TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-78527-8
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
9/19/2018 2:25:45 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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Job ID: 580-78527-8

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-78527-8

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Twenty-five samples were received on 7/2/2018 2:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.1º C, 0.2º C, 0.6º C, 1.7º C, 2.3º C and 3.2º C.

The following samples were activated for Manganese by 6020BLL analysis by the client on 7/10/2018: PDI-SG-B441 (580-78527-3), PDI-SG-B455 (580-78527-15), PDI-SG-B454 (580-78527-17), PDI-SG-B453 (580-78527-18), PDI-SG-B453-D (580-78527-19), PDI-SG-B460 (580-78527-23) and PDI-RB-180630 (580-78527-26). This analysis was not originally requested on the chain-of-custody (COC).

The following samples were canceled by the client on 7/13/18 for Manganese analysis only: PDI-SG-B453 (580-78527-18) and PDI-SG-B453-D (580-78527-19).

Client changed sample ID: PDI-SG-RB-20180630 should be PDI-RB-VV-180630

The following samples were activated by the client on 8/16/18 for all On Hold analysis: PDI-SG-B434 (580-78527-1), PDI-SG-B435 (580-78527-2), PDI-SG-B441 (580-78527-3), PDI-SG-B442 (580-78527-4), PDI-SG-B439 (580-78527-5), PDI-SG-B440 (580-78527-6), PDI-SG-B445 (580-78527-7), PDI-SG-B446 (580-78527-8), PDI-SG-B447 (580-78527-9), PDI-SG-B449 (580-78527-10), PDI-SG-B443 (580-78527-11), PDI-SG-B444 (580-78527-12), PDI-SG-B448 (580-78527-13), PDI-SG-B451 (580-78527-14), PDI-SG-B455 (580-78527-15), PDI-SG-B450 (580-78527-16), PDI-SG-B454 (580-78527-17), PDI-SG-B453 (580-78527-18), PDI-SG-B453-D (580-78527-19), PDI-SG-B452 (580-78527-20), PDI-SG-B457 (580-78527-21), PDI-SG-B457 (580-78527-21[MS]), PDI-SG-B457 (580-78527-21[MSD]), PDI-SG-B459 (580-78527-22), PDI-SG-B460 (580-78527-23), PDI-SG-B461 (580-78527-24), and PDI-SG-B461-D (580-78527-25).

The following sample was canceled by the client for Atterberg Limits on 8/23/18: PDI-SG-B461 (580-78527-24)

A sample container was provided to be archived frozen at the TestAmerica Sacramento laboratory pending potential additional analyses.

This report contains results for Dioxins/Furans by Method 1613B, performed at TestAmerica Sacramento.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

Job ID: 580-78527-8 (Continued)

Laboratory: TestAmerica Seattle (Continued)

DIOXIN/ FURAN

Samples PDI-SG-B434 (580-78527-1), PDI-SG-B435 (580-78527-2), PDI-SG-B441 (580-78527-3), PDI-SG-B442 (580-78527-4), PDI-SG-B439 (580-78527-5), PDI-SG-B440 (580-78527-6), PDI-SG-B445 (580-78527-7), PDI-SG-B446 (580-78527-8), PDI-SG-B447 (580-78527-9), PDI-SG-B449 (580-78527-10), PDI-SG-B443 (580-78527-11), PDI-SG-B444 (580-78527-12), PDI-SG-B448 (580-78527-13), PDI-SG-B451 (580-78527-14), PDI-SG-B455 (580-78527-15), PDI-SG-B450 (580-78527-16), PDI-SG-B454 (580-78527-17), PDI-SG-B453 (580-78527-18), PDI-SG-B453-D (580-78527-19), PDI-SG-B452 (580-78527-20), PDI-SG-B457 (580-78527-21), PDI-SG-B459 (580-78527-22), PDI-SG-B460 (580-78527-23), PDI-SG-B461 (580-78527-24) and PDI-SG-B461-D (580-78527-25) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 09/10/2018 and 09/11/2018 and analyzed on 09/15/2018, 09/16/2018 and 09/17/2018.

