



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

SVOC DATA PACKAGE

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis
Submission ID(s): L2138374

Final Package Review by:

A handwritten signature in black ink, appearing to read 'S. Dahl', is written over a horizontal line.

Date Reviewed: 21-Aug-18

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100
Contact: Whitney Davis
Submission ID(s): L2138374

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

Analytical Method: 2,4' and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2138374-1	PDI-SC-S163-0TO2	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	17-Aug-18
WG2837194-4	Duplicate	QC	n/a	n/a	03-Aug-18	17-Aug-18
L2138374-2	PDI-SC-S163-2TO4	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-3	PDI-SC-S163-4TO6	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-4	PDI-SC-S163-6TO8	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-5	PDI-SC-S163-8TO10	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-6	PDI-SC-S163-10TO12.7	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-7	PDI-SC-S163-12.7TO13	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-8	PDI-SC-S251-0TO2.5	Sediment	27-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-9	PDI-SC-S034-0TO1.8	Sediment	20-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-10	PDI-SC-S034-1.8TO4	Sediment	20-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-11	PDI-SC-S034-4TO5.2	Sediment	20-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-12	PDI-SC-S014-0TO2	Sediment	26-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-13	PDI-SC-S014-2TO4	Sediment	26-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-14	PDI-SC-S014-4TO6	Sediment	26-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
L2138374-15	PDI-SC-S002-0TO2	Sediment	26-Jul-18	31-Jul-18	03-Aug-18	18-Aug-18
WG2837194-1	Method Blank	QC	n/a	n/a	03-Aug-18	17-Aug-18
WG2837194-2	Laboratory Control Sample	QC	n/a	n/a	03-Aug-18	17-Aug-18

Comments and Notes:

a) Sample Integrity:

The samples were received in good condition at 0.8 degrees C.

b) Instrumental Analysis:

All results have been reported on a dry weight basis

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The responses for some or all compounds have been omitted from the highest calibration level due to instrument detector saturation. There are six levels to demonstrate linearity for these targets.

For the second source calibration verification H6-18-RS1-057, the recovery of the labelled standard 13C12-4,4'-DDT was marginally above the method control limit. All native target recoveries are within limits. No negative impact to overall data quality is expected.

For analytical sequence 6-180816B, the recovery of 13C12-4,4'-DDT was marginally above the method control limit for the continuing calibration verification (CCV) H6-18-CCV-0786. As a result, the reported recoveries for this standard may be slightly elevated. No bias to native target data is expected.

For the laboratory control sample, the recovery of the native target 2,4'-DDE was above the method control limit. As a result, the reported data for this target may be somewhat elevated.

Replication between the sample and laboratory duplicate is not within expected limits for the low detected levels of 2,4'-DDT and 4,4'-DDT. The sample may not be homogeneous.

For the sample PDI-SC-S014-0TO2, the recovery of the labelled extraction standard 13C12-4,4'-DDE was below the method control limit. As a result, the detection limit may be elevated. The reported native target values are not expected to be biased.

I certify that this data package is in compliance with the terms and condition of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.


Steve Kennedy, Technical Supervisor

21-Aug-18
Date

SVOC DATA PACKAGE

SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100
Contact: Whitney Davis
Submission ID(s): L2138374

Client Project Information

Project ID: 60566335
Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Contact: Amy Dahl

Analytical Method: 2,4' and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2138374-16	PDI-SC-S002-2TO4	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
WG2839698-4	Duplicate	QC	n/a	n/a	08-Aug-18	18-Aug-18
L2138374-17	PDI-SC-S002-4TO6.5	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-18	PDI-SC-S030-0TO2	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-19	PDI-SC-S030-2TO4	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-20	PDI-SC-S030-2TO4D	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-21	PDI-SC-S030-4TO5.3	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-22	PDI-SC-S185-0TO2	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-23	PDI-SC-S185-2TO4	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-24	PDI-SC-S185-4TO5.5	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-25	PDI-SC-S055-0TO2	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-26	PDI-SC-S055-2TO4	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-27	PDI-SC-S055-4TO6	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-28	PDI-SC-S055-6TO8	Sediment	26-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-29	PDI-SC-S024-0TO2	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-30	PDI-SC-S024-2TO4	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-31	PDI-SC-S024-4TO6	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-32	PDI-SC-S028-0TO2	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-33	PDI-SC-S028-2TO3.2	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-34	PDI-SC-S028-3.2TO5.7	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
L2138374-35	PDI-SC-S028-3.2TO5.7D	Sediment	27-Jul-18	31-Jul-18	08-Aug-18	18-Aug-18
WG2839698-1	Method Blank	QC	n/a	n/a	08-Aug-18	18-Aug-18
WG2839698-2	Laboratory Control Sample	QC	n/a	n/a	08-Aug-18	18-Aug-18

Comments and Notes:

a) Sample Integrity:

The samples were received in good condition at 0.8 degrees C.

b) Instrumental Analysis:

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The responses for all compounds have been omitted from the highest calibration level due to instrument detector saturation.

There are six levels to demonstrate linearity for all targets.

For the second source calibration verification H6-18-RS1-057, the recovery of the labelled standard 13C12-4,4'-DDT was marginally above the method control limit. All native target recoveries are within limits. No negative impact to overall data quality is expected.

For some samples, the recovery of the labelled extraction standard 13C12-4,4'-DDE was below the method control limit.

As a result, the detection limits may be elevated. The reported native target values are not expected to be biased.

The laboratory control sample (LCS) native target recoveries are all within limits.

For the laboratory control sample, the recovery of the native target 2,4'-DDE was above the method control limit. As a result, the reported data for this target may be somewhat elevated.

Replication between the sample and laboratory duplicate is not within expected limits for 2,4'-DDE. A low level has been detected in one replicate, but not the other.

I certify that this data package is in compliance with the terms and condition of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.


Steve Kennedy, Technical Supervisor

21-Aug-18
Date



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SECTION 1: PROJECT NARRATIVE

ALSE Project Information

Project ID: AECOM100

Contact: Whitney Davis

Submission ID(s): L2138374

Client Project Information

Project ID: 60566335

Project Description: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Contact: Amy Dahl

Analytical Method: 2,4' and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Date Extracted	Date Analyzed
L2138374-36	PDI-RB-SS-180726	Water	26-Jul-18	31-Jul-18	01-Aug-18	17-Aug-18
L2138374-37	PDI-RB-SS-180727	Water	27-Jul-18	31-Jul-18	01-Aug-18	17-Aug-18
WG2837173-1	Method Blank	QC	n/a	n/a	01-Aug-18	17-Aug-18
WG2837173-2	Laboratory Control Sample	QC	n/a	n/a	01-Aug-18	17-Aug-18

Comments and Notes:

a) Sample Integrity:

The samples were received in good condition at 0.8 degrees C.

b) Instrumental Analysis:

The samples have been analyzed with an instrument method where conditions are optimized for acquisition of the selected targets only.

The responses for some compounds have been omitted from the highest calibration level due to instrument detector saturation. There are six levels to demonstrate linearity for these targets.

For analytical sequence 6-180816B, the recovery of 13C12-4,4'-DDT was marginally above the method control limit for the continuing calibration verification (CCV) H6-18-CCV-0786. As a result, the reported recoveries for this standard may be slightly elevated. No bias to native target data is expected.

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Steve Kennedy, Technical Supervisor

21-Aug-18

Date

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SECTION 2: DATA SUMMARY REPORT



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Whitney Davis
ALS Project ID: AECOM100
ALS WO#: L2138374
Date of Report: 21-Aug-18
Date of Sample Receipt: 31-Jul-18

Client Name: AECOM United States
Client Address: 1111 Third Avenue
Suite 1600
Seattle, WA 98101, USA
Client Contact: Amy Dahl
Client Project ID: 60566335

COMMENTS: 2,4' and 4,4'-DDE, DDD and DDT by EPA 1699 (modified)

Certified by: _____

A handwritten signature in black ink, appearing to read "Henry", is written over a horizontal line.

Results in this certificate relate only to the samples as submitted to the laboratory.

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Sample Analysis summary Report

Sample Name	PDI-SC-S163-0TO2	Duplicate	PDI-SC-S163-2TO4	PDI-SC-S163-4TO6	PDI-SC-S163-6TO8	PDI-SC-S163-8TO10
ALS Sample ID	L2138374-1	WG2837194-4	L2138374-2	L2138374-3	L2138374-4	L2138374-5
Sample Size	5.45	5.39	5.44	5.58	5.68	5.49
Sample size units	g	g	g	g	g	g
Percent Solid	52.7%	52.1%	53.6%	55.8%	55.6%	54.6%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	27-Jul-18	n/a	27-Jul-18	27-Jul-18	27-Jul-18	27-Jul-18
Extraction Date	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.663	0.611	1.02	0.747	1.05	0.732
4,4'-DDE	8.92	9.44	15.1	9.98	16.7	8.48
2,4'-DDD	1.02	1.06	2.31	1.46	2.80	2.47
4,4'-DDD	3.16	3.36	7.10	4.80	7.66	5.80
2,4'-DDT	0.206	0.0826	0.0911	0.0989	<0.085	<0.062
4,4'-DDT	1.10	0.301	0.247	0.223	0.278	0.161
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	47	72	75	31	80	82
4,4'-DDD, 13C12-	73	76	65	58	68	64
4,4'-DDT, 13C12-	69	79	59	38	58	53

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Sample Analysis summary Report

Sample Name	PDI-SC-S163- 10TO12.7	PDI-SC-S163- 12.7TO13	PDI-SC-S251- 0TO2.5	PDI-SC-S034- 0TO1.8	PDI-SC-S034- 1.8TO4	PDI-SC-S034- 4TO5.2
ALS Sample ID	L2138374-6	L2138374-7	L2138374-8	L2138374-9	L2138374-10	L2138374-11
Sample Size	5.9	7.27	8.11	7.97	6.88	7.15
Sample size units	g	g	g	g	g	g
Percent Solid	58.1%	72.7%	81.1%	79.6%	68.8%	70.4%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	27-Jul-18	27-Jul-18	27-Jul-18	20-Jul-18	20-Jul-18	20-Jul-18
Extraction Date	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	6.18	0.0109	0.0515	0.859	0.108	0.0232
4,4'-DDE	38.6	0.0384	0.500	6.20	0.193	0.0560
2,4'-DDD	25.1	<0.012	0.145	7.34	0.176	<0.028
4,4'-DDD	41.5	<0.016	0.400	26.5	0.366	0.108
2,4'-DDT	0.391	0.0908	0.0392	1.61	0.204	<0.040
4,4'-DDT	0.865	0.167	0.124	9.65	0.448	0.0956
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	50	35	69	83	46	63
4,4'-DDD, 13C12-	62	28	68	102	42	60
4,4'-DDT, 13C12-	46	23	64	88	40	58

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Sample Analysis summary Report

Sample Name				
	PDI-SC-S014-0T02	PDI-SC-S014-2T04	PDI-SC-S014-4T06	PDI-SC-S002-0T02
ALS Sample ID	L2138374-12	L2138374-13	L2138374-14	L2138374-15
Sample Size	7.64	7.1	7.27	6.97
Sample size units	g	g	g	g
Percent Solid	74.7%	69.4%	70.3%	68.2%
Sample Matrix	Sediment	Sediment	Sediment	Sediment
Sampling Date	26-Jul-18	26-Jul-18	26-Jul-18	26-Jul-18
Extraction Date	3-Aug-18	3-Aug-18	3-Aug-18	3-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.130	0.0392	<0.0086	0.0189
4,4'-DDE	<0.20	0.0811	0.0167	0.0347
2,4'-DDD	<0.095	<0.028	<0.0097	<0.014
4,4'-DDD	<0.044	<0.017	<0.010	<0.019
2,4'-DDT	<0.095	<0.017	0.0244	0.0546
4,4'-DDT	<0.40	0.150	0.0821	0.155
Extraction Standards	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	8	44	67	64
4,4'-DDD, 13C12-	21	82	63	62
4,4'-DDT, 13C12-	11	60	61	61

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Quality Control Summary Report		
Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2837194-1	WG2837194-2
Sample Size	6.87	1.00
Sample size units	g	n/a
Percent Solid	100.0%	52.1%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	3-Aug-18	3-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	0.0131	131
4,4'-DDE	0.0305	95
2,4'-DDD	<0.017	102
4,4'-DDD	0.0398	96
2,4'-DDT	0.0524	87
4,4'-DDT	0.360	90
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	55	37
4,4'-DDD, 13C12-	57	69
4,4'-DDT, 13C12-	59	59

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Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-056	H6-18-RS1-057	H6-18-CCV-0784	H6-18-CCV-0786	H6-18-CCV-0783	H6-18-CCV-0793	H6-18-CCV-0795
Sample Size	1	1	1	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
2,4'-DDE			98	97	101	98	104
4,4'-DDE	92	96	98	99	99	99	101
2,4'-DDD			100	94	100	97	109
4,4'-DDD	94	94	99	98	99	98	105
2,4'-DDT			96	91	97	101	108
4,4'-DDT	87	94	94	90	91	102	100
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	100	128	104	107	105	101	95
4,4'-DDD, 13C12-	106	131	106	115	106	99	79
4,4'-DDT, 13C12-	113	133	114	135	108	99	71

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Sample Analysis summary Report

Sample Name	PDI-SC-S002-2TO4	Duplicate	PDI-SC-S002-4TO6.5	PDI-SC-S030-0TO2	PDI-SC-S030-2TO4	PDI-SC-S030-2TO4D
ALS Sample ID	L2138374-16	WG2839698-4	L2138374-17	L2138374-18	L2138374-19	L2138374-20
Sample Size	6.94	7.04	7.12	5.85	6.01	6.09
Sample size units	g	g	g	g	g	g
Percent Solid	67.4%	67.8%	69.0%	58.2%	58.7%	58.6%
Sample Matrix	Sediment	QC	Sediment	Sediment	Sediment	Sediment
Sampling Date	26-Jul-18	n/a	26-Jul-18	26-Jul-18	26-Jul-18	26-Jul-18
Extraction Date	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	<0.0035	0.00675	0.0102	0.365	1.50	1.67
4,4'-DDE	0.0133	0.0182	0.0203	3.75	14.1	15.0
2,4'-DDD	<0.0052	<0.0055	<0.010	0.824	2.37	2.13
4,4'-DDD	<0.0060	<0.0062	0.00986	2.63	7.84	6.70
2,4'-DDT	0.0202	0.0255	0.0258	0.268	0.722	0.975
4,4'-DDT	0.0632	0.0735	0.0814	0.921	2.48	3.47
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	72	67	48	40	14	12
4,4'-DDD, 13C12-	66	63	64	74	25	31
4,4'-DDT, 13C12-	64	62	59	54	17	18

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Sample Analysis summary Report

Sample Name	PDI-SC-S030-4TO5.3	PDI-SC-S185-0TO2	PDI-SC-S185-2TO4	PDI-SC-S185-4TO5.5	PDI-SC-S055-0TO2	PDI-SC-S055-2TO4
ALS Sample ID	L2138374-21	L2138374-22	L2138374-23	L2138374-24	L2138374-25	L2138374-26
Sample Size	6.87	7.83	8.25	7.91	5.45	5.72
Sample size units	g	g	g	g	g	g
Percent Solid	66.4%	75.7%	78.6%	75.8%	52.6%	54.7%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	26-Jul-18	26-Jul-18	26-Jul-18	26-Jul-18	26-Jul-18	26-Jul-18
Extraction Date	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.671	0.0365	0.0582	0.0867	0.140	0.300
4,4'-DDE	6.11	0.556	0.213	0.228	4.29	5.18
2,4'-DDD	0.794	0.425	0.162	0.143	0.640	1.42
4,4'-DDD	2.86	4.47	0.549	0.447	2.55	4.00
2,4'-DDT	<0.34	0.111	<0.092	0.0775	0.159	0.336
4,4'-DDT	1.35	0.605	0.284	0.262	0.506	0.790
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	24	75	20	17	77	62
4,4'-DDD, 13C12-	49	67	39	29	66	52
4,4'-DDT, 13C12-	32	63	25	20	61	45

