y												
	Tetradecanoylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Tetradecenoylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Threonine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Tiglylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Total dimethylarginine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Tryptophan	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	Tyrosine	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
	ursodeoxycholic acid	SGS AXYS MLM-001	MLM-001	Y										Y						Y												
Valerylcarnitine	SGS AXYS MLM-001	MLM-001	Y										Y						Y													
Valine	SGS AXYS MLM-001	MLM-001	Y										Y						Y													
TBBPA	Tetrabromobisphenol A	SGS AXYS MLA-079	MLA-079	Y																												
TOP	Perfluorobutanesulfonate (PFBS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorobutanoate (PFBA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorodecanesulfonate (PFDS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorodecanoate (PFDA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorododecanesulfonate (PFDoS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorododecanoate (PFDoA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluoroheptanesulfonate (PFHpS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluoroheptanoate (PFHpA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorohexanesulfonate (PFHxS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorohexanoate (PFHxA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorononanesulfonate (PFNS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorononanoate (PFNA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorooctanesulfonate (PFOS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorooctanoate (PFOA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluoropentanesulfonate (PFPeS)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluoropentanoate (PFPeA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorotetradecanoate (PFTeDA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluorotridecanoate (PFTrDA)	SGS AXYS MLA-111	MLA-111		Y																Y											
	Perfluoroundecanoate (PFUnA)	SGS AXYS MLA-111	MLA-111		Y																Y											
Note *	Analysis of pesticides and PCBs in non-potable water samples by SGS AXYS method MLA-007, with the exception of NPDES or State permitted discharges and Stormwater applications, may fall within the scope of Washington State Department of Ecology solids matrix accreditation, subject to approval of the Ecology Project Manager.																															
Note **	PFAS by LC-MS/MS compliant with US DoD QSM 5.1 table B-15																															

Legend

Y	Accreditation scope
BFR	Brominated flame retardants (non-PBDPE)
BPA and mPE	Bisphenol A and mono-Phthalate Esters
HBCDD	Hexabromocyclododecane
OC Pesticides	Organochlorine Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PBDPE	Polybrominated diphenylethers
PCB	Polychlorinated Biphenyls
PCDDF	Polychlorinated dibenzodioxins/furans
PFAS	Per- and Polyfluoroalkyl Substances
PPCP	Pharmaceutical and Personal Care Products
TBBPA	Tetrabromobisphenol A
TOP	Total Oxidizable Precursors
California DPH	California Department of Public Health, Lab ID 2911
Florida DOH	Florida Department of Health, Lab ID E871007, (NELAC Standard)
Pennsylvania DEP	Pennsylvania Department of Environmental Protection
Minnesota DOH	Minnesota Department of Health, Lab ID 232-999-430, (NELAC Standard)
New Jersey DEP	New Jersey Department of Environmental Protection, Lab ID CANA005, (NELAC Standard)
New York DOH	New York Department of Health, Lab ID 11674, (NELAC Standard)
Washington DE	Washington Department of Ecology, Lab ID C404
Virginia DGS	Virginia Department of General Services, Division of Consolidated Laboratory Services, Lab ID 460224, (NELAC Standard)
Maine DOH	Maine Center for Disease Control and Prevention, Department of Health and Human Services, Lab ID CN00003

ANAB DoD ANSI-ASQ National Accreditation Board, certificate ADE-1861, (US DoD QSM 5.1 Standard)



CALA Canadian Association for Laboratory Accreditation Inc., Lab ID A2637, (ISO/IEC 17025:2005 Standard)



CALA
Testing
Accreditation No. A 2637



ANAB ISO 17025 ANSI-ASQ National Accreditation Board, certificate ADE-1861.01, (ISO/IEC 17025:2005 Standard)