Several analytes were detected in method blank MB 320-244815/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Several analytes were detected in method blank MB 320-245002/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-SG-B434 (580-78527-1), PDI-SG-B435 (580-78527-2), PDI-SG-B441 (580-78527-3), PDI-SG-B442 (580-78527-4), PDI-SG-B439 (580-78527-5), PDI-SG-B440 (580-78527-6), PDI-SG-B445 (580-78527-7), PDI-SG-B446 (580-78527-8), PDI-SG-B447 (580-78527-9), PDI-SG-B449 (580-78527-10), PDI-SG-B443 (580-78527-11), PDI-SG-B444 (580-78527-12), PDI-SG-B448 (580-78527-13), PDI-SG-B451 (580-78527-14), PDI-SG-B455 (580-78527-15), PDI-SG-B450 (580-78527-16), PDI-SG-B454 (580-78527-17), PDI-SG-B453 (580-78527-18), PDI-SG-B453-D (580-78527-19), PDI-SG-B452 (580-78527-20), PDI-SG-B457 (580-78527-21), PDI-SG-B459 (580-78527-22), PDI-SG-B460 (580-78527-23), PDI-SG-B461 (580-78527-24), PDI-SG-B461-D (580-78527-25), (CCV 320-245785/60), (LCS 320-245002/2-A), (LCSD 320-245002/3-A), (MB 320-245002/1-A), (CCV 320-245784/46), (CCV 320-245783/31), (LCS 320-244815/2-A), (LCSD 320-244815/3-A), (MB 320-244815/1-A), and (CCV 320-245751/16). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: PDI-SG-B457 (580-78527-21). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-B434 (580-78527-1), PDI-SG-B435 (580-78527-2), PDI-SG-B441 (580-78527-3), PDI-SG-B442 (580-78527-4), PDI-SG-B439 (580-78527-5), PDI-SG-B440 (580-78527-6), PDI-SG-B445 (580-78527-7), PDI-SG-B446 (580-78527-8), PDI-SG-B447 (580-78527-9), PDI-SG-B449 (580-78527-10), PDI-SG-B443 (580-78527-11), PDI-SG-B444 (580-78527-12), PDI-SG-B448 (580-78527-13), PDI-SG-B451 (580-78527-14), PDI-SG-B455 (580-78527-15), PDI-SG-B450 (580-78527-16), PDI-SG-B454 (580-78527-17), PDI-SG-B453 (580-78527-18), PDI-SG-B453-D (580-78527-19), PDI-SG-B452 (580-78527-20), PDI-SG-B457 (580-78527-21), PDI-SG-B459 (580-78527-22), PDI-SG-B460 (580-78527-23), PDI-SG-B461 (580-78527-24) and PDI-SG-B461-D (580-78527-25). The reporting limits (RLs) have been adjusted proportionately.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: PDI-SG-B434
Date Collected: 06/29/18 11:36
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-1
Matrix: Solid
Percent Solids: 51.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.068	B	0.0049	0.00030	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,4,6,7,8-HpCDF	0.013	B q	0.0049	0.00023	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0049	0.00023	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,4,7,8-HxCDD	0.00092	J B	0.0049	0.000060	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,4,7,8-HxCDF	0.0011	J B	0.0049	0.00010	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,6,7,8-HxCDD	0.0030	J B	0.0049	0.000060	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,6,7,8-HxCDF	0.00062	J B	0.0049	0.000095	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,7,8,9-HxCDD	0.0017	J	0.0049	0.000055	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,7,8,9-HxCDF	0.00075	J B	0.0049	0.000061	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,7,8-PeCDD	0.00041	J	0.0049	0.000042	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
1,2,3,7,8-PeCDF	0.00028	J B q	0.0049	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
2,3,4,6,7,8-HxCDF	0.00041	J B	0.0049	0.000071	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
2,3,4,7,8-PeCDF	0.00030	J B	0.0049	0.000047	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
2,3,7,8-TCDD	0.00017	J B q	0.00098	0.000029	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
2,3,7,8-TCDF	0.00045	J B	0.00098	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
OCDD	0.66	B	0.0098	0.00022	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1
OCDF	0.062	B	0.0098	0.000055	ug/Kg	☼	09/10/18 15:16	09/15/18 09:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*39*		*23 - 140*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*29*		*28 - 143*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*38*		*26 - 138*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,4,7,8-HxCDD	*40*		*32 - 141*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,4,7,8-HxCDF	*41*		*26 - 152*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,6,7,8-HxCDD	*41*		*28 - 130*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,6,7,8-HxCDF	*42*		*26 - 123*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,7,8,9-HxCDF	*46*		*29 - 147*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,7,8-PeCDD	*43*		*25 - 181*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-1,2,3,7,8-PeCDF	*42*		*24 - 185*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-2,3,4,6,7,8-HxCDF	*45*		*28 - 136*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-2,3,4,7,8-PeCDF	*44*		*21 - 178*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-2,3,7,8-TCDF	*53*		*24 - 169*	*09/10/18 15:16*	*09/15/18 09:42*	*1*
13C-OCDD	*29*		*17 - 157*	*09/10/18 15:16*	*09/15/18 09:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*71*		*35 - 197*	*09/10/18 15:16*	*09/15/18 09:42*	*1*