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Sample Analysis summary Report

Sample Name	PDI-SC-S055-4TO6	PDI-SC-S055-6TO8	PDI-SC-S024-0TO2	PDI-SC-S024-2TO4	PDI-SC-S024-4TO6	PDI-SC-S028-0TO2
ALS Sample ID	L2138374-27	L2138374-28	L2138374-29	L2138374-30	L2138374-31	L2138374-32
Sample Size	6.68	6.77	6.13	7.59	7.98	6.59
Sample size units	g	g	g	g	g	g
Percent Solid	63.8%	65.0%	59.8%	74.3%	79.4%	64.6%
Sample Matrix	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sampling Date	26-Jul-18	26-Jul-18	27-Jul-18	27-Jul-18	27-Jul-18	27-Jul-18
Extraction Date	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18	8-Aug-18
Target Analytes	ng / g	ng / g	ng / g	ng / g	ng / g	ng / g
2,4'-DDE	0.575	0.423	0.118	0.139	<0.11	0.0457
4,4'-DDE	8.02	6.88	2.36	1.48	0.922	0.653
2,4'-DDD	1.88	1.84	0.441	0.406	0.263	0.229
4,4'-DDD	7.30	6.27	1.03	1.15	0.723	0.568
2,4'-DDT	0.270	0.159	0.156	0.210	0.245	0.0610
4,4'-DDT	1.79	0.324	0.480	0.460	0.506	0.248
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	47	79	76	12	6	76
4,4'-DDD, 13C12-	63	67	64	22	11	65
4,4'-DDT, 13C12-	49	61	56	14	7	60

ALS Life sciences

Sample Analysis summary Report

Sample Name	PDI-SC-S028- 2TO3.2	PDI-SC-S028- 3.2TO5.7	PDI-SC-S028- 3.2TO5.7D
ALS Sample ID	L2138374-33	L2138374-34	L2138374-35
Sample Size	8.00	7.51	7.28
Sample size units	g	g	g
Percent Solid	78.1%	71.7%	71.1%
Sample Matrix	Sediment	Sediment	Sediment
Sampling Date	27-Jul-18	27-Jul-18	27-Jul-18
Extraction Date	8-Aug-18	8-Aug-18	8-Aug-18
Target Analytes	ng / g	ng / g	ng / g
2,4'-DDE	0.0624	0.149	0.132
4,4'-DDE	0.330	0.945	0.726
2,4'-DDD	0.0757	0.178	0.157
4,4'-DDD	0.191	0.436	0.350
2,4'-DDT	0.131	0.115	0.0774
4,4'-DDT	0.317	0.411	0.213
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	21	18	22
4,4'-DDD, 13C12-	41	37	42
4,4'-DDT, 13C12-	26	23	28

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2839698-1	WG2839698-2
Sample Size	6.93	1.00
Sample size units	g	n/a
Percent Solid	100.0%	52.4%
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	8-Aug-18	8-Aug-18
Target Analytes	ng / g	% Rec
2,4'-DDE	0.00956	129
4,4'-DDE	0.0279	96
2,4'-DDD	0.0188	106
4,4'-DDD	0.0223	98
2,4'-DDT	0.0654	92
4,4'-DDT	0.261	100
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	64	13
4,4'-DDD, 13C12-	54	24
4,4'-DDT, 13C12-	50	15

ALS Life sciences

Continuing Calibration Summary Report

Sample Name	CCV	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-057	H6-18-CCV-0795	H6-18-CCV-0797	H6-18-CCV-0799
Sample Size	1	1	1	1
Sample size units	n/a	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a	n/a
Sample Matrix	QC	QC	QC	QC
Sampling Date	n/a	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec	% Rec
2,4'-DDE		104	102	103
4,4'-DDE	96	101	102	104
2,4'-DDD		109	103	100
4,4'-DDD	94	105	104	105
2,4'-DDT		108	104	102
4,4'-DDT	94	100	102	104
Extraction Standards	% Rec	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	128	95	108	117
4,4'-DDD, 13C12-	131	79	106	124
4,4'-DDT, 13C12-	133	71	105	127

ALS Life sciences

Sample Analysis summary Report

Sample Name PDI-RB-SS-180726 PDI-RB-SS-180727

ALS Sample ID L2138374-36 L2138374-37

Sample Size	1.04	1.00
Sample size units	L	L
Percent Solid	n/a	n/a
Sample Matrix	Water	Water
Sampling Date	26-Jul-18	27-Jul-18
Extraction Date	1-Aug-18	1-Aug-18

Target Analytes	ng / L	ng / L
2,4'-DDE	0.0246	0.0393
4,4'-DDE	0.0444	<0.046
2,4'-DDD	<0.016	<0.024
4,4'-DDD	0.0464	<0.039
2,4'-DDT	<0.019	<0.034
4,4'-DDT	0.199	<0.23

Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	70	46
4,4'-DDD, 13C12-	74	79
4,4'-DDT, 13C12-	79	77

ALS Life sciences

Quality Control Summary Report

Sample Name	Method Blank	Laboratory Control Sample
ALS Sample ID	WG2837173-1	WG2837173-2
Sample Size	1.00	1.00
Sample size units	L	n/a
Percent Solid	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	1-Aug-18	1-Aug-18
Target Analytes	ng / L	% Rec
2,4'-DDE	0.0460	118
4,4'-DDE	0.0905	99
2,4'-DDD	<0.039	104
4,4'-DDD	0.0877	96
2,4'-DDT	<0.062	93
4,4'-DDT	0.381	88
Extraction Standards	% Rec	% Rec
4,4'-DDE, 13C12-	50	55
4,4'-DDD, 13C12-	59	75
4,4'-DDT, 13C12-	62	75

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Continuing Calibration Summary Report			
Sample Name	CCV	CCV	CCV
ALS Sample ID	H6-18-RS1-056	H6-18-CCV-0784	H6-18-CCV-0786
Sample Size	1	1	1
Sample size units	n/a	n/a	n/a
Percent Solid	n/a	n/a	n/a
Sample Matrix	QC	QC	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	n/a	n/a	n/a
Target Analytes	% Rec	% Rec	% Rec
2,4'-DDE		98	97
4,4'-DDE	92	98	99
2,4'-DDD		100	94
4,4'-DDD	94	99	98
2,4'-DDT		96	91
4,4'-DDT	87	94	90
Extraction Standards	% Rec	% Rec	% Rec
4,4'-DDE, 13C12-	100	104	107
4,4'-DDD, 13C12-	106	106	115
4,4'-DDT, 13C12-	113	114	135

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-0T02	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-1	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.45	g
Analysis Type	Sample	Percent Solid	52.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B39
Run Date	17-Aug-18 05:54
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.663	0.0077		J	1.9
4,4'-DDE	11.41	8.92	0.0095			1.9
2,4'-DDD	11.58	1.02	0.012		M,J	1.9
4,4'-DDD	12.08	3.16	0.0089			1.9
2,4'-DDT	12.14	0.206	0.0093		J,B	1.9
4,4'-DDT	12.58	1.10	0.017		M,J,B	1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	47	21-125		
4,4'-DDD, 13C12-	125	12.08	73	5-150		
4,4'-DDT, 13C12-	125	12.58	69	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	
ALS Sample ID	WG2837194-4	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.39	g
Analysis Type	Sample	Percent Solid	52.1%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B40
Run Date	17-Aug-18 06:14
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.611	0.0051	J		1.9
4,4'-DDE	11.42	9.44	0.0063			1.9
2,4'-DDD	11.59	1.06	0.0071	J		1.9
4,4'-DDD	12.09	3.36	0.0079	M		1.9
2,4'-DDT	12.15	0.0826	0.0083	M,J,B		1.9
4,4'-DDT	12.59	0.301	0.012	M,J,B		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	72	21-125		
4,4'-DDD, 13C12-	125	12.09	76	5-150		
4,4'-DDT, 13C12-	125	12.58	79	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-2TO4	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-2	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.44	g
Analysis Type	Sample	Percent Solid	53.6%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A36
Run Date	18-Aug-18 09:29
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	1.02	0.0049		J	1.9
4,4'-DDE	11.41	15.1	0.0064			1.9
2,4'-DDD	11.58	2.31	0.0094		M	1.9
4,4'-DDD	12.09	7.10	0.011		M	1.9
2,4'-DDT	12.14	0.0911	0.011		M,J,B	1.9
4,4'-DDT	12.58	0.247	0.019		M,J,B	1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	75	21-125		
4,4'-DDD, 13C12-	125	12.08	65	5-150		
4,4'-DDT, 13C12-	125	12.58	59	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-4TO6	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-3	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.58	g
Analysis Type	Sample	Percent Solid	55.8%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A37
Run Date	18-Aug-18 09:49
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.747	0.012	J		1.8
4,4'-DDE	11.40	9.98	0.015	M		1.8
2,4'-DDD	11.57	1.46	0.018	J		1.8
4,4'-DDD	12.08	4.80	0.011	M		1.8
2,4'-DDT	12.14	0.0989	0.011	M,J,B		1.8
4,4'-DDT	12.58	0.223	0.024	M,J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	31	21-125		
4,4'-DDD, 13C12-	125	12.07	58	5-150		
4,4'-DDT, 13C12-	125	12.57	38	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-6TO8	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-4	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.68	g
Analysis Type	Sample	Percent Solid	55.6%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A38
Run Date	18-Aug-18 10:09
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	1.05	0.0052	J		1.8
4,4'-DDE	11.41	16.7	0.0068			1.8
2,4'-DDD	11.58	2.80	0.0092	M		1.8
4,4'-DDD	12.09	7.66	0.011	M		1.8
2,4'-DDT	12.14	<0.085	0.011	M,J,R	0.085	1.8
4,4'-DDT	12.58	0.278	0.023	J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	80	21-125		
4,4'-DDD, 13C12-	125	12.08	68	5-150		
4,4'-DDT, 13C12-	125	12.58	58	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S163-8TO10
ALS Sample ID L2138374-5
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 27-Jul-18
Extraction Date 3-Aug-18
Sample Size 5.49 g
Percent Solid 54.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180817A39
Run Date 18-Aug-18 10:30
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.732	0.0042	J		1.9
4,4'-DDE	11.41	8.48	0.0054			1.9
2,4'-DDD	11.58	2.47	0.0092			1.9
4,4'-DDD	12.09	5.80	0.013	M		1.9
2,4'-DDT	12.15	<0.062	0.013	M,J,R	0.062	1.9
4,4'-DDT	12.59	0.161	0.023	J,B		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	82	21-125		
4,4'-DDD, 13C12-	125	12.08	64	5-150		
4,4'-DDT, 13C12-	125	12.58	53	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-10T012.7	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-6	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.9	g
Analysis Type	Sample	Percent Solid	58.1%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A40
Run Date	18-Aug-18 10:50
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	6.18	0.0083			1.7
4,4'-DDE	11.41	38.6	0.011			1.7
2,4'-DDD	11.58	25.1	0.016			1.7
4,4'-DDD	12.09	41.5	0.013	M		1.7
2,4'-DDT	12.14	0.391	0.013	M,J,B		1.7
4,4'-DDT	12.58	0.865	0.029	J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	50	21-125		
4,4'-DDD, 13C12-	125	12.08	62	5-150		
4,4'-DDT, 13C12-	125	12.58	46	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S163-12.7TO13	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-7	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.27	g
Analysis Type	Sample	Percent Solid	72.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A41
Run Date	18-Aug-18 11:10
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.0109	0.0076	M,J,B		1.4
4,4'-DDE	11.42	0.0384	0.010	J,B		1.4
2,4'-DDD	NotFnd	<0.012	0.012	U		1.4
4,4'-DDD	NotFnd	<0.016	0.016	U		1.4
2,4'-DDT	12.15	0.0908	0.016	M,J,B		1.4
4,4'-DDT	12.59	0.167	0.031	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	35	21-125		
4,4'-DDD, 13C12-	125	12.09	28	5-150		
4,4'-DDT, 13C12-	125	12.59	23	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S251-0T02.5	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-8	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	8.11	g
Analysis Type	Sample	Percent Solid	81.1%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A28
Run Date	18-Aug-18 06:48
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0515	0.0082	M,J,B		1.3
4,4'-DDE	11.41	0.500	0.011	M,J		1.3
2,4'-DDD	11.58	0.145	0.012	J		1.3
4,4'-DDD	12.09	0.400	0.013	M,J		1.3
2,4'-DDT	12.15	0.0392	0.013	M,J,B		1.3
4,4'-DDT	12.59	0.124	0.020	M,J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	69	21-125		
4,4'-DDD, 13C12-	125	12.08	68	5-150		
4,4'-DDT, 13C12-	125	12.58	64	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S034-0TO1.8
ALS Sample ID L2138374-9
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 20-Jul-18
Extraction Date 3-Aug-18
Sample Size 7.97 g
Percent Solid 79.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180817A29
Run Date 18-Aug-18 07:08
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.859	0.0082	J		1.3
4,4'-DDE	11.40	6.20	0.011			1.3
2,4'-DDD	11.57	7.34	0.015			1.3
4,4'-DDD	12.08	26.5	0.013			1.3
2,4'-DDT	12.14	1.61	0.013			1.3
4,4'-DDT	12.58	9.65	0.022			1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	83	21-125		
4,4'-DDD, 13C12-	125	12.07	102	5-150		
4,4'-DDT, 13C12-	125	12.57	88	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

J indicates that a target analyte was detected below the calibrated range.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S034-1.8TO4
ALS Sample ID L2138374-10
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 20-Jul-18
Extraction Date 3-Aug-18
Sample Size 6.88 g
Percent Solid 68.8%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information

Run 1

Filename 6-180817A30
Run Date 18-Aug-18 07:28
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.108	0.011	M,J,B		1.5
4,4'-DDE	11.41	0.193	0.015	M,J,B		1.5
2,4'-DDD	11.58	0.176	0.020	J		1.5
4,4'-DDD	12.09	0.366	0.023	J,B		1.5
2,4'-DDT	12.14	0.204	0.022	J,B		1.5
4,4'-DDT	12.58	0.448	0.039	J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	46	21-125		
4,4'-DDD, 13C12-	125	12.08	42	5-150		
4,4'-DDT, 13C12-	125	12.58	40	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S034-4TO5.2	Sampling Date	20-Jul-18	
ALS Sample ID	L2138374-11	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.15	g
Analysis Type	Sample	Percent Solid	70.4%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A31
Run Date	18-Aug-18 07:48
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.0232	0.0078	J,B		1.4
4,4'-DDE	11.40	0.0560	0.010	M,J,B		1.4
2,4'-DDD	11.57	<0.028	0.014	M,J,R	0.028	1.4
4,4'-DDD	12.08	0.108	0.017	M,J,B		1.4
2,4'-DDT	12.14	<0.040	0.017	M,J,R	0.040	1.4
4,4'-DDT	12.58	0.0956	0.026	M,J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	63	21-125		
4,4'-DDD, 13C12-	125	12.08	60	5-150		
4,4'-DDT, 13C12-	125	12.57	58	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S014-0T02	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-12	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.64	g
Analysis Type	Sample	Percent Solid	74.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A32
Run Date	18-Aug-18 08:08
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.130	0.066	M,J,B		1.3
4,4'-DDE	11.40	<0.20	0.086	M,J,R	0.20	1.3
2,4'-DDD	11.58	<0.095	0.095	M,U	0.056	1.3
4,4'-DDD	12.08	<0.044	0.042	M,J,R	0.044	1.3
2,4'-DDT	12.14	<0.095	0.042	M,J,R	0.095	1.3
4,4'-DDT	12.58	<0.40	0.11	M,J,R	0.40	1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	8	21-125		
4,4'-DDD, 13C12-	125	12.07	21	5-150		
4,4'-DDT, 13C12-	125	12.57	11	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S014-2TO4	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-13	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.1	g
Analysis Type	Sample	Percent Solid	69.4%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A33
Run Date	18-Aug-18 08:29
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.0392	0.017	M,J,B		1.4
4,4'-DDE	11.40	0.0811	0.022	M,J,B		1.4
2,4'-DDD	NotFnd	<0.028	0.028	U		1.4
4,4'-DDD	NotFnd	<0.017	0.017	U		1.4
2,4'-DDT	NotFnd	<0.017	0.017	U		1.4
4,4'-DDT	12.58	0.150	0.034	M,J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	44	21-125		
4,4'-DDD, 13C12-	125	12.07	82	5-150		
4,4'-DDT, 13C12-	125	12.57	60	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S014-4TO6
ALS Sample ID L2138374-14
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 26-Jul-18
Extraction Date 3-Aug-18
Sample Size 7.27 g
Percent Solid 70.3%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information