Client Sample ID: PDI-SG-B435
Date Collected: 06/29/18 13:43
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-2
Matrix: Solid
Percent Solids: 51.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.029	B	0.0048	0.00015	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,4,6,7,8-HpCDF	0.0073	B q	0.0048	0.00016	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,4,7,8,9-HpCDF	0.00066	J B	0.0048	0.00016	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,4,7,8-HxCDD	0.00054	J B	0.0048	0.000040	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,4,7,8-HxCDF	0.00067	J B	0.0048	0.000062	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,6,7,8-HxCDD	0.0014	J B	0.0048	0.000039	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,6,7,8-HxCDF	0.00041	J B	0.0048	0.000059	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0048	0.000036	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,7,8,9-HxCDF	0.00070	J B	0.0048	0.000039	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,7,8-PeCDD	0.00025	J	0.0048	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
1,2,3,7,8-PeCDF	0.00024	J B	0.0048	0.000028	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
2,3,4,6,7,8-HxCDF	0.00023	J B	0.0048	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
2,3,4,7,8-PeCDF	0.00019	J B q	0.0048	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
2,3,7,8-TCDD	ND		0.00096	0.000023	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
2,3,7,8-TCDF	0.00043	J B	0.00096	0.000026	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
OCDD	0.27	B	0.0096	0.00012	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1
OCDF	0.025	B	0.0096	0.000044	ug/Kg	☼	09/10/18 15:16	09/15/18 10:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*44*		*23 - 140*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*32*		*28 - 143*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*42*		*26 - 138*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,4,7,8-HxCDD	*43*		*32 - 141*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,4,7,8-HxCDF	*43*		*26 - 152*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,6,7,8-HxCDD	*44*		*28 - 130*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,6,7,8-HxCDF	*44*		*26 - 123*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,7,8,9-HxCDF	*49*		*29 - 147*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,7,8-PeCDD	*47*		*25 - 181*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-1,2,3,7,8-PeCDF	*47*		*24 - 185*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*09/10/18 15:16*	*09/15/18 10:28*	*1*
13C-OCDD	*32*		*17 - 157*	*09/10/18 15:16*	*09/15/18 10:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*77*		*35 - 197*	*09/10/18 15:16*	*09/15/18 10:28*	*1*

Client Sample ID: PDI-SG-B441
Date Collected: 06/29/18 15:20
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-3
Matrix: Solid
Percent Solids: 62.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.011	B	0.0040	0.000082	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,4,6,7,8-HpCDF	0.0026	J B q	0.0040	0.000052	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,4,7,8,9-HpCDF	0.00053	J B	0.0040	0.000052	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,4,7,8-HxCDD	0.00031	J B	0.0040	0.000021	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,4,7,8-HxCDF	0.00034	J B	0.0040	0.000032	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,6,7,8-HxCDD	0.00072	J B	0.0040	0.000020	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,6,7,8-HxCDF	0.00025	J B	0.0040	0.000031	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,7,8,9-HxCDD	0.00059	J	0.0040	0.000019	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,7,8,9-HxCDF	0.00063	J B	0.0040	0.000020	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,7,8-PeCDD	0.00012	J q	0.0040	0.000025	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
1,2,3,7,8-PeCDF	0.00013	J B q	0.0040	0.000023	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
2,3,4,6,7,8-HxCDF	0.00014	J B	0.0040	0.000022	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
2,3,4,7,8-PeCDF	0.00013	J B	0.0040	0.000024	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
2,3,7,8-TCDD	0.00010	J B q	0.00081	0.000023	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
2,3,7,8-TCDF	0.00029	J B	0.00081	0.000013	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
OCDD	0.10	B	0.0081	0.000065	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1
OCDF	0.0083	B	0.0081	0.000024	ug/Kg	☼	09/10/18 15:16	09/15/18 17:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*41*		*23 - 140*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*33*		*28 - 143*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*41*		*26 - 138*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,4,7,8-HxCDD	*41*		*32 - 141*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,4,7,8-HxCDF	*42*		*26 - 152*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,6,7,8-HxCDD	*41*		*28 - 130*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,6,7,8-HxCDF	*41*		*26 - 123*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,7,8,9-HxCDF	*47*		*29 - 147*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,7,8-PeCDD	*43*		*25 - 181*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-1,2,3,7,8-PeCDF	*43*		*24 - 185*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-2,3,4,6,7,8-HxCDF	*44*		*28 - 136*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-2,3,4,7,8-PeCDF	*45*		*21 - 178*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-2,3,7,8-TCDD	*55*		*25 - 164*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-2,3,7,8-TCDF	*54*		*24 - 169*	*09/10/18 15:16*	*09/15/18 17:06*	*1*
13C-OCDD	*29*		*17 - 157*	*09/10/18 15:16*	*09/15/18 17:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*09/10/18 15:16*	*09/15/18 17:06*	*1*

Client Sample ID: PDI-SG-B442
Date Collected: 06/29/18 16:22
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-4
Matrix: Solid
Percent Solids: 47.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.029	B	0.0053	0.00017	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,4,6,7,8-HpCDF	0.0056	B	0.0053	0.00013	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,4,7,8,9-HpCDF	0.00052	J B	0.0053	0.00013	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,4,7,8-HxCDD	0.00052	J B	0.0053	0.000029	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,4,7,8-HxCDF	0.00055	J B	0.0053	0.000048	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,6,7,8-HxCDD	0.0014	J B	0.0053	0.000028	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,6,7,8-HxCDF	0.00033	J B	0.0053	0.000046	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0053	0.000026	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,7,8,9-HxCDF	0.00063	J B	0.0053	0.000032	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,7,8-PeCDD	0.00023	J	0.0053	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
1,2,3,7,8-PeCDF	0.00018	J B q	0.0053	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
2,3,4,6,7,8-HxCDF	0.00021	J B	0.0053	0.000035	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
2,3,4,7,8-PeCDF	0.00020	J B	0.0053	0.000031	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
2,3,7,8-TCDD	0.00011	J B q	0.0011	0.000021	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
2,3,7,8-TCDF	0.00047	J B	0.0011	0.000024	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
OCDD	0.28	B	0.011	0.00013	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1
OCDF	0.021	B	0.011	0.000026	ug/Kg	☼	09/10/18 15:16	09/15/18 17:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*47*		*23 - 140*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*38*		*28 - 143*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,4,7,8-HxCDD	*45*		*32 - 141*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,4,7,8-HxCDF	*48*		*26 - 152*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,6,7,8-HxCDD	*45*		*28 - 130*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,6,7,8-HxCDF	*46*		*26 - 123*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,7,8,9-HxCDF	*50*		*29 - 147*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,7,8-PeCDD	*46*		*25 - 181*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-1,2,3,7,8-PeCDF	*46*		*24 - 185*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-2,3,4,6,7,8-HxCDF	*49*		*28 - 136*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-2,3,7,8-TCDF	*57*		*24 - 169*	*09/10/18 15:16*	*09/15/18 17:52*	*1*
13C-OCDD	*38*		*17 - 157*	*09/10/18 15:16*	*09/15/18 17:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*78*		*35 - 197*	*09/10/18 15:16*	*09/15/18 17:52*	*1*