Run 1

Filename 6-180817A34
Run Date 18-Aug-18 08:49
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	<0.0086	0.0051	M,J,R	0.0086	1.4
4,4'-DDE	11.41	0.0167	0.0067	M,J,B		1.4
2,4'-DDD	11.58	<0.0097	0.0073	M,J,R	0.0097	1.4
4,4'-DDD	12.08	<0.010	0.0083	M,J,R	0.010	1.4
2,4'-DDT	12.14	0.0244	0.0082	J,B		1.4
4,4'-DDT	12.58	0.0821	0.012	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	67	21-125		
4,4'-DDD, 13C12-	125	12.07	63	5-150		
4,4'-DDT, 13C12-	125	12.57	61	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S002-0TO2	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-15	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.97	g
Analysis Type	Sample	Percent Solid	68.2%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A35
Run Date	18-Aug-18 09:09
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0189	0.0055	M,J,B		1.5
4,4'-DDE	11.41	0.0347	0.0072	M,J,B		1.5
2,4'-DDD	11.58	<0.014	0.0092	M,J,R	0.014	1.5
4,4'-DDD	12.09	<0.019	0.010	M,J,R	0.019	1.5
2,4'-DDT	12.15	0.0546	0.010	M,J,B		1.5
4,4'-DDT	12.59	0.155	0.016	J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	64	21-125		
4,4'-DDD, 13C12-	125	12.08	62	5-150		
4,4'-DDT, 13C12-	125	12.58	61	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S002-2TO4	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-16	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.94	g
Analysis Type	Sample	Percent Solid	67.4%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A64
Run Date	18-Aug-18 18:53
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	NotFnd	<0.0035	0.0035	U		1.5
4,4'-DDE	11.41	0.0133	0.0046	M,J,B		1.5
2,4'-DDD	NotFnd	<0.0052	0.0052	U		1.5
4,4'-DDD	NotFnd	<0.0060	0.0060	U		1.5
2,4'-DDT	12.14	0.0202	0.0059	M,J,B		1.5
4,4'-DDT	12.58	0.0632	0.010	J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	72	21-125		
4,4'-DDD, 13C12-	125	12.08	66	5-150		
4,4'-DDT, 13C12-	125	12.58	64	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	g	Approved: <i>R. Bakhtiari</i> --e-signature-- 21-Aug-2018
ALS Sample ID	WG2839698-4	Extraction Date	8-Aug-18		
Analysis Method	EPA 1699 (mod)	Sample Size	7.04		
Analysis Type	Sample	Percent Solid	67.8%		
Sample Matrix	QC	Split Ratio	1		

Run Information	Run 1
Filename	6-180817A65
Run Date	18-Aug-18 19:13
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.00675	0.0032	M,J,B		1.4
4,4'-DDE	11.41	0.0182	0.0042	M,J,B		1.4
2,4'-DDD	NotFnd	<0.0055	0.0055	U		1.4
4,4'-DDD	NotFnd	<0.0062	0.0062	U		1.4
2,4'-DDT	12.14	0.0255	0.0061	M,J,B		1.4
4,4'-DDT	12.58	0.0735	0.011	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	67	21-125		
4,4'-DDD, 13C12-	125	12.08	63	5-150		
4,4'-DDT, 13C12-	125	12.58	62	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S002-4TO6.5	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-17	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.12	g
Analysis Type	Sample	Percent Solid	69.0%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A66
Run Date	18-Aug-18 19:33
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0102	0.0041	M,J,B		1.4
4,4'-DDE	11.42	0.0203	0.0053	M,J,B		1.4
2,4'-DDD	11.59	<0.010	0.0063	J,R	0.010	1.4
4,4'-DDD	12.09	0.00986	0.0050	M,J,B		1.4
2,4'-DDT	12.15	0.0258	0.0050	M,J,B		1.4
4,4'-DDT	12.59	0.0814	0.0093	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	48	21-125		
4,4'-DDD, 13C12-	125	12.09	64	5-150		
4,4'-DDT, 13C12-	125	12.58	59	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S030-0TO2	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-18	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.85	g
Analysis Type	Sample	Percent Solid	58.2%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A71
Run Date	18-Aug-18 21:14
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.365	0.013	J		1.7
4,4'-DDE	11.41	3.75	0.018			1.7
2,4'-DDD	11.58	0.824	0.023	J		1.7
4,4'-DDD	12.09	2.63	0.013			1.7
2,4'-DDT	12.15	0.268	0.013	J,B		1.7
4,4'-DDT	12.58	0.921	0.028	J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	40	21-125		
4,4'-DDD, 13C12-	125	12.08	74	5-150		
4,4'-DDT, 13C12-	125	12.58	54	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S030-2TO4	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-19	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.01	g
Analysis Type	Sample	Percent Solid	58.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A72
Run Date	18-Aug-18 21:34
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	1.50	0.033	J		1.7
4,4'-DDE	11.41	14.1	0.043			1.7
2,4'-DDD	11.58	2.37	0.061			1.7
4,4'-DDD	12.09	7.84	0.035	M		1.7
2,4'-DDT	12.15	0.722	0.035	M,J		1.7
4,4'-DDT	12.59	2.48	0.079	M,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	14	21-125		
4,4'-DDD, 13C12-	125	12.08	25	5-150		
4,4'-DDT, 13C12-	125	12.58	17	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S030-2TO4D	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-20	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.09	g
Analysis Type	Sample	Percent Solid	58.6%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A73
Run Date	18-Aug-18 21:54
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	1.67	0.038	J		1.7
4,4'-DDE	11.41	15.0	0.050			1.7
2,4'-DDD	11.58	2.13	0.072			1.7
4,4'-DDD	12.09	6.70	0.029	M		1.7
2,4'-DDT	12.15	0.975	0.029	J		1.7
4,4'-DDT	12.58	3.47	0.075			1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	12	21-125		
4,4'-DDD, 13C12-	125	12.08	31	5-150		
4,4'-DDT, 13C12-	125	12.58	18	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S030-4TO5.3
ALS Sample ID L2138374-21
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 26-Jul-18
Extraction Date 8-Aug-18
Sample Size 6.87 g
Percent Solid 66.4%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180817A74
Run Date 18-Aug-18 22:14
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.671	0.016	J		1.5
4,4'-DDE	11.41	6.11	0.022			1.5
2,4'-DDD	11.58	0.794	0.026	J		1.5
4,4'-DDD	12.09	2.86	0.013			1.5
2,4'-DDT	12.15	<0.34	0.013	J,R	0.34	1.5
4,4'-DDT	12.59	1.35	0.031	J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	24	21-125		
4,4'-DDD, 13C12-	125	12.08	49	5-150		
4,4'-DDT, 13C12-	125	12.58	32	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S185-0T02	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-22	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.83	g
Analysis Type	Sample	Percent Solid	75.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A50
Run Date	18-Aug-18 14:11
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.0365	0.0053	J,B		1.3
4,4'-DDE	11.40	0.556	0.0069	J		1.3
2,4'-DDD	11.57	0.425	0.0083	M,J		1.3
4,4'-DDD	12.08	4.47	0.011	M		1.3
2,4'-DDT	12.14	0.111	0.010	M,J,B		1.3
4,4'-DDT	12.58	0.605	0.016	J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	75	21-125		
4,4'-DDD, 13C12-	125	12.08	67	5-150		
4,4'-DDT, 13C12-	125	12.57	63	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S185-2TO4
ALS Sample ID L2138374-23
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 26-Jul-18
Extraction Date 8-Aug-18
Sample Size 8.25 g
Percent Solid 78.6%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180817A51
Run Date 18-Aug-18 14:31
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.0582	0.021	M,J,B		1.2
4,4'-DDE	11.40	0.213	0.028	J,B		1.2
2,4'-DDD	11.57	0.162	0.039	M,J,B		1.2
4,4'-DDD	12.08	0.549	0.022	J		1.2
2,4'-DDT	12.14	<0.092	0.022	J,R	0.092	1.2
4,4'-DDT	12.58	0.284	0.054	M,J,B		1.2
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	20	21-125		
4,4'-DDD, 13C12-	125	12.08	39	5-150		
4,4'-DDT, 13C12-	125	12.57	25	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S185-4TO5.5	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-24	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.91	g
Analysis Type	Sample	Percent Solid	75.8%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A52
Run Date	18-Aug-18 14:51
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0867	0.024	J,B		1.3
4,4'-DDE	11.41	0.228	0.031	M,J,B		1.3
2,4'-DDD	11.58	0.143	0.039	J,B		1.3
4,4'-DDD	12.08	0.447	0.025	M,J		1.3
2,4'-DDT	12.14	0.0775	0.024	M,J,B		1.3
4,4'-DDT	12.58	0.262	0.057	M,J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	17	21-125		
4,4'-DDD, 13C12-	125	12.08	29	5-150		
4,4'-DDT, 13C12-	125	12.57	20	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S055-0TO2	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-25	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.45	g
Analysis Type	Sample	Percent Solid	52.6%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A53
Run Date	18-Aug-18 15:11
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.140	0.0058	J		1.9
4,4'-DDE	11.41	4.29	0.0075			1.9
2,4'-DDD	11.58	0.640	0.0095	J		1.9
4,4'-DDD	12.09	2.55	0.011			1.9
2,4'-DDT	12.15	0.159	0.011	J,B		1.9
4,4'-DDT	12.58	0.506	0.020	J,B		1.9
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	77	21-125		
4,4'-DDD, 13C12-	125	12.08	66	5-150		
4,4'-DDT, 13C12-	125	12.58	61	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S055-2TO4	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-26	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	5.72	g
Analysis Type	Sample	Percent Solid	54.7%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A54
Run Date	18-Aug-18 15:31
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.89	0.300	0.0058	J		1.8
4,4'-DDE	11.42	5.18	0.0075			1.8
2,4'-DDD	11.59	1.42	0.010	J		1.8
4,4'-DDD	12.10	4.00	0.012			1.8
2,4'-DDT	12.15	0.336	0.012	J,B		1.8
4,4'-DDT	12.59	0.790	0.024	J,B		1.8
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	62	21-125		
4,4'-DDD, 13C12-	125	12.09	52	5-150		
4,4'-DDT, 13C12-	125	12.59	45	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S055-4TO6	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-27	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.68	g
Analysis Type	Sample	Percent Solid	63.8%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A55
Run Date	18-Aug-18 15:51
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.575	0.0085		J	1.5
4,4'-DDE	11.41	8.02	0.011			1.5
2,4'-DDD	11.58	1.88	0.014			1.5
4,4'-DDD	12.09	7.30	0.011			1.5
2,4'-DDT	12.15	0.270	0.011		J,B	1.5
4,4'-DDT	12.58	1.79	0.023		B	1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	47	21-125		
4,4'-DDD, 13C12-	125	12.08	63	5-150		
4,4'-DDT, 13C12-	125	12.58	49	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S055-6TO8	Sampling Date	26-Jul-18	
ALS Sample ID	L2138374-28	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.77	g
Analysis Type	Sample	Percent Solid	65.0%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A56
Run Date	18-Aug-18 16:12
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.423	0.0043	J		1.5
4,4'-DDE	11.41	6.88	0.0057			1.5
2,4'-DDD	11.58	1.84	0.0081	M		1.5
4,4'-DDD	12.09	6.27	0.010	M		1.5
2,4'-DDT	12.15	0.159	0.0099	M,J,B		1.5
4,4'-DDT	12.59	0.324	0.017	M,J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	79	21-125		
4,4'-DDD, 13C12-	125	12.08	67	5-150		
4,4'-DDT, 13C12-	125	12.58	61	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S024-0T02	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-29	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.13	g
Analysis Type	Sample	Percent Solid	59.8%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A57
Run Date	18-Aug-18 16:32
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.118	0.0058	J		1.7
4,4'-DDE	11.40	2.36	0.0076			1.7
2,4'-DDD	11.57	0.441	0.0098	J		1.7
4,4'-DDD	12.08	1.03	0.012	M,J		1.7
2,4'-DDT	12.14	0.156	0.012	M,J,B		1.7
4,4'-DDT	12.58	0.480	0.021	J,B		1.7
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	76	21-125		
4,4'-DDD, 13C12-	125	12.07	64	5-150		
4,4'-DDT, 13C12-	125	12.57	56	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S024-2TO4	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-30	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.59	g
Analysis Type	Sample	Percent Solid	74.3%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A58
Run Date	18-Aug-18 16:52
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.139	0.026	J		1.3
4,4'-DDE	11.41	1.48	0.034			1.3
2,4'-DDD	11.59	0.406	0.041	M,J		1.3
4,4'-DDD	12.09	1.15	0.026	M,J		1.3
2,4'-DDT	12.15	0.210	0.026	M,J,B		1.3
4,4'-DDT	12.59	0.460	0.063	J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	12	21-125		
4,4'-DDD, 13C12-	125	12.09	22	5-150		
4,4'-DDT, 13C12-	125	12.58	14	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S024-4TO6	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-31	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.98	g
Analysis Type	Sample	Percent Solid	79.4%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A59
Run Date	18-Aug-18 17:12
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	<0.11	0.046	M,J,R	0.11	1.3
4,4'-DDE	11.41	0.922	0.060	J		1.3
2,4'-DDD	11.58	0.263	0.067	J		1.3
4,4'-DDD	12.09	0.723	0.044	M,J		1.3
2,4'-DDT	12.15	0.245	0.044	M,J,B		1.3
4,4'-DDT	12.59	0.506	0.10	J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	6	21-125		
4,4'-DDD, 13C12-	125	12.08	11	5-150		
4,4'-DDT, 13C12-	125	12.58	7	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S028-0T02	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-32	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.59	g
Analysis Type	Sample	Percent Solid	64.6%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A60
Run Date	18-Aug-18 17:32
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.0457	0.0045	J,B		1.5
4,4'-DDE	11.40	0.653	0.0060	M,J		1.5
2,4'-DDD	11.57	0.229	0.0068	J		1.5
4,4'-DDD	12.08	0.568	0.0090	M,J		1.5
2,4'-DDT	12.14	0.0610	0.0088	M,J,B		1.5
4,4'-DDT	12.58	0.248	0.014	M,J,B		1.5
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	76	21-125		
4,4'-DDD, 13C12-	125	12.07	65	5-150		
4,4'-DDT, 13C12-	125	12.57	60	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S028-2TO3.2	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-33	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	8.00	g
Analysis Type	Sample	Percent Solid	78.1%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A61
Run Date	18-Aug-18 17:52
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0624	0.016	J,B		1.3
4,4'-DDE	11.42	0.330	0.021	J		1.3
2,4'-DDD	11.59	0.0757	0.023	J,B		1.3
4,4'-DDD	12.09	0.191	0.012	J,B		1.3
2,4'-DDT	12.15	0.131	0.012	J,B		1.3
4,4'-DDT	12.59	0.317	0.033	J,B		1.3
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	21	21-125		
4,4'-DDD, 13C12-	125	12.09	41	5-150		
4,4'-DDT, 13C12-	125	12.58	26	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-SC-S028-3.2T05.7
ALS Sample ID L2138374-34
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Sediment

Sampling Date 27-Jul-18
Extraction Date 8-Aug-18
Sample Size 7.51 g
Percent Solid 71.7%
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180817A62
Run Date 18-Aug-18 18:12
Final Volume 1020 uL
Dilution Factor 5
Analysis Units ng/g
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.149	0.013	J		1.4
4,4'-DDE	11.41	0.945	0.017	J		1.4
2,4'-DDD	11.58	0.178	0.025	J,B		1.4
4,4'-DDD	12.09	0.436	0.013	J		1.4
2,4'-DDT	12.14	0.115	0.013	J,B		1.4
4,4'-DDT	12.58	0.411	0.037	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	18	21-125		
4,4'-DDD, 13C12-	125	12.08	37	5-150		
4,4'-DDT, 13C12-	125	12.58	23	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.

J indicates that a target analyte was detected below the calibrated range.

B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	PDI-SC-S028-3.2TO5.7D	Sampling Date	27-Jul-18	
ALS Sample ID	L2138374-35	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	7.28	g
Analysis Type	Sample	Percent Solid	71.1%	
Sample Matrix	Sediment	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A63
Run Date	18-Aug-18 18:32
Final Volume	1020 uL
Dilution Factor	5
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.87	0.132	0.011	J		1.4
4,4'-DDE	11.40	0.726	0.014	J		1.4
2,4'-DDD	11.57	0.157	0.018	J,B		1.4
4,4'-DDD	12.08	0.350	0.0096	J		1.4
2,4'-DDT	12.14	0.0774	0.0095	J,B		1.4
4,4'-DDT	12.58	0.213	0.021	J,B		1.4
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	22	21-125		
4,4'-DDD, 13C12-	125	12.07	42	5-150		
4,4'-DDT, 13C12-	125	12.57	28	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
J	indicates that a target analyte was detected below the calibrated range.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-RB-SS-180726
ALS Sample ID L2138374-36
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Water

Sampling Date 26-Jul-18
Extraction Date 1-Aug-18
Sample Size 1.04 L
Percent Solid n/a
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information

Run 1

Filename 6-180816B32
Run Date 17-Aug-18 03:33
Final Volume 1020 uL
Dilution Factor 1
Analysis Units ng/L
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes		Ret.	Conc.	EDL	EMPC	
		Time	ng / L	ng / L	Flags	ng / L LQL
2,4'-DDE		10.88	0.0246	0.0091	M,J,B	2.0
4,4'-DDE		11.41	0.0444	0.011	M,J,B	2.0
2,4'-DDD		NotFnd	<0.016	0.016	U	2.0
4,4'-DDD		12.09	0.0464	0.018	J,B	2.0
2,4'-DDT		12.15	<0.019	0.018	M,J,R	0.019 2.0
4,4'-DDT		12.59	0.199	0.026	M,J,B	2.0
Extraction Standards ng						
4,4'-DDE, 13C12-	125	11.41	70	21-125		
4,4'-DDD, 13C12-	125	12.08	74	5-150		
4,4'-DDT, 13C12-	125	12.58	79	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name PDI-RB-SS-180727
ALS Sample ID L2138374-37
Analysis Method EPA 1699 (mod)
Analysis Type Sample
Sample Matrix Water

Sampling Date 27-Jul-18
Extraction Date 1-Aug-18
Sample Size 1.00 L
Percent Solid n/a
Split Ratio 1

Approved:
R. Bakhtiari
 --e-signature--
 21-Aug-2018

Run Information **Run 1**
Filename 6-180816B33
Run Date 17-Aug-18 03:53
Final Volume 1020 uL
Dilution Factor 1
Analysis Units ng/L
Instrument - Column HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / L	EDL ng / L	Flags	EMPC ng / L	LQL
2,4'-DDE	10.88	0.0393	0.015	M,J,B	2.0	
4,4'-DDE	11.41	<0.046	0.019	M,J,R	0.046	2.0
2,4'-DDD	11.59	<0.024	0.024	M,U	0.018	2.0
4,4'-DDD	12.09	<0.039	0.015	M,J,R	0.039	2.0
2,4'-DDT	12.15	<0.034	0.016	M,J,R	0.034	2.0
4,4'-DDT	12.59	<0.23	0.025	J,R	0.23	2.0
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	46	21-125		
4,4'-DDD, 13C12-	125	12.08	79	5-150		
4,4'-DDT, 13C12-	125	12.58	77	5-120		

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the EDL.

J indicates that a target analyte was detected below the calibrated range.
R Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

SVOC DATA PACKAGE

SECTION 3: METHOD SUMMARY

OC Pesticide METHOD SUMMARY
Method EPA 1699

Introduction:

This summary is to provide ALSE Burlington OC pesticide method details in order to provide persons reviewing or validating this data package sufficient information to re-construct the sample calculation, data verification and review. It incorporates the analysis of organochlorine pesticides via EPA method 1699. Deviations from this reference method are documented in ALS Standard Operating Procedures (available upon request) and in this Method Summary.

Any deviations to what is listed herein or in the ALS Standard Operating Procedures would be listed in the project narrative.

To avoid the confusion and conflicting nomenclature within the performance based methods, we have defined the labeled standards in terms relating to the time of addition to the sample or extract. Therefore;

- Laboratory Surrogate (when provided/requested by the client) are added prior to sample extraction
- The Field or Sampling Standards (where used) are added prior to field sampling
- The Extraction Standards are added prior to extraction
- The GPC Recovery Standard is added (when used) prior to Gel Permeation Chromatographic cleanup
- The Clean-up Standards (where used) are added prior to extract clean-up
- The Injection Standards are added prior to extract injection.

Additional method information, such as Instrumental Descriptors, is documented in ALS Standard Operating Procedures and available upon request.

Calibration Standard Levels:

Seven levels of standard are available for calibration as listed in Table 1. These targets give a wide range of responses on the analytical instruments, thus it is expected that for any given target, either the lowest standard level(s) or the highest standard level(s) may be excluded due to poor response, poor linearity, or detector saturation. With seven levels of standard, it is expected that at least 5 points can be used for calibration for each target.

Table 1: Calibration Standards (conc in ng/mL)

		CS1	CS2	CS3	CS4	CS5	CS6	CS7
Natives	Hexachlorobutadiene	2	7.5	20	50	150	400	1200
	1,2,4,5-Tetrachlorobenzene	2	7.5	20	50	150	400	1200
	1,2,3,4-Tetrachlorobenzene	2	7.5	20	50	150	400	1200
	Pentachlorobenzene	2	7.5	20	50	150	400	1200
	Hexachlorobenzene	2	7.5	20	50	150	400	1200
	3,4,5,6-Tetrachloroveratrole	2	7.5	20	50	150	400	1200
	Pentachloroanisole	2	7.5	20	50	150	400	1200
	alpha-BHC	2	7.5	20	50	150	400	1200
	beta-BHC	2	7.5	20	50	150	400	1200
	gamma-BHC	2	7.5	20	50	150	400	1200
	delta-BHC	2	7.5	20	50	150	400	1200
	Pentachloronitrobenzene	2	7.5	20	50	150	400	1200
	Heptachlor	2	7.5	20	50	150	400	1200
	Aldrin	2	7.5	20	50	150	400	1200
	4,4'-DDNU	2	7.5	20	50	150	400	1200
	Dacthal	2	7.5	20	50	150	400	1200
	Chlorpyrifos	10	37.5	100	250	750	2000	6000
	Octachlorostyrene	2	7.5	20	50	150	400	1200
	Heptachlor Epoxide B	2	7.5	20	50	150	400	1200
	Heptachlor Epoxide A	2	7.5	20	50	150	400	1200
	Oxychlordane	2	7.5	20	50	150	400	1200
	4,4'-DDMU	2	7.5	20	50	150	400	1200
	trans-Chlordane	2	7.5	20	50	150	400	1200
	cis-Chlordane	2	7.5	20	50	150	400	1200
	trans-Nonachlor	2	7.5	20	50	150	400	1200
	Dieldrin	2	7.5	20	50	150	400	1200
	Endrin	2	7.5	20	50	150	400	1200
	cis-Nonachlor	2	7.5	20	50	150	400	1200
	Endosulfan I	2	7.5	20	50	150	400	1200
	Endosulfan II	2	7.5	20	50	150	400	1200
	Endosulfan Sulfate	2	7.5	20	50	150	400	1200
	24'-DDE	2	7.5	20	50	150	400	1200
	44'-DDE	2	7.5	20	50	150	400	1200
	24'-DDD	2	7.5	20	50	150	400	1200
	44'-DDD	2	7.5	20	50	150	400	1200
	24'-DDT	2	7.5	20	50	150	400	1200
	44'-DDT	2	7.5	20	50	150	400	1200
	Endrin Aldehyde	2	7.5	20	50	150	400	1200
	Endrin Ketone	2	7.5	20	50	150	400	1200
	Methoxychlor	2	7.5	20	50	150	400	1200
	Dicofol	20	75	200	500	1500	4000	12000
	Mirex	2	7.5	20	50	150	400	1200
	Parlar-26	2	7.5	20	50	150	400	1200
	Parlar-50	2	7.5	20	50	150	400	1200
	Parlar-62	2	7.5	20	50	150	400	1200

Laboratory Surrogate	1,3-Dibromobenzene	20	20	20	20	20	20	20
	Endrin Ketone	2	7.5	20	50	150	400	1200
Field Surrogate	1,3,5-Tribromobenzene	20	20	20	20	20	20	20
	1,2,4,5-Tetrabromobenzene	20	20	20	20	20	20	20
	delta-BHC	2	7.5	20	50	150	400	1200
GPC Recovery Standard	13C12-PCB-133	100	100	100	100	100	100	100
Extraction Standard	13C6-Pentachlorobenzene	250	250	250	250	250	250	250
	13C6-Hexachlorobenzene	250	250	250	250	250	250	250
	13C6-alpha-BHC	250	250	250	250	250	250	250
	d6-gamma-BHC	250	250	250	250	250	250	250
	13C10-Heptachlor	250	250	250	250	250	250	250
	13C10-Oxychlorane	250	250	250	250	250	250	250
	13C10-trans-Nonachlor	250	250	250	250	250	250	250
	13C12-Dieldrin	250	250	250	250	250	250	250
	13C12-Endrin	250	250	250	250	250	250	250
	13C9-Endosulfan-II	250	250	250	250	250	250	250
	13C12-44'-DDE	250	250	250	250	250	250	250
	13C12-44'-DDD	250	250	250	250	250	250	250
	13C12-44'-DDT	250	250	250	250	250	250	250
	d6-Methoxychlor	250	250	250	250	250	250	250
	13C10-Mirex	250	250	250	250	250	250	250
Injection Standard	13C12-PCB-9	100	100	100	100	100	100	100
	13C12-PCB-52	100	100	100	100	100	100	100
	13C12-PCB-101	100	100	100	100	100	100	100

Calibration and Quality Control Limits

The calibration and QC Sample control limits are presented in Table 2 below. For the lowest standard used for initial calibration, and for each calibration verification CS3, the signal to noise ratio for each ion for both labelled and non-labelled analytes must be greater than or equal to 10:1

		Calibration		Samples and QC Samples	
		Initial Cal. %RSD	Cal. Ver. %Exp	LCS % Rec	Samples % Rec
Natives	Hexachlorobutadiene	35	70-130	5-200	
	1,2,4,5-Tetrachlorobenzene	35	70-130	5-200	
	1,2,3,4-Tetrachlorobenzene	35	70-130	5-200	
	Pentachlorobenzene	20	70-130	5-200	
	Hexachlorobenzene	20	75-125	10-150	
	3,4,5,6-Tetrachloroveratrole	35	70-130	20-200	
	Pentachloroanisole	35	70-130	20-200	
	alpha-BHC	20	75-125	50-120	
	beta-BHC	35	75-125	50-120	
	gamma-BHC	20	75-125	50-120	
	delta-BHC	35	75-125	50-120	
	Pentachloronitrobenzene	35	70-130	20-200	
	Heptachlor	20	75-125	50-120	
	Aldrin	35	75-125	50-120	
	4,4'-DDNU	35	75-125	20-160	
	Dacthal	35	50-150	20-200	
	Chlorpyrifos	35	75-125	19-163	
	Octachlorostyrene	35	70-130	50-175	
	Heptachlor Epoxide B	35	70-130	20-200	
	Heptachlor Epoxide A	35	75-125	50-120	
	Oxychlordan	20	75-125	50-120	
	4,4'-DDMU	35	75-125	20-160	
	trans-Chlordane	35	75-125	50-120	
	cis-Chlordane	35	75-125	50-120	
	trans-Nonachlor	20	75-125	50-120	
	Dieldrin	20	75-125	50-120	
	Endrin	20	75-125	50-120	
	cis-Nonachlor	35	75-125	50-120	
	Endosulfan I	35	75-125	50-120	
	Endosulfan II	20	75-125	5-200	
	Endosulfan Sulfate	35	75-125	50-200	
	24'-DDE	35	75-125	24-123	
	44'-DDE	20	75-125	50-120	
	24'-DDD	35	75-125	50-120	
	44'-DDD	20	75-125	42-120	
	24'-DDT	35	75-125	50-120	
	44'-DDT	20	75-125	50-120	
	Endrin Aldehyde	35	70-130	20-200	
	Endrin Ketone	35	75-125	50-134	
	Methoxychlor	20	75-125	50-120	
	Dicofol	35	50-150	20-200	
	Mirex	20	75-125	50-120	
	Parlar-26	35	70-130	20-200	
	Parlar-50	35	70-130	20-200	
	Parlar-62	35	70-130	20-200	

Laboratory Surrogate	1,3-Dibromobenzene	35	50-150	50-150	40-120
	Endrin Ketone	35	50-150	50-150	40-150
Field Surrogate	1,3,5-Tribromobenzene	35	50-150	50-150	60-120
	1,2,4,5-Tetrabromobenzene	35	50-150	50-150	60-120
	delta-BHC	35	50-150	50-150	60-120
GPC Recovery Standard	13C12-PCB-133	35	50-150	50-150	50-120
Extraction Standard	13C6-Pentachlorobenzene	35	70-130	5-120	5-120
	13C6-Hexachlorobenzene	35	70-130	5-120	5-120
	13C6-alpha-BHC	35	70-130	13-138	16-129
	d6-gamma-BHC	35	70-130	5-124	11-120
	13C10-Heptachlor	35	70-130	5-128	5-120
	13C10-Oxychlorane	35	70-130	5-144	23-135
	13C10-trans-Nonachlor	35	70-130	17-154	36-139
	13C12-Dieldrin	35	70-130	19-161	40-151
	13C12-Endrin	35	70-130	20-157	35-155
	13C9-Endosulfan-II	35	70-130	5-144	15-148
	13C12-44'-DDE	35	70-130	26-169	47-160
	13C12-44'-DDD	35	70-130	13-200	5-150
	13C12-44'-DDT	35	70-130	13-200	5-120
	d6-Methoxychlor	35	70-130	8-200	5-120
	13C10-Mirex	35	70-130	5-138	5-120

Additional Continuing Calibration Details:

After initial calibration is established, a CS4 standard is injected as a Continuing Calibration Verification (CCV) at the beginning of every 12 hour shift in which samples are analyzed. If the following performance criteria are met, analysis of samples may proceed:

- Ion abundance ratios are within their respective theoretical limits (see Table 3)
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20% (see Section 5.2.4.2)
- The %Diff is within the CCV limits (see Table 2)

If these performance criteria are not met, GC maintenance is performed or the system is adjusted and a new CCV is injected, or a new initial calibration is run.