Client Sample ID: PDI-SG-B439
Date Collected: 06/29/18 11:51
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-5
Matrix: Solid
Percent Solids: 55.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.057	B	0.0045	0.00047	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,4,6,7,8-HpCDF	0.029	B	0.0045	0.00026	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,4,7,8,9-HpCDF	0.0014	J B	0.0045	0.00031	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,4,7,8-HxCDD	0.00065	J B	0.0045	0.000065	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,4,7,8-HxCDF	0.0023	J B	0.0045	0.00015	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,6,7,8-HxCDD	0.0028	J B	0.0045	0.000063	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,6,7,8-HxCDF	0.0021	J B	0.0045	0.00015	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,7,8,9-HxCDD	0.0016	J	0.0045	0.000059	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,7,8,9-HxCDF	0.00060	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,7,8-PeCDD	0.00048	J	0.0045	0.000065	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
1,2,3,7,8-PeCDF	0.00059	J B	0.0045	0.00019	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
2,3,4,6,7,8-HxCDF	0.00086	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
2,3,4,7,8-PeCDF	0.00090	J B	0.0045	0.00019	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
2,3,7,8-TCDD	0.00030	J B q	0.00090	0.000029	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
OCDD	1.2	B	0.0090	0.00048	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1
OCDF	0.049	B	0.0090	0.000044	ug/Kg	☼	09/10/18 15:16	09/15/18 18:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*43*		*23 - 140*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*35*		*28 - 143*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*37*		*26 - 138*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDF	*46*		*26 - 152*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDD	*45*		*28 - 130*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDF	*47*		*26 - 123*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,7,8,9-HxCDF	*48*		*29 - 147*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,7,8-PeCDD	*46*		*25 - 181*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-1,2,3,7,8-PeCDF	*45*		*24 - 185*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-2,3,4,7,8-PeCDF	*48*		*21 - 178*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-2,3,7,8-TCDD	*55*		*25 - 164*	*09/10/18 15:16*	*09/15/18 18:38*	*1*
13C-OCDD	*35*		*17 - 157*	*09/10/18 15:16*	*09/15/18 18:38*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*78*		*35 - 197*	*09/10/18 15:16*	*09/15/18 18:38*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00073	J B	0.00090	0.00016	ug/Kg	☼	09/10/18 15:16	09/17/18 17:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*09/10/18 15:16*	*09/17/18 17:13*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*09/10/18 15:16*	*09/17/18 17:13*	*1*

Client Sample ID: PDI-SG-B440
Date Collected: 06/29/18 14:12
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-6
Matrix: Solid
Percent Solids: 41.6

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.045	B	0.0060	0.00023	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,4,6,7,8-HpCDF	0.010	B	0.0060	0.00019	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,4,7,8,9-HpCDF	0.00079	J B	0.0060	0.00018	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,4,7,8-HxCDD	0.00073	J B	0.0060	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,4,7,8-HxCDF	0.00085	J B	0.0060	0.000069	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,6,7,8-HxCDD	0.0023	J B	0.0060	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,6,7,8-HxCDF	0.00051	J B	0.0060	0.000063	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,7,8,9-HxCDD	0.0017	J	0.0060	0.000040	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,7,8,9-HxCDF	0.00079	J B	0.0060	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,7,8-PeCDD	0.00039	J	0.0060	0.000049	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
1,2,3,7,8-PeCDF	0.00029	J B	0.0060	0.000041	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
2,3,4,6,7,8-HxCDF	0.00033	J B	0.0060	0.000051	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
2,3,4,7,8-PeCDF	0.00031	J B	0.0060	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
2,3,7,8-TCDD	ND		0.0012	0.000024	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
2,3,7,8-TCDF	0.00066	J B	0.0012	0.000036	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
OCDD	0.38	B	0.012	0.00016	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1
OCDF	0.034	B	0.012	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 19:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*51*		*23 - 140*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*34*		*28 - 143*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,4,7,8-HxCDD	*50*		*32 - 141*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,6,7,8-HxCDD	*49*		*28 - 130*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,7,8,9-HxCDF	*54*		*29 - 147*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,7,8-PeCDD	*49*		*25 - 181*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-1,2,3,7,8-PeCDF	*47*		*24 - 185*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-2,3,4,6,7,8-HxCDF	*53*		*28 - 136*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-2,3,7,8-TCDF	*54*		*24 - 169*	*09/10/18 15:16*	*09/15/18 19:24*	*1*
13C-OCDD	*40*		*17 - 157*	*09/10/18 15:16*	*09/15/18 19:24*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*74*		*35 - 197*	*09/10/18 15:16*	*09/15/18 19:24*	*1*