Mid-run Calibration Verification:

While the EPA 1699 does not require a post-run calibration verification standard to be run, it is recognized that responses and/or relative responses of some targets may change significantly during HRMS analysis due to sample related contamination of GC or MS components. This problem is compounded by chemical dissimilarities between some targets and their quantification reference standards in the case of internal standard quantification. Enhanced quantification and a measure of confidence in sample results obtained during an analytical shift can be attained by injecting a CS4 calibration verification (VER) standard in the middle of, and at the end of a 12-hour run, and quantifying samples against the average of bracketing calibration standards where improved results would be achieved.

a) Mid-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the mid-run VER can be quantified vs. the initial calibration, and analysis can proceed. If the mid-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the pre-run CCV and mid-run VER as a two-point calibration) and analysis can proceed, provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the pre-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the mid-run VER vs. the pre-run CCV meets the CCV %Diff limits (See Table 2)

If the mid-run VER does not meet the above criteria either, analysis cannot continue without corrective action (samples analyzed after the mid-run VER in an automated sequence must be re-analyzed). The samples preceding the failing mid-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

a) Post-Run VER:

If this analysis meets the performance criteria for a pre-run CCV, then all of the samples preceding the post-run VER can be quantified vs. the initial calibration. If the post-run VER does not meet pre-run CCV criteria, the preceding samples can be quantified vs. bracketing calibration runs (using the post-run VER and mid-run VER as a two-point calibration) provided that the following criteria are met:

- Ion abundance ratios are within their respective theoretical limits (see Table 1) or within 15% of the ratios in the mid-run CCV
- All targets have a s/n ratio of at least 10:1
- The RT of each analyte is within 15 seconds of that in the initial calibration
- Endin and DDT breakdown is less than 20%
- The %RPD of the post-run VER vs. the mid-run VER meets the CCV %Diff limits (See Table 2)

If the post-run VER does not meet the above criteria either, the samples preceding the failing post-run VER may be flagged and reported, but must be assessed for impact on data quality:

- If a failing native target is present in any of the preceding samples above the Method Detection Limit (or above the client's lower required Detection Limit, if known), that sample must be re-analyzed for that target.
- If a failing native target's Estimated Detection Limit is above the Method Detection Limit (or above the client's lower required Detection Limit, if known) due to deterioration of system performance, that sample must be re-analyzed for that target.

Reporting Limits:

Unless indicated in the otherwise, native target data is reported down to 2.5:1 signal to noise for each isomer grouping for each extract injection. This is consistent to SW846 8290 defined protocols (i.e. EDL or Estimated Detection Limit) and is commonly applied throughout the industry to any and all performance based HRMS methods.

Method Blank:

The method blank levels must be below the response to the lowest calibration standard used for initial calibration.

MS/MSD (where required):

The % relative difference between the MS and MSD spike recoveries should be less than or equal to 20%.

Instrument/Run Performance Criteria:

a) Chromatographic Performance

For the DB-5 column, 44'-DDT and 24'-DDT (or the labelled analogues) must be uniquely resolved to a valley height of less than 60% of the shorter of the two peaks.

b) DDT and Endrin Breakdown

A custom standard (HROCP-GC_BD#1) is injected to measure the breakdown of endrin and DDT during the run. This standard must be injected at the beginning and end of each 12 hour shift, and it is also recommended that it be injected along with the mid-run CCV where used. This standard contains 13C12-4,4'-DDT, 13C12-endrin, and native endrin, endrin aldehyde and endrin ketone.

- For measurement of DDT breakdown, measure the concentration for 13C12-44'-DDE, 13C12-44'-DDD and 13C12-44'-DDT (the labelled DDT is part of the standard, and the labelled DDE and DDD are breakdown products). Calculate breakdown using the following formula:

13C12-44'-DDT % Breakdown =

$$\frac{(\text{concentration of 13C12-44'-DDD} + \text{concentration of 13C12-44'-DDE})}{\text{concentration of 13C12-44'-DDT}} \times 100\%$$

labelled DDT = part of standard; labelled DDE and DDD = breakdown products

- Additionally, measurement of endrin breakdown can be performed. For measurement of endrin breakdown, measure the concentration of endrin, endrin aldehyde, and endrin ketone (these natives are quantified by isotope dilution vs. the 13C12-endrin). Calculate breakdown using the following formula:

Endrin % Breakdown =

$$\frac{(\text{concentration of endrin aldehyde} + \text{concentration of endrin ketone})}{\text{concentration of endrin}} \times 100\%$$

If the breakdown of endrin and/or DDT exceeds 20% in a standard, the targets are decomposing on the inlet or column, and remedial action must be taken (inlet maintenance and trimming of the analytical column) before any valid sample data can be produced. If the breakdown of DDT or endrin in a sample exceeds 20% and there is that native in the sample above the MDL, that sample will have to be reanalyzed for that target (further cleanup or dilution of that sample is recommended before reanalysis).

Breakdown exceedences can be ignored under the following circumstances:

- Where the endrin breakdown fails but DDT breakdown passes and where DDT and/or its metabolites are the only targets.
- Where the DDT breakdown fails but endrin breakdown passes and where endrin and/or its metabolites are the only targets.
- For the determination of other pesticide targets (i.e. non-DDT and non-Endrin and metabolite targets) which have a corresponding labelled extraction/internal standard of exactly the same isomer.

c) Mass Resolution:

At the beginning of and just following the end of each 12 hour run sequence, the instrument must be checked to demonstrate a resolution of 10,000 for each quantification window.

The maximum time between scans within a descriptor is 1 second.

Lock mass deviations to the average response must be less than or equal 20%.

Laboratory Duplicates:

The % relative difference between duplicates should be less than or equal to 25% but only where the response is greater than the low calibration standard.

Analyte Identification Criteria:

Ion Ratio Criteria

For all compounds, a pair of ions with a specific isotopic ratio are being monitored. To have a confirmed positive response to a native or labelled OCP, that ratio must be within the theoretical limits in Table 1, or within 15% of the observed values on the most recent CS4 analysis.

Signal to Noise Criteria

The signal to noise ratio for each quantification and confirmation ion for labelled and non-labelled analytes must be greater than or equal to 10:1 for the initial calibration CS1 and for each calibration verification CS4. For positive identification of a native target in a sample, both ions must have a s/n ratio exceeding 2.5:1.

Matched RT on Peak Maxima

The retention time (RT) of the peak maxima for each pair of quantification ions must be no more than 2 seconds (i.e. 2 scans) difference.

Expected Retention Time (RT)

The peak must be at the expected RT

- within -1/+3 seconds of the labelled standard for natives with their own ^{13}C labelled standard
- within +/- 0.008 RRT units of the RRT in the most recent CS4 analysis for targets with their own ^2H labelled standard
- within +/- 0.010 RRT units of the RRT in the most recent CS4 analysis for targets without their own labelled standard

As per EPA 1699 Sections 16.5-16.6, it is possible that not all of the positive ID criteria are met. If a pesticide is deemed to be present in this case by the experienced spectroscopist, the result may be flagged as "this result is unconfirmed and must not be used for permitting or regulatory compliance purposes". If the ion abundance ratio criteria are not met, the result must also include an "R" flag.

Table 3: Monitored Masses, Ion Abundance Ratios, and Quantitation/RT References

Entry	Native Standard	Quantification Method	Quantification vs. Entry #:	Quantitation Ion	Confirmation Ion	Theoretical Ion Abundance ratio	Ion Abundance Ratio Tolerance
1	24'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
2	44'-DDE	rel_int	7	246.0003	247.9974	1.56	0.25
3	24'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
4	44'-DDD	rel_int	8	235.0082	237.0053	1.56	0.25
5	24'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
6	44'-DDT	rel_int	9	235.0082	237.0053	1.56	0.25
Extraction Standard							
7	13C12-44'-DDE	rel_int	10	258.0405	260.0376	1.56	0.25
8	13C12-44'-DDD	rel_int	10	247.0483	249.0454	1.56	0.25
9	13C12-44'-DDT	rel_int	10	247.0483	249.0454	1.56	0.25
Injection Standard							
10	13C12-PCB-52	abs_int	-	301.9625	303.9597	0.77	0.15

Data Calculations:

a) Analyte Concentrations:

The relative response factor of each target relative to the standard against which it is to be calculated is determined using the area responses of both quantification ions via equation 9.1.

In cases where a native target is calculated against an exact labelled analogue, the quantification will be considered to be by isotope dilution. In other cases, the quantification will be considered to be by internal standard.

$$\text{RRF} = \frac{(A1_t + A2_t) C_s}{(A1_s + A2_s) C_t} \quad \text{Equ. 9.1}$$

Where,

$A1_t + A2_t$ = The areas of the two quantification ions for the target analyte

$A1_s + A2_s$ = The areas of the two quantification ions for the labelled compound against which the target analyte will be calculated.

C_t = The concentration in the calibration standard of the target analyte.

C_s = The concentration in the calibration standard of the labelled compound against which the target will be calculated.

For all analytes to be quantified and from the initial calibration series of standard injections, a table of RRFs is prepared. The relative standard deviation (%RSD, or the coefficient of variance) is checked to confirm that appropriate method criteria has been met as listed in Table 3. The average of the five or six levels of for each analyte, RRF_{av} is applied for quantification of samples according to Equations 9.2 and 9.3 below.

$$\text{Amount in sample (ng)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av})} \quad \text{Equ. 9.2}$$

$$\text{Concentration in sample (ng/g or ng/L)} = \frac{(A1_n + A2_n) Q_l}{(A1_l + A2_l) (\text{RRF}_{av}) (W_s)} \quad \text{Equ. 9.3}$$

Where,

Q_l = The amount (pg) of labelled compound added to the sample

W_s = The weight (g) or volume (l) of sample

b) Extraction, Clean-up, and Sampling Standard Recovery Calculation:

The extraction, clean-up, and sampling standard recoveries are determined by Equation 9.4 below.

$$\% \text{ Recovery} = \frac{(\text{Amount in sample})}{(\text{Amount added to sample})} \times 100 \quad \text{Equ. 9.4}$$

c) Estimated Detection Limit

$$\text{EDL} = \frac{2.5 \times H_x \times Q_{\text{es}}}{H_{\text{es}} \times W \times \text{RFF}_{\text{av}}} \quad \text{Equ. 9.5}$$

Where,

EDL = estimated detection limit for native targets

H_x = sum of the height of the noise level for each quantification ions for the unlabeled target

H_{es} = Sum of the heights of responses of both quantification ions for the labelled extraction standard.

W = weight of volume of sample

RFF_{av} = average relative response factor

Q_{es} = Amount of extraction standard added

Chromatogram Annotation Codes

All manually integrated peaks are expanded and reprinted with the following annotations:

* Analyst Initials	AA
* Date	YYMMDD
* integration code	CC

The Syntax is:

Example:

AAYYMMDDCC

SK111220MB

Code	Mnemonic	Description
MB	Manual Baseline	The peak was manually integrated because the initial baseline was determined incorrectly by the software
MS	Manual Split	The peak was manually integrated because the peak was incorrectly or not split by the software
MJ/MC	Manual Join/Manual Combine	The peak was manually integrated because the peak was split by the software and the peak should be integrated as a single peak
MA	Manual Add	The peak was manually integrated because the signal:noise ratio was judged to be >2.5
MD	Manual Delete	The peak was excluded because the signal:noise ratio was judged to be <2.5
MX	Manual Exclude	The peak was excluded due to an interference
MT	Manual Time	The peak retention time was manually chosen

The following explanatory annotation codes may appear on the chromatograms of peaks that have been reviewed:

Code	Mnemonic	Description
+	Detected Peak	A peak was detected at this mass and retention time that was above 2.5:1 signal to noise
<	Below Detection Limit	The signal at this mass and retention time was below 2.5:1 signal to noise
EMPC	Estimated Maximum Possible Concentration	The signal at this mass and retention time is an interference such that the target compound could not be confirmed
X-RT	Not Detected due to Retention Time non-conformance	The signal at this retention time could not be used to positively identify the target compound because of retention time non-conformance (apex of quantification and confirmation ions do not maximize within the same two seconds, or the retention time of the peak does not fall within the expected range with respect to its labeled analogue)
X-LOC	Not Detected due to interference from a higher level of chlorination	The signal at this retention time is attributable to a fragment from a co-eluting compound at a higher level of chlorination, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-DPE	Not Detected due to diphenyl ether interference	The signal at this retention time is attributable to interference from a chlorinated diphenyl ether, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)
X-IF	Not Detected due to interference	The signal at this retention time is attributable to a co-eluting interference, and cannot be used to positively identify the target. The result is expressed as an Estimated Maximum Possible Concentration (EMPC)

SVOC DATA PACKAGE

SECTION 4: CALIBRATION DATA

Including:

for Multi-Point Calibration(s)

- Multi-Point Calibration Tables
- Individual Quantitation Reports

for Continuing Calibration(s)

- Individual Quantitation Reports

ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180816B13	16-Aug-2018 21:09
CS-2	6-180816B12	16-Aug-2018 20:49
CS-3	6-180816B18	16-Aug-2018 22:50
CS-4	6-180816B17	16-Aug-2018 22:30
CS-5	6-180816B16	16-Aug-2018 22:10
CS-6	6-180816B15	16-Aug-2018 21:50
CS-7	6-180816B14	16-Aug-2018 21:32

Approved: *R. Bakhtiari*
--e-signature--
21-Aug-2018

Target Analytes	Relative Response Factors							Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	CS-7		
2,4'-DDE	1.331	1.412	1.221	1.344	1.426	1.397		1.355	6%
4,4'-DDE	1.151	1.175	1.023	1.105	1.116	1.065		1.106	5%
2,4'-DDD	1.115	1.211	1.069	1.144	1.179	1.144		1.144	4%
4,4'-DDD	1.175	1.232	1.117	1.153	1.176	1.141		1.166	3%
2,4'-DDT	1.177	1.205	0.973	1.085	1.104	1.106	1.154	1.115	7%
4,4'-DDT	1.457	1.245	1.036	0.997	1.041	1.000	1.058	1.119	15%
Extraction Standards									
4,4'-DDE, 13C12-	1.010	0.977	1.059	1.028	0.975	0.981		1.005	3%
4,4'-DDD, 13C12-	0.710	0.697	0.832	0.834	0.816	0.879		0.795	9%
4,4'-DDT, 13C12-	0.397	0.377	0.532	0.515	0.502	0.521	0.516	0.480	13%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B13
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 16-Aug-2018 21:09

Approved: *R. Bakhtiari*
 --e-signature--
 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.58	2.00	1.40E+05	1.331
4,4'-DDE	11.41	1.54	2.00	1.21E+05	1.151
2,4'-DDD	11.58	1.67	2.00	8.23E+04	1.115
4,4'-DDD	12.09	1.59	2.00	8.67E+04	1.175
2,4'-DDT	12.15	1.56	2.00	4.86E+04	1.177
4,4'-DDT	12.59	1.59	2.00	6.02E+04	1.457
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.52	250.00	1.31E+07	1.010
4,4'-DDD, 13C12-	12.09	1.56	250.00	9.23E+06	0.710
4,4'-DDT, 13C12-	12.58	1.57	250.00	5.16E+06	0.397
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.82	100.00	5.20E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B12
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 16-Aug-2018 20:49