Client Sample ID: PDI-SG-B445
Date Collected: 06/29/18 16:35
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-7
Matrix: Solid
Percent Solids: 59.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0053	B	0.0042	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,4,6,7,8-HpCDF	0.0024	J B	0.0042	0.000033	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,4,7,8,9-HpCDF	0.00028	J B q	0.0042	0.000038	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,4,7,8-HxCDD	0.00022	J B	0.0042	0.000015	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,4,7,8-HxCDF	0.00026	J B	0.0042	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,6,7,8-HxCDD	0.00037	J B q	0.0042	0.000015	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,6,7,8-HxCDF	0.00029	J B	0.0042	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,7,8,9-HxCDD	0.00033	J	0.0042	0.000014	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,7,8,9-HxCDF	0.00052	J B	0.0042	0.000021	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,7,8-PeCDD	0.00012	J	0.0042	0.000020	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
1,2,3,7,8-PeCDF	0.00016	J B	0.0042	0.000025	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
2,3,4,6,7,8-HxCDF	0.00015	J B	0.0042	0.000022	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
2,3,4,7,8-PeCDF	0.00016	J B	0.0042	0.000027	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
2,3,7,8-TCDD	ND		0.00084	0.000011	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
2,3,7,8-TCDF	0.00039	J B	0.00084	0.000024	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
OCDD	0.075	B	0.0084	0.000043	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1
OCDF	0.0036	J B	0.0084	0.000018	ug/Kg	☼	09/10/18 15:16	09/15/18 20:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*45*		*28 - 143*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*49*		*26 - 138*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,4,7,8-HxCDD	*51*		*32 - 141*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,6,7,8-HxCDD	*52*		*28 - 130*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,6,7,8-HxCDF	*53*		*26 - 123*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-2,3,4,6,7,8-HxCDF	*56*		*28 - 136*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-2,3,7,8-TCDF	*57*		*24 - 169*	*09/10/18 15:16*	*09/15/18 20:10*	*1*
13C-OCDD	*43*		*17 - 157*	*09/10/18 15:16*	*09/15/18 20:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*77*		*35 - 197*	*09/10/18 15:16*	*09/15/18 20:10*	*1*