Approved: *R. Bakhtiari*
 --e-signature--
 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	7.50	5.34E+05	1.412
4,4'-DDE	11.42	1.55	7.50	4.44E+05	1.175
2,4'-DDD	11.59	1.61	7.50	3.26E+05	1.211
4,4'-DDD	12.09	1.61	7.50	3.32E+05	1.232
2,4'-DDT	12.15	1.60	7.50	1.76E+05	1.205
4,4'-DDT	12.59	1.61	7.50	1.81E+05	1.245
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.53	250.00	1.26E+07	0.977
4,4'-DDD, 13C12-	12.09	1.56	250.00	8.99E+06	0.697
4,4'-DDT, 13C12-	12.58	1.57	250.00	4.86E+06	0.377
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.76	100.00	5.16E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B18
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 16-Aug-2018 22:50

Approved: *R. Bakhtiari*
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 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.55	20.00	1.35E+06	1.221
4,4'-DDE	11.41	1.54	20.00	1.13E+06	1.023
2,4'-DDD	11.58	1.60	20.00	9.26E+05	1.069
4,4'-DDD	12.09	1.56	20.00	9.67E+05	1.117
2,4'-DDT	12.15	1.59	20.00	5.38E+05	0.973
4,4'-DDT	12.59	1.59	20.00	5.73E+05	1.036
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.52	250.00	1.38E+07	1.059
4,4'-DDD, 13C12-	12.08	1.57	250.00	1.08E+07	0.832
4,4'-DDT, 13C12-	12.58	1.55	250.00	6.91E+06	0.532
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.81	100.00	5.20E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B17
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 16-Aug-2018 22:30

Approved: *R. Bakhtiari*
 --e-signature--
 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.55	50.00	3.51E+06	1.344
4,4'-DDE	11.42	1.56	50.00	2.88E+06	1.105
2,4'-DDD	11.59	1.59	50.00	2.42E+06	1.144
4,4'-DDD	12.09	1.60	50.00	2.44E+06	1.153
2,4'-DDT	12.15	1.59	50.00	1.42E+06	1.085
4,4'-DDT	12.59	1.59	50.00	1.30E+06	0.997
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.52	250.00	1.30E+07	1.028
4,4'-DDD, 13C12-	12.09	1.54	250.00	1.06E+07	0.834
4,4'-DDT, 13C12-	12.58	1.56	250.00	6.54E+06	0.515
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.82	100.00	5.08E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B16
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 16-Aug-2018 22:10

Approved: *R. Bakhtiari*
 --e-signature--
 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.87	1.54	150.00	1.18E+07	1.426
4,4'-DDE	11.4	1.56	150.00	9.27E+06	1.116
2,4'-DDD	11.57	1.60	150.00	8.19E+06	1.179
4,4'-DDD	12.08	1.61	150.00	8.17E+06	1.176
2,4'-DDT	12.14	1.58	150.00	4.72E+06	1.104
4,4'-DDT	12.58	1.60	150.00	4.45E+06	1.041
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.51	250.00	1.38E+07	0.975
4,4'-DDD, 13C12-	12.07	1.55	250.00	1.16E+07	0.816
4,4'-DDT, 13C12-	12.57	1.56	250.00	7.12E+06	0.502
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.53	0.82	100.00	5.68E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B15
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 16-Aug-2018 21:50

Approved: *R. Bakhtiari*
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 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.87	1.53	400.00	3.11E+07	1.397
4,4'-DDE	11.4	1.54	400.00	2.37E+07	1.065
2,4'-DDD	11.57	1.60	400.00	2.28E+07	1.144
4,4'-DDD	12.08	1.60	400.00	2.28E+07	1.141
2,4'-DDT	12.14	1.59	400.00	1.31E+07	1.106
4,4'-DDT	12.58	1.63	400.00	1.18E+07	1.000
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.53	250.00	1.39E+07	0.981
4,4'-DDD, 13C12-	12.07	1.54	250.00	1.25E+07	0.879
4,4'-DDT, 13C12-	12.57	1.55	250.00	7.38E+06	0.521
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.53	0.81	100.00	5.67E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS7-056**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180816B14
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 16-Aug-2018 21:32

Approved: *R. Bakhtiari*
 --e-signature--
 20-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	0	0.00	1200.00	0.00E+00	0.000
4,4'-DDE	0	0.00	1200.00	0.00E+00	0.000
2,4'-DDD	0	0.00	1200.00	0.00E+00	0.000
4,4'-DDD	0	0.00	1200.00	0.00E+00	0.000
2,4'-DDT	12.15	1.47	1200.00	4.05E+07	1.154
4,4'-DDT	12.59	1.51	1200.00	3.72E+07	1.058

Extraction Standards

4,4'-DDE, 13C12-	0	0.00	250.00	0.00E+00	0.000
4,4'-DDD, 13C12-	0	0.00	250.00	0.00E+00	0.000
4,4'-DDT, 13C12-	12.58	1.57	250.00	7.32E+06	0.516

Labeled Injection Standards

13C12-PCB-52 (IS)	9.54	0.81	100.00	5.68E+06	
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ALS Life sciences

Calibration Summary Report

Calibration Level	Filename	Run Date
CS-1	6-180817A17	18-Aug-2018 03:06
CS-2	6-180817A16	18-Aug-2018 02:46
CS-3	6-180817A22	18-Aug-2018 04:47
CS-4	6-180817A21	18-Aug-2018 04:27
CS-5	6-180817A20	18-Aug-2018 04:07
CS-6	6-180817A19	18-Aug-2018 03:47
CS-7	6-180817A18	18-Aug-2018 03:26

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Relative Response Factors							Mean	% RSD
	CS-1	CS-2	CS-3	CS-4	CS-5	CS-6	CS-7		
2,4'-DDE	1.396	1.501	1.344	1.463	1.537	1.500		1.457	5%
4,4'-DDE	1.103	1.183	1.030	1.125	1.137	1.098		1.113	5%
2,4'-DDD	1.220	1.270	1.159	1.248	1.268	1.249		1.236	3%
4,4'-DDD	1.139	1.205	1.099	1.191	1.178	1.150		1.160	3%
2,4'-DDT	1.110	1.267	1.083	1.186	1.212	1.191		1.175	6%
4,4'-DDT	1.026	1.061	0.973	1.038	1.059	1.001		1.026	3%
Extraction Standards									
4,4'-DDE, 13C12-	0.867	0.854	0.930	0.890	0.832	0.824	0.783	0.854	6%
4,4'-DDD, 13C12-	0.722	0.707	0.805	0.789	0.774	0.792	0.833	0.775	6%
4,4'-DDT, 13C12-	0.491	0.470	0.566	0.545	0.537	0.553	0.548	0.530	7%

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS1-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A17
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 18-Aug-2018 03:06

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.54	2.00	1.30E+05	1.396
4,4'-DDE	11.41	1.55	2.00	1.03E+05	1.103
2,4'-DDD	11.58	1.55	2.00	9.47E+04	1.220
4,4'-DDD	12.09	1.57	2.00	8.84E+04	1.139
2,4'-DDT	12.14	1.54	2.00	5.85E+04	1.110
4,4'-DDT	12.58	1.55	2.00	5.41E+04	1.026

Extraction Standards

4,4'-DDE, 13C12-	11.4	1.52	250.00	1.16E+07	0.867
4,4'-DDD, 13C12-	12.08	1.56	250.00	9.70E+06	0.722
4,4'-DDT, 13C12-	12.58	1.56	250.00	6.59E+06	0.491

Labeled Injection Standards

13C12-PCB-52 (IS)	9.54	0.82	100.00	5.37E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS2-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A16
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 18-Aug-2018 02:46

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.56	7.50	5.30E+05	1.501
4,4'-DDE	11.41	1.56	7.50	4.18E+05	1.183
2,4'-DDD	11.58	1.61	7.50	3.71E+05	1.270
4,4'-DDD	12.08	1.59	7.50	3.52E+05	1.205
2,4'-DDT	12.14	1.60	7.50	2.46E+05	1.267
4,4'-DDT	12.58	1.63	7.50	2.06E+05	1.061
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.53	250.00	1.18E+07	0.854
4,4'-DDD, 13C12-	12.08	1.55	250.00	9.75E+06	0.707
4,4'-DDT, 13C12-	12.58	1.55	250.00	6.47E+06	0.470
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.81	100.00	5.51E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS3-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A22
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 18-Aug-2018 04:47

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.87	1.55	20.00	1.12E+06	1.344
4,4'-DDE	11.4	1.59	20.00	8.57E+05	1.030
2,4'-DDD	11.57	1.61	20.00	8.35E+05	1.159
4,4'-DDD	12.08	1.59	20.00	7.92E+05	1.099
2,4'-DDT	12.14	1.60	20.00	5.48E+05	1.083
4,4'-DDT	12.58	1.65	20.00	4.92E+05	0.973
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.53	250.00	1.04E+07	0.930
4,4'-DDD, 13C12-	12.07	1.55	250.00	9.00E+06	0.805
4,4'-DDT, 13C12-	12.57	1.56	250.00	6.33E+06	0.566
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.53	0.77	100.00	4.47E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS4-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A21
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 18-Aug-2018 04:27

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.54	50.00	3.19E+06	1.463
4,4'-DDE	11.41	1.57	50.00	2.46E+06	1.125
2,4'-DDD	11.58	1.60	50.00	2.42E+06	1.248
4,4'-DDD	12.09	1.61	50.00	2.31E+06	1.191
2,4'-DDT	12.15	1.60	50.00	1.58E+06	1.186
4,4'-DDT	12.59	1.57	50.00	1.39E+06	1.038

Extraction Standards

4,4'-DDE, 13C12-	11.4	1.53	250.00	1.09E+07	0.890
4,4'-DDD, 13C12-	12.08	1.58	250.00	9.68E+06	0.789
4,4'-DDT, 13C12-	12.58	1.62	250.00	6.68E+06	0.545

Labeled Injection Standards

13C12-PCB-52 (IS)	9.54	0.79	100.00	4.90E+06	
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ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS5-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A20
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 18-Aug-2018 04:07

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.88	1.55	150.00	1.07E+07	1.537
4,4'-DDE	11.41	1.56	150.00	7.91E+06	1.137
2,4'-DDD	11.58	1.60	150.00	8.21E+06	1.268
4,4'-DDD	12.09	1.61	150.00	7.63E+06	1.178
2,4'-DDT	12.14	1.60	150.00	5.45E+06	1.212
4,4'-DDT	12.58	1.62	150.00	4.76E+06	1.059
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.53	250.00	1.16E+07	0.832
4,4'-DDD, 13C12-	12.08	1.55	250.00	1.08E+07	0.774
4,4'-DDT, 13C12-	12.58	1.56	250.00	7.49E+06	0.537
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.53	0.82	100.00	5.58E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS6-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A19
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date 18-Aug-2018 03:47

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE	10.87	1.57	400.00	2.98E+07	1.500
4,4'-DDE	11.4	1.55	400.00	2.18E+07	1.098
2,4'-DDD	11.57	1.60	400.00	2.39E+07	1.249
4,4'-DDD	12.08	1.59	400.00	2.20E+07	1.150
2,4'-DDT	12.14	1.59	400.00	1.59E+07	1.191
4,4'-DDT	12.58	1.58	400.00	1.33E+07	1.001
Extraction Standards					
4,4'-DDE, 13C12-	11.4	1.52	250.00	1.24E+07	0.824
4,4'-DDD, 13C12-	12.07	1.54	250.00	1.19E+07	0.792
4,4'-DDT, 13C12-	12.57	1.57	250.00	8.33E+06	0.553
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.53	0.82	100.00	6.03E+06	

ALS Life sciences

Calibration Report

ALS Sample ID **H6-18-CS7-057**
 Analysis Method EPA 1699 (mod)
 Analysis Type Calibration

Filename 6-180817A18
 Inst # HRMS-6
 Column HP5MSUSR163634H

Run Date
 18-Aug-2018 03:26

Approved: *R. Bakhtiari*
 --e-signature--
 21-Aug-2018

Target Analytes	Ret. Time	Ion Ratio	Concentration ng / mL	Response	RRF
2,4'-DDE					
4,4'-DDE					
2,4'-DDD					
4,4'-DDD					
2,4'-DDT					
4,4'-DDT					
Extraction Standards					
4,4'-DDE, 13C12-	11.41	1.53	250.00	1.10E+07	0.783
4,4'-DDD, 13C12-	12.09	1.56	250.00	1.17E+07	0.833
4,4'-DDT, 13C12-	12.59	1.55	250.00	7.71E+06	0.548
Labeled Injection Standards					
13C12-PCB-52 (IS)	9.54	0.82	100.00	5.63E+06	

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-056	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B19
Run Date	16-Aug-18 23:10
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	0			
4,4'-DDE	150	11.41	92	75-125
2,4'-DDD	0			
4,4'-DDD	150	12.09	94	75-125
2,4'-DDT	0			
4,4'-DDT	150	12.59	87	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.41	100	70-130
4,4'-DDD, 13C12-	250	12.08	106	70-130
4,4'-DDT, 13C12-	250	12.58	113	70-130

ALS Life sciences

Second Source Calibration Verification Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-RS1-057	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A23
Run Date	18-Aug-18 05:07
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	0			
4,4'-DDE	150	11.41	96	75-125
2,4'-DDD	0			
4,4'-DDD	150	12.08	94	75-125
2,4'-DDT	0			
4,4'-DDT	150	12.58	94	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	128	70-130
4,4'-DDD, 13C12-	250	12.08	131	70-130
4,4'-DDT, 13C12-	250	12.57	133	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0784	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B20
Run Date	16-Aug-18 23:32
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	98	75-125
4,4'-DDE	50	11.40	98	75-125
2,4'-DDD	50	11.57	100	75-125
4,4'-DDD	50	12.08	99	75-125
2,4'-DDT	50	12.14	96	75-125
4,4'-DDT	50	12.58	94	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	104	70-130
4,4'-DDD, 13C12-	250	12.07	106	70-130
4,4'-DDT, 13C12-	250	12.57	114	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0786	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B35
Run Date	17-Aug-18 04:33
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	97	75-125
4,4'-DDE	50	11.40	99	75-125
2,4'-DDD	50	11.57	94	75-125
4,4'-DDD	50	12.08	98	75-125
2,4'-DDT	50	12.14	91	75-125
4,4'-DDT	50	12.58	90	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	107	70-130
4,4'-DDD, 13C12-	250	12.08	115	70-130
4,4'-DDT, 13C12-	250	12.57	135	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0783	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B43
Run Date	17-Aug-18 07:14
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	101	75-125
4,4'-DDE	50	11.40	99	75-125
2,4'-DDD	50	11.58	100	75-125
4,4'-DDD	50	12.08	99	75-125
2,4'-DDT	50	12.14	97	75-125
4,4'-DDT	50	12.58	91	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	105	70-130
4,4'-DDD, 13C12-	250	12.08	106	70-130
4,4'-DDT, 13C12-	250	12.57	108	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0793	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A24
Run Date	18-Aug-18 05:29
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	98	75-125
4,4'-DDE	50	11.40	99	75-125
2,4'-DDD	50	11.57	97	75-125
4,4'-DDD	50	12.08	98	75-125
2,4'-DDT	50	12.14	101	75-125
4,4'-DDT	50	12.58	102	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	101	70-130
4,4'-DDD, 13C12-	250	12.08	99	70-130
4,4'-DDT, 13C12-	250	12.57	99	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0795	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A42
Run Date	18-Aug-18 11:30
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.		Limits	
		Time	% Rec	Flags	
2,4'-DDE	50	10.88	104	75-125	
4,4'-DDE	50	11.42	101	75-125	
2,4'-DDD	50	11.59	109	75-125	
4,4'-DDD	50	12.09	105	75-125	
2,4'-DDT	50	12.15	108	75-125	
4,4'-DDT	50	12.59	100	75-125	
Extraction Standards	ng / mL				
4,4'-DDE, 13C12-	250	11.41	95	70-130	
4,4'-DDD, 13C12-	250	12.09	79	70-130	
4,4'-DDT, 13C12-	250	12.58	71	70-130	

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0797	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A67
Run Date	18-Aug-18 19:53
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	102	75-125
4,4'-DDE	50	11.40	102	75-125
2,4'-DDD	50	11.57	103	75-125
4,4'-DDD	50	12.08	104	75-125
2,4'-DDT	50	12.14	104	75-125
4,4'-DDT	50	12.58	102	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.39	108	70-130
4,4'-DDD, 13C12-	250	12.07	106	70-130
4,4'-DDT, 13C12-	250	12.57	105	70-130

ALS Life sciences

Continuing Calibration Report

Sample Name	CCV	Sampling Date	n/a	
ALS Sample ID	H6-18-CCV-0799	Extraction Date	n/a	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	CCV	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A76
Run Date	18-Aug-18 22:54
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng / mL	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	50	10.87	103	75-125
4,4'-DDE	50	11.40	104	75-125
2,4'-DDD	50	11.57	100	75-125
4,4'-DDD	50	12.08	105	75-125
2,4'-DDT	50	12.14	102	75-125
4,4'-DDT	50	12.58	104	75-125
Extraction Standards	ng / mL			
4,4'-DDE, 13C12-	250	11.40	117	70-130
4,4'-DDD, 13C12-	250	12.07	124	70-130
4,4'-DDT, 13C12-	250	12.57	127	70-130

SVOC DATA PACKAGE

SECTION 5: QC SAMPLE DATA

Including:

- Laboratory Method Blank Analysis Reports
- Laboratory Control Sample Analysis Reports
- Matrix Spike Analysis Reports
- Other QC Sample Analysis Reports (where applicable)

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: R. Bakhtiari --e-signature-- 21-Aug-2018
ALS Sample ID	WG2837194-1	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.87 g	
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	6-180816B28
Run Date	17-Aug-18 02:12
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.0131	0.0022	J		0.30
4,4'-DDE	11.41	0.0305	0.0027	J		0.30
2,4'-DDD	11.58	<0.017	0.0028	M,J,R	0.017	0.30
4,4'-DDD	12.08	0.0398	0.0031	M,J		0.30
2,4'-DDT	12.14	0.0524	0.0032	M,J		0.30
4,4'-DDT	12.58	0.360	0.0052	M		0.30
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	55	21-125		
4,4'-DDD, 13C12-	125	12.08	57	5-150		
4,4'-DDT, 13C12-	125	12.58	59	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2837194-2	Extraction Date	3-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	52.1%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B24
Run Date	17-Aug-18 00:51
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.87	131	50-120
4,4'-DDE	25	11.40	95	50-120
2,4'-DDD	25	11.57	102	42-120
4,4'-DDD	25	12.08	96	42-120
2,4'-DDT	25	12.14	87	50-120
4,4'-DDT	25	12.58	90	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.39	37	21-125
4,4'-DDD, 13C12-	125	12.07	69	13-200
4,4'-DDT, 13C12-	125	12.57	59	13-200

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	
ALS Sample ID	WG2839698-1	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	6.93	g
Analysis Type	Blank	Percent Solid	100.0%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A49
Run Date	18-Aug-18 13:51
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/g
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / g	EDL ng / g	Flags	EMPC ng / g	LQL
2,4'-DDE	10.88	0.00956	0.0016	M,J		0.29
4,4'-DDE	11.41	0.0279	0.0021	J		0.29
2,4'-DDD	11.58	0.0188	0.0027	M,J		0.29
4,4'-DDD	12.09	0.0223	0.0033	M,J		0.29
2,4'-DDT	12.15	0.0654	0.0032	J		0.29
4,4'-DDT	12.59	0.261	0.0052	J		0.29
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.41	64	21-125		
4,4'-DDD, 13C12-	125	12.08	54	5-150		
4,4'-DDT, 13C12-	125	12.58	50	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2839698-2	Extraction Date	8-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	52.4%	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180817A45
Run Date	18-Aug-18 12:30
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.88	129	50-120
4,4'-DDE	25	11.41	96	50-120
2,4'-DDD	25	11.58	106	42-120
4,4'-DDD	25	12.09	98	42-120
2,4'-DDT	25	12.14	92	50-120
4,4'-DDT	25	12.58	100	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.40	13	21-125
4,4'-DDD, 13C12-	125	12.08	24	13-200
4,4'-DDT, 13C12-	125	12.58	15	13-200

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	
ALS Sample ID	WG2837173-1	Extraction Date	1-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	L
Analysis Type	Blank	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B29
Run Date	17-Aug-18 02:32
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	ng/L
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	Ret. Time	Conc. ng / L	EDL ng / L	Flags	EMPC ng / L	LQL
2,4'-DDE	10.87	0.0460	0.017	M,J	2.0	
4,4'-DDE	11.40	0.0905	0.021	M,J	2.0	
2,4'-DDD	11.57	<0.039	0.022	M,J,R	0.039	2.0
4,4'-DDD	12.08	0.0877	0.021	J	2.0	
2,4'-DDT	12.14	<0.062	0.022	J,R	0.062	2.0
4,4'-DDT	12.58	0.381	0.031	M,J	2.0	
Extraction Standards	ng					
4,4'-DDE, 13C12-	125	11.40	50	21-125		
4,4'-DDD, 13C12-	125	12.07	59	5-150		
4,4'-DDT, 13C12-	125	12.57	62	5-120		

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	
ALS Sample ID	WG2837173-2	Extraction Date	1-Aug-18	
Analysis Method	EPA 1699 (mod)	Sample Size	1	n/a
Analysis Type	LCS	Percent Solid	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: R. Bakhtiari --e-signature-- 21-Aug-2018

Run Information	Run 1
Filename	6-180816B25
Run Date	17-Aug-18 01:11
Final Volume	1020 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-6 HP5MSUSR163634H

Target Analytes	ng	Ret.	Limits	
		Time	% Rec	Flags
2,4'-DDE	25	10.88	118	50-120
4,4'-DDE	25	11.41	99	50-120
2,4'-DDD	25	11.58	104	42-120
4,4'-DDD	25	12.09	96	42-120
2,4'-DDT	25	12.15	93	50-120
4,4'-DDT	25	12.59	88	50-120
Extraction Standards	ng			
4,4'-DDE, 13C12-	125	11.40	55	21-125
4,4'-DDD, 13C12-	125	12.08	75	13-200
4,4'-DDT, 13C12-	125	12.58	75	13-200

SVOC DATA PACKAGE

SECTION 6: INTERNAL RECORDS

Including:

- Prep Logs
- Independent calculation checks
- Others as listed below:

Extraction Workup Sheet

Batch ID: WG2837194

Analysis: Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst: Radhika Menon

Date: 3-Aug-2018

SUBSAMPLING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2837194-1	Method Blank	10.17
WG2837194-2	Laboratory Control Sample	10.18
WG2837194-3	Extraction and Injection STD.	—
* L2136985-34	PDI-SC-S245-0TO2	10.22
* L2136985-35	PDI-SC-S245-2TO3.8	10.23
* L2136985-36	PDI-SC-S140-4TO5.7	10.00
L2136985-37	PDI-SC-S140-2TO4	10.03
L2136985-38	PDI-SC-S140-0TO2	10.21
L2138374-1	PDI-SC-S163-0TO2	10.35
WG2837194-4	Duplicate(L2138374-1)	10.35
L2138374-2	PDI-SC-S163-2TO4	10.14
L2138374-3	PDI-SC-S163-4TO6	10.01
L2138374-4	PDI-SC-S163-6TO8	10.23
L2138374-5	PDI-SC-S163-8TO10	10.05
* L2138374-6	PDI-SC-S163-10TO12.7	10.17
L2138374-7	PDI-SC-S163-12.7TO13	10.00
L2138374-8	PDI-SC-S251-0TO2.5	10.00
L2138374-9	PDI-SC-S034-0TO1.8	10.01
L2138374-10	PDI-SC-S034-1.8TO4	10.00
L2138374-11	PDI-SC-S034-4TO5.2	10.16
L2138374-12	PDI-SC-S014-0TO2	10.24
L2138374-13	PDI-SC-S014-2TO4	10.24
L2138374-14	PDI-SC-S014-4TO6	10.34
L2138374-15	PDI-SC-S002-0TO2	10.22
See Comment Section		

BATCH TRACKING

	Date/Time/Initials
Subsampling:	RM 1:00pm 3-Aug-18
Balance ID	3955
Client Labels Checked:	RM 1:00pm 3-Aug-18
Samples Spiked	RM 3:45pm 3-Aug-18
Soxhlet start time:	RM 4:15pm 3-Aug-18
Soxhlet reflux properly:	RM 4:50pm 3-Aug-18
Soxhlet end time:	
Rotovap + temp check:	JH2 7-Aug-2018
Sili Column:	JH2 7-Aug-2018
Mini Acid	RM 8:00am 3-Aug-2018
	—
	—
Robo-Vialing:	RM 8:19am 3-Aug-2018
Update to LIMS:	RM 8:25am 3-Aug-2018

10.23 RM 3-Aug-2018

* See comments

Batch ID: WG2837194

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2837194-1	20	✓
WG2837194-2	20	✓
WG2837194-3	20	✓
L2136985-34	20	✓
L2136985-35	20	✓
L2136985-36	20	✓
L2136985-37	20	✓
L2136985-38	20	✓
L2138374-1	20	✓
WG2837194-4	20	✓
L2138374-2	20	✓
L2138374-3	20	✓
L2138374-4	20	✓
L2138374-5	20	✓
L2138374-6	20	✓
L2138374-7	20	✓
L2138374-8	20	✓
L2138374-9	20	✓
L2138374-10	20	✓
L2138374-11	20	✓
L2138374-12	20	✓
L2138374-13	20	✓
L2138374-14	20	✓
L2138374-15	20	✓
	20	

Syringe ID

137

Standard:

HROCP-ES#1-023B

Spike Date:

3-Aug-2018

Spike Witnessing

Chemist's Initials

Chemist:

RM

Witness's Initials

Witness:

NA

Witness's Initials

Correct Syringe Obtained:

NA

Witness's Initials

Correct Standard Obtained:

NA

Witness's Initials

Correct Technique Followed:

NA

Batch ID: WG2837194

Syringe ID

202

Standard:

HROCP-NS#2-001A

Date &
Initials:

3-Aug-2018 RM

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2837194-2	20	✓
WG2837194-3	20	✓

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2837194-1	20	✓
WG2837194-2	20	✓
WG2837194-3	20	✓
L2136985-34	20	✓
L2136985-35	20	✓
L2136985-36	20	✓
L2136985-37	20	✓
L2136985-38	20	✓
L2138374-1	20	✓
WG2837194-4	20	✓
L2138374-2	20	✓
L2138374-3	20	✓
L2138374-4	20	✓
L2138374-5	20	✓
L2138374-6	20	✓
L2138374-7	20	✓
L2138374-8	20	✓
L2138374-9	20	✓
L2138374-10	20	✓
L2138374-11	20	✓
L2138374-12	20	✓
L2138374-13	20	✓
L2138374-14	20	✓
L2138374-15	20	✓
	20	

Syringe ID

196

Standard:

HROCP-IS#1-014A

Date &
Initials:

8-AUG-2018 RM

Correct Syringe Obtained:

Chemist's Initials

RM

Correct Standard Obtained:

Chemist's Initials

RM

Correct Technique Followed:

Chemist's Initials

RM

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling

- ☐
- ☐ Subsample 10g weight wet (5g dry weight)
- ☐ Spike the samples with Extraction/Native Standards.
- ☐ Soxhlet extract in DCM for 16 hours.
- ☐ Rotovap down to ~4ml. Transfer with hexane rinses to tube.
- ☐ Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses
 - **F1** = 25 mL of Hexane
 - **F2** = 50mL of 1:1 DCM:Hexane
- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses
 - Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL
- Vortex well and transfer to robo-vial without rinses.
- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	182575	FISH
Hexane	182082	FISH
DCM	103443	CAL
Toluene	103253	CAL
Nonane	ORG-WAKONON-	
1:1 DCM:HEX	ORG-DH2- 508	CAL
Sodium Sulphate	ORG-SSU- 1889	CAL
Acid Silica	ORG-ASI- 7786	CAL
Neutral Silica	ORG-NSI- 1734	CAL
Alumina	ORG-ALU-	
Chromacarb	ORG-CC-	
Corn Oil	ORG-CO-	

Comments:

Samples can be processed at 50 degrees Return Samples to freezer after subsampling 12138374-10,7 contained water after extraction, was put through SSulphate filter. Aug 07 2018 JAZ

* - had colour after mini acid

* - worst sample.

~ 8A 8 AUG 2018

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

Extraction Workup Sheet

Batch ID: WG2839698

Analysis: Sediments - OCP

BU-TM-1110 Overall HR Prep

Analyst: *Marni Micketti*

Date: *8-Aug-2018*

SUBSAMPLING

BATCH TRACKING

Sample I.D.	Client I.D.	Subsample Size (g)
WG2839698-1	Method Blank	<i>10.21</i>
WG2839698-2	Laboratory Control Sample	<i>10.25</i>
WG2839698-3	Extraction and Injection STD.	—
L2138374-16	PDI-SC-S002-2TO4	<i>10.30</i>
WG2839698-4	Duplicate(L2138374-16)	<i>10.38</i>
L2138374-17	PDI-SC-S002-4TO6.5	<i>10.31</i>
L2138374-18	PDI-SC-S030-0TO2	<i>10.06</i>
L2138374-19	PDI-SC-S030-2TO4	<i>10.25</i>
L2138374-20	PDI-SC-S030-2TO4D	<i>10.39</i>
L2138374-21	PDI-SC-S030-4TO5.3	<i>10.34</i>
L2138374-22	PDI-SC-S185-0TO2	<i>10.34</i>
L2138374-23	PDI-SC-S185-2TO4	<i>10.49</i>
L2138374-24	PDI-SC-S185-4TO5.5	<i>10.43</i>
* L2138374-25	PDI-SC-S055-0TO2	<i>10.37</i>
** L2138374-26	PDI-SC-S055-2TO4	<i>10.46</i>
L2138374-27	PDI-SC-S055-4TO6	<i>10.47</i>
L2138374-28	PDI-SC-S055-6TO8	<i>10.43</i>
L2138374-29	PDI-SC-S024-0TO2	<i>10.25</i>
L2138374-30	PDI-SC-S024-2TO4	<i>10.21</i>
L2138374-31	PDI-SC-S024-4TO6	<i>10.05</i>
L2138374-32	PDI-SC-S028-0TO2	<i>10.19</i>
L2138374-33	PDI-SC-S028-2TO3.2	<i>10.25</i>
L2138374-34	PDI-SC-S028-3.2TO5.7	<i>10.47</i>
L2138374-35	PDI-SC-S028-3.2TO5.7D	<i>10.24</i>