Client Sample ID: PDI-SG-B446
Date Collected: 06/30/18 11:36
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-8
Matrix: Solid
Percent Solids: 58.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0035	J B	0.0043	0.000031	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,4,6,7,8-HpCDF	0.00071	J q B	0.0043	0.000028	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,4,7,8,9-HpCDF	0.00021	J q B	0.0043	0.000030	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,4,7,8-HxCDD	0.00017	J q B	0.0043	0.000019	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,4,7,8-HxCDF	0.00011	J B	0.0043	0.000017	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,6,7,8-HxCDD	0.00026	J B	0.0043	0.000019	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,6,7,8-HxCDF	0.000079	J B	0.0043	0.000017	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,7,8,9-HxCDD	0.00032	J	0.0043	0.000017	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,7,8,9-HxCDF	0.00037	J B	0.0043	0.000012	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,7,8-PeCDD	0.000068	J	0.0043	0.000020	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
1,2,3,7,8-PeCDF	0.00011	J B	0.0043	0.000015	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
2,3,4,6,7,8-HxCDF	0.000050	J B	0.0043	0.000013	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
2,3,4,7,8-PeCDF	0.000056	J q B	0.0043	0.000017	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
2,3,7,8-TCDD	ND		0.00085	0.000034	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
2,3,7,8-TCDF	0.00022	J B	0.00085	0.000012	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
OCDD	0.032	B	0.0085	0.000036	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1
OCDF	0.0021	J B	0.0085	0.000020	ug/Kg	☼	09/10/18 15:16	09/15/18 20:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*49*		*23 - 140*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,4,7,8-HxCDD	*48*		*32 - 141*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,4,7,8-HxCDF	*49*		*26 - 152*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,6,7,8-HxCDD	*47*		*28 - 130*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,6,7,8-HxCDF	*49*		*26 - 123*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,7,8,9-HxCDF	*53*		*29 - 147*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,7,8-PeCDD	*48*		*25 - 181*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-1,2,3,7,8-PeCDF	*49*		*24 - 185*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-2,3,4,6,7,8-HxCDF	*51*		*28 - 136*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-2,3,4,7,8-PeCDF	*51*		*21 - 178*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*09/10/18 15:16*	*09/15/18 20:56*	*1*
13C-OCDD	*36*		*17 - 157*	*09/10/18 15:16*	*09/15/18 20:56*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*79*		*35 - 197*	*09/10/18 15:16*	*09/15/18 20:56*	*1*

Client Sample ID: PDI-SG-B447
Date Collected: 06/30/18 14:02
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-9
Matrix: Solid
Percent Solids: 50.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.065	B	0.0049	0.00029	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0049	0.00023	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,4,7,8,9-HpCDF	0.00097	J B	0.0049	0.00026	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,4,7,8-HxCDD	0.00087	J B	0.0049	0.000044	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,4,7,8-HxCDF	0.00086	J B	0.0049	0.000084	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,6,7,8-HxCDD	0.0027	J B	0.0049	0.000044	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,6,7,8-HxCDF	0.00047	J B	0.0049	0.000081	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,7,8,9-HxCDD	0.0016	J	0.0049	0.000040	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,7,8,9-HxCDF	0.00059	J B	0.0049	0.000053	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,7,8-PeCDD	0.00037	J	0.0049	0.000054	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
1,2,3,7,8-PeCDF	0.00024	J B	0.0049	0.000039	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
2,3,4,6,7,8-HxCDF	0.00029	J B	0.0049	0.000060	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
2,3,4,7,8-PeCDF	0.00026	J B	0.0049	0.000040	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
2,3,7,8-TCDD	0.00012	J B q	0.00099	0.000022	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
2,3,7,8-TCDF	0.00056	J B	0.00099	0.000033	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
OCDD	0.55	B	0.0099	0.00020	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1
OCDF	0.071	B	0.0099	0.000041	ug/Kg	☼	09/10/18 15:16	09/15/18 21:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*46*		*23 - 140*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*37*		*28 - 143*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*43*		*26 - 138*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,4,7,8-HxCDD	*45*		*32 - 141*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,4,7,8-HxCDF	*45*		*26 - 152*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,6,7,8-HxCDD	*44*		*28 - 130*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,6,7,8-HxCDF	*45*		*26 - 123*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,7,8,9-HxCDF	*49*		*29 - 147*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,7,8-PeCDD	*44*		*25 - 181*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-1,2,3,7,8-PeCDF	*44*		*24 - 185*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-2,3,4,7,8-PeCDF	*47*		*21 - 178*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*09/10/18 15:16*	*09/15/18 21:42*	*1*
13C-OCDD	*33*		*17 - 157*	*09/10/18 15:16*	*09/15/18 21:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*74*		*35 - 197*	*09/10/18 15:16*	*09/15/18 21:42*	*1*