Date/Time/Initials
Subsampling: <i>MM</i>
Balance ID: <i>3955</i>
Client Labels Checked: <i>MM</i>
Samples Spiked: <i>MM</i>
Soxhlet start time: <i>8-Aug-2018 5:00pm</i>
Soxhlet reflux properly: <i>MM</i>
Soxhlet end time: <i>9-Aug-2018 9:00am</i>
Rotovap + temp check: <i>NA2 09 AUG 2018</i>
Sili Column: <i>NA2 09 AUG 2018</i>
Mini Acid: <i>10-Aug-2018 8:30am NA</i>
Robo-Vialing: <i>10-Aug-2018 12:00pm NA</i>
Update to LIMS: <i>10-Aug-2018 12:30pm NA</i>

* See comments

Batch ID: WG2839698

DX Extraction Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2839698-1	20	✓
WG2839698-2	20	✓
WG2839698-3	20	✓
L2138374-16	20	✓
WG2839698-4	20	✓
L2138374-17	20	✓
L2138374-18	20	✓
L2138374-19	20	✓
L2138374-20	20	✓
L2138374-21	20	✓
L2138374-22	20	✓
L2138374-23	20	✓
L2138374-24	20	✓
L2138374-25	20	✓
L2138374-26	20	✓
L2138374-27	20	✓
L2138374-28	20	✓
L2138374-29	20	✓
L2138374-30	20	✓
L2138374-31	20	✓
L2138374-32	20	✓
L2138374-33	20	✓
L2138374-34	20	✓
L2138374-35	20	✓
	20	

Syringe ID

137

Standard:

HROCP-ES#1-023C

Spike Date:

8-Aug-2018

Spike Witnessing

Chemist's Initials

Chemist:

MP

Witness's Initials

Witness:

NB

Witness's Initials

Correct Syringe Obtained:

NB

Witness's Initials

Correct Standard Obtained:

NB

Witness's Initials

Correct Technique Followed:

NB

Batch ID: WG2839698

Syringe ID

202

Standard:

HROCP-NS#2- 001A

Date &
Initials:

8-Aug-2018 MM

DX Native Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2839698-2	20	✓
WG2839698-3	20	✓

DX Injection Standard:

(Checkmark)

Sample I.D.	Volume (ul)	Spiked
WG2839698-1	20	✓
WG2839698-2	20	✓
WG2839698-3	20	✓
L2138374-16	20	✓
WG2839698-4	20	✓
L2138374-17	20	✓
L2138374-18	20	✓
L2138374-19	20	✓
L2138374-20	20	✓
L2138374-21	20	✓
L2138374-22	20	✓
L2138374-23	20	✓
L2138374-24	20	✓
L2138374-25	20	✓
L2138374-26	20	✓
L2138374-27	20	✓
L2138374-28	20	✓
L2138374-29	20	✓
L2138374-30	20	✓
L2138374-31	20	✓
L2138374-32	20	✓
L2138374-33	20	✓
L2138374-34	20	✓
L2138374-35	20	✓
	20	✓

Syringe ID

196

Standard:

HROCP-IS#1- 014A

Date &
Initials:

10-Aug-2018 NA

Correct Syringe Obtained:

Chemist's Initials

NA

Correct Standard Obtained:

Chemist's Initials

NA

Correct Technique Followed:

Chemist's Initials

NA

Procedure:

This batchsheet is a guideline only. Please see test procedure for complete set of instructions.

SubSampling

- ☐
- ☐ Subsample 10g weight wet (5g dry weight)
- ☐ Spike the samples with Extraction/Native Standards.
- ☐ Soxhlet extract in DCM for 16 hours.
- ☐ Rotovap down to ~4ml. Transfer with hexane rinses to tube.
- ☐ Reduce gently to 1mL

Sili Column (Column does not contain carbon)

- Load sample with 3x1mL hexane rinses
 - F1 = 25 mL of Hexane
 - F2 = 50mL of 1:1 DCM:Hexane
- Reduce sili-column F2 to 1mL.

Mini Acid Silica Column

- Load sample with 3x1mL hexane rinses
 - Elute with 15 ml of DCM

Robo-vial

- Reduce to 1mL
- Vortex well and transfer to robo-vial without rinses.
- Spike with Injection standard. Mark level and submit. **FV=1020uL**

Reagent Lot Numbers:

Reagent	Lot#	Manufacturer
Acetone	182575	
Hexane	184498	
DCM	103413	
Toluene	103253	
Nonane	ORG-WAKONON-	
1:1 DCM:HEX	ORG-DH2- 508	
Sodium Sulphate	ORG-SSU- 1889	
Acid Silica	ORG-ASI- 7799	
Neutral Silica	ORG-NSI- 1735	
Alumina	ORG-ALU-	
Chromacarb	ORG-CC-	
Corn Oil	ORG-CO-	

Comments:

10-AUG-2018	* indicates sample had color after mini acid
NA	** indicates sample with more intense color

WG:						Prep Analyst:					
Analysis:						Date:					
	Very Good	meets Method Req	Some Outliers	very Poor	Comments / was split batch sent for rework? W/bv?						
MB											
LCS											
DUP											
ES rec											

0

(Checkmark)

[illegible]

OCP Native Standard:

Sample I.D.	Volume (µL)	Spiked
WG2837173-2	20	✓
WG2837173-3	20	✓

Syringe ID:

137

HROCP-ES#1 - 0230

Standard:

Spike Date:

1 Aug 2018

Spike Witnessing

Chemist's Initials

Chemist:

Q2

Witness's Initials

Witness:

AP

Witness's Initials

Correct Syringe Obtained:

AP

Witness's Initials

Correct Standard Obtained:

43

Witness's Initials

Correct Technique Followed:

FF

Syringe
ID:

202

Standard:

HROCP-NS#2-001B

**Date &
Initials:**

1 Aug 2018 GN

Batch ID:

WG2837173

Procedure:

Extraction:

***Note: this batchsheet is a guideline only. See Test Procedure for complete set of instructions.**

- Sample Size = 1L (Mark bottle so that exact volume can be determined.)
- Standards added to 1mL Acetone, and then added to sep funnel with 2 acetone rinses, then swirled.
- Extracted with 3x 100mL DCM, then dried over sodium sulphate.
- Reduce to ~5mL (Don't go below 5mL in volume on the roto-vap)
- Transfer to a c-tube (calibrated at 1ml level) with 3x2mL DCM.
- Blow down to exactly 1mL.

-Sili Column - Load sample with 3x1mL hexane rinses

- F1 = 25 mL of Hexane
- F2 = 50mL of 1:1 DCM:Hexane

-reduce F2 to 1ml**Mini Acid Silica Column**

- Load sample with 3x1mL hexane rinses
- Elute with 15 ml of DCM
- Reduce to 1ml, vortex and transfer to robovial (without rinses) Mark level.
- Spike injection standard and submit FV=1020ul

Approval of Deviation from Standard Method

☐ Procedure does not deviate from Standard Method.

(Batch Writer): _____

☐ Procedure does deviate from Standard Method.

Approved (Supervisor/Manager): _____

Comments:

**** Protect samples from light as much as possible. ****

**** Samples must submit to instruments within 5 days of extraction ****

One of the F₁ samples broke when wrapping up
2-Aug-18 AP. ↳ Sample WG2837173-1

WG:			Prep Analyst:		
Analysis:			Date:		
	Very Good	Meets Method Req	Some Outliers	Very Poor	Comments / Was spl/batch sent for rework? Why?
MB					
LCS					
DUP					
ES rec					

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved:

R. Bakhtiari
--e-signature--
21-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated
Value

Value from
TargetLynx

$$\text{RRF} = \frac{1127196.60}{13769525.00} \times \frac{250.00}{20} = 1.02 \quad 1.02$$

Calculation of 4,4'-DDE amount in L2138374-1

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{518042.7}{1204010.2} \times \frac{125}{1.11 \times 5.45} = 8.92 \quad 8.92$$

Calculation of 13C12-4,4'-DDE Recovery in L2138374-1

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{1204010.2}{1020946.1} \times \frac{50 \times 100}{1.01 \times 125} = 47 \quad 47 \%$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved:

R. Bakhtiari
--e-signature--
21-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated
Value

Value from
TargetLynx

$$\text{RRF} = \frac{856609.00}{10399876.80} \times \frac{250.00}{20} = 1.03 \quad 1.03$$

Calculation of 4,4'-DDE amount in L2138374-16

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{1127.1}{1369341.9} \times \frac{125}{1.11 \times 6.94} = 0.0133 \quad 0.0133$$

Calculation of 13C12-4,4'-DDE Recovery in L2138374-16

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{1369341.9}{892968.2} \times \frac{50 \times 100}{0.85 \times 125} = 72 \quad 72 \%$$

ALS Life sciences

Sample Calculation Report

CS3 RRF Check

Approved: *R. Bakhtiari*
--e-signature--
21-Aug-2018

$$\text{RRF} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{Concentration of 13C2-4,4'DDE}}{\text{Concentration of DDE}}$$

Calculated Value Value from TargetLynx

$$\text{RRF} = \frac{1127196.60}{13769525.00} \times \frac{250.00}{20} = 1.02 \quad 1.02$$

Calculation of 4,4'-DDE amount in L2138374-36

$$\text{ng} = \frac{\text{Response of 4,4'-DDE}}{\text{Response of 13C12-4,4'DDE}} \times \frac{\text{ng of 13C12-4,4'-DDE spiked}}{\text{Mean RRF} \times \text{Sample Size}}$$

$$\text{ng/g} = \frac{2537.4}{6206921} \times \frac{125}{1.106 \times 1.04} = 0.0444 \quad 0.0444$$

Calculation of 13C12-4,4'-DDE Recovery in L2138374-36

$$\% \text{ Recovery} = \frac{\text{Response of 13C12-4,4'-DDE}}{\text{Response of 13C12-PCB-52}} \times \frac{\text{ng of 13C12-PCB-52} \times 100}{\text{Mean RRF} \times \text{Amount Spiked}}$$

$$\% \text{ Recovery} = \frac{6206921}{3534472.5} \times \frac{50 \times 100}{1.01 \times 125} = 70 \quad 70 \%$$

SVOC DATA PACKAGE

SECTION 7: SHIPPING/RECEIVING DOCUMENTS

Including:

- Airbills
- Chain-of-Custody Records
- Sample Log-in Sheet(s) - where applicable
- Others as listed below:

[illegible]

[illegible]

Client Contact
AECOM
1111 3rd Ave Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700 Fax: 1+(866) 495-5288
Project Name: Portland Harbor Pre-Remedial Design
Investigation and Baseline Sampling
Portland, OR
Project #: 60566335 Study: Subsurface Sediment
Sample Type:

Site Contact: Jennifer Ray	Date: 7/30/18	COC No: 1
Laboratory Contact: Whitney Davis	Carrier: FedEx	3 of 4 pages

AECOM
1111 3rd Ave Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700 Fax: 1+(866) 495-5288
Project Name: Portland Harbor Pre-Remedial Design
Investigation and Baseline Sampling
Portland, OR
Project #: 60566335 Study: Subsurface Sediment
Sample Type:

Project Contact: Amy Dahl / Chelsey Cook
Tel: (206) 438-2261 / (206) 438-2010

Site Contact: Jennifer Ray
Laboratory Contact: Whitney Davis

Date: 7/30/18
Carrier: FedE

COC No: 1 4
3 of 5 pages

Analysis Turnaround Time

Calendar (C) or Work Days (W) W

☒ 21 days

☐ Other _____

Particulates, DDx only

Sample Specific Notes:

[illegible]

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

☐ Return To Client☒ Disposal By Lab☒ Archive For 12 Months

Special Instructions/QC Requirements & Comments:

0.8°C

Relinquished by: 	Company: <u>Arcem</u>	Date/Time: <u>7/30/18 1600</u>	Received by: <u>ARON BURTON</u>	Company: <u>ALS</u>	Date/Time: <u>31-July-2018 15:05</u>
Relinquished by: 	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ORIGIN ID:PDXA (971) 373-1622
JENNIFER RAY
AECOM
1115 SE CARUTHERS ST
PORTLAND, OR 97214
UNITED STATES US

SHIP DATE: 30JUL18
ACTWGT: 51.40 LB
CAD: 006994757/SSFE1904
DIMS: 25x14x14 IN
BILL THIRD PARTY

TO **WHITNEY DAVIS**
ALS ENVIRONMENTAL
299 CAYUGA RD

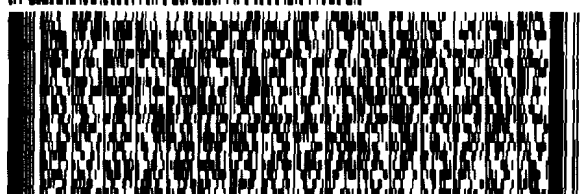
BUFFALO NY 14225

(906) 340-0821
INU:
PO:

REF:

DEPT:

01 0000 1010100001 011 0 0000 111 0 0000 110000 011



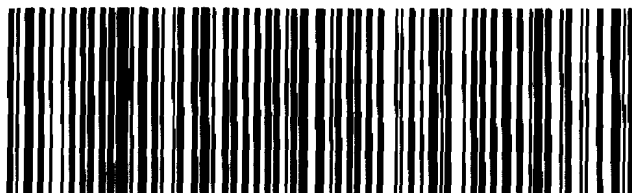
AN102270810281J

1 of 2
TRK# 7820 7000 2958
0201
MASTER

XX BUFA

14225
NY-US **BUF**

TUE - 31 JUL 10:30A
PRIORITY OVERNIGHT



Do Not Use This Tag

ORIGIN ID:PDXA (971) 373-1622
JENNIFER RAY
AECOM
1115 SE CARUTHERS ST
PORTLAND, OR 97214
UNITED STATES US

SHIP DATE: 30JUL18
ACTWGT: 57.10 LB
CAD: 006994757/SSFE1904
DIMS: 25x14x14 IN
BILL THIRD PARTY

TO **WHITNEY DAVIS**
ALS ENVIRONMENTAL
299 CAYUGA RD

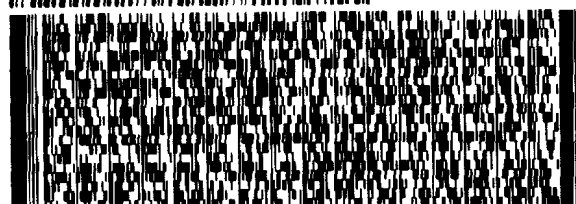
BUFFALO NY 14225

(906) 340-0821
INU:
PO:

REF:

DEPT:

01 0000 1010100001 011 0 0000 111 0 0000 110000 011



AN102270810281J

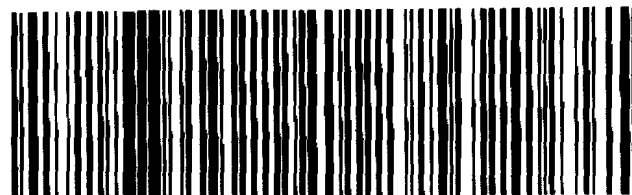
2 of 2
MPS# 7820 7000 2969
0263
Mstr# 7820 7000 2958

XX BUFA

14225
NY-US **BUF**

TUE - 31 JUL 10:30A
PRIORITY OVERNIGHT

0201



Part # 156297 433 444 455 12/18

Sample Receiving Log

Date/Time Received	Client ID	Number/Description of Containers	Temp. on Receipt*	Condition of Samples, Courier & Tracking Information	Receiver's Initials	Date/Time Login Completed	Submission ID	Sample ID Range
31-July-2018 15:05	Aecom	35 x jars of sediment 4 x 1L amber bottles	0-8°C	Good Fedex 7820 7000 2958	MB	31-July-2018 16:10	L2138374	-1-37

*Temperatures were recorded using: ☒ 'Oakton infraPro' dedicated I.R. gun (serial #97800270)

☐ Other (specify): _____

BU-FM-0261c v02 Sample Receiving Log

Date Issued: 21-Aug-2017

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