Client Sample ID: PDI-SG-B449
Date Collected: 06/30/18 15:38
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-10
Matrix: Solid
Percent Solids: 51.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.030	B	0.0048	0.00016	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,4,6,7,8-HpCDF	0.0060	B	0.0048	0.00011	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,4,7,8,9-HpCDF	0.00054	J B	0.0048	0.00012	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,4,7,8-HxCDD	0.00051	J B	0.0048	0.000037	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,4,7,8-HxCDF	0.00057	J B	0.0048	0.000046	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,6,7,8-HxCDD	0.0016	J B	0.0048	0.000037	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,6,7,8-HxCDF	0.00033	J B	0.0048	0.000045	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0048	0.000034	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,7,8,9-HxCDF	0.00051	J B	0.0048	0.000029	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,7,8-PeCDD	0.00024	J	0.0048	0.000035	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
1,2,3,7,8-PeCDF	0.00015	J B q	0.0048	0.000026	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
2,3,4,6,7,8-HxCDF	0.00020	J B	0.0048	0.000033	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
2,3,4,7,8-PeCDF	0.00020	J B	0.0048	0.000028	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
2,3,7,8-TCDD	0.000098	J B q	0.00096	0.000015	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
2,3,7,8-TCDF	0.00048	J B	0.00096	0.000023	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
OCDD	0.27	B	0.0096	0.00010	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1
OCDF	0.022	B	0.0096	0.000028	ug/Kg	☼	09/10/18 15:16	09/15/18 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*51*		*23 - 140*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*43*		*28 - 143*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,4,7,8-HxCDD	*48*		*32 - 141*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,4,7,8-HxCDF	*49*		*26 - 152*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,6,7,8-HxCDF	*48*		*26 - 123*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,7,8,9-HxCDF	*53*		*29 - 147*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,7,8-PeCDD	*47*		*25 - 181*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-1,2,3,7,8-PeCDF	*47*		*24 - 185*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-2,3,4,6,7,8-HxCDF	*52*		*28 - 136*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/15/18 22:28*	*1*
13C-OCDD	*40*		*17 - 157*	*09/10/18 15:16*	*09/15/18 22:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*09/10/18 15:16*	*09/15/18 22:28*	*1*

Client Sample ID: PDI-SG-B443
Date Collected: 06/30/18 10:21
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-11
Matrix: Solid
Percent Solids: 59.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.012	B	0.0041	0.000082	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,4,6,7,8-HpCDF	0.0025	J q B	0.0041	0.000060	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,4,7,8,9-HpCDF	0.00036	J q B	0.0041	0.000064	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,4,7,8-HxCDD	0.00031	J B	0.0041	0.000025	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,4,7,8-HxCDF	0.00028	J B	0.0041	0.000029	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,6,7,8-HxCDD	0.00076	J B	0.0041	0.000025	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,6,7,8-HxCDF	0.00024	J B	0.0041	0.000031	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,7,8,9-HxCDD	0.00067	J	0.0041	0.000023	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,7,8,9-HxCDF	0.00057	J B	0.0041	0.000019	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,7,8-PeCDD	0.00014	J	0.0041	0.000030	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
1,2,3,7,8-PeCDF	0.00018	J B	0.0041	0.000021	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
2,3,4,6,7,8-HxCDF	0.00012	J B	0.0041	0.000022	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
2,3,4,7,8-PeCDF	0.00011	J q B	0.0041	0.000021	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
2,3,7,8-TCDD	0.000077	J q	0.00082	0.000012	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
2,3,7,8-TCDF	0.00041	J B	0.00082	0.000015	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
OCDD	0.11	B	0.0082	0.000077	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1
OCDF	0.0085	B	0.0082	0.000020	ug/Kg	☼	09/10/18 15:16	09/16/18 02:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*47*		*26 - 138*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,4,7,8-HxCDF	*47*		*26 - 152*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,6,7,8-HxCDD	*45*		*28 - 130*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,6,7,8-HxCDF	*46*		*26 - 123*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,7,8,9-HxCDF	*51*		*29 - 147*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,7,8-PeCDD	*46*		*25 - 181*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-1,2,3,7,8-PeCDF	*45*		*24 - 185*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-2,3,4,6,7,8-HxCDF	*49*		*28 - 136*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-2,3,4,7,8-PeCDF	*47*		*21 - 178*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*09/10/18 15:16*	*09/16/18 02:48*	*1*
13C-OCDD	*37*		*17 - 157*	*09/10/18 15:16*	*09/16/18 02:48*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*74*		*35 - 197*	*09/10/18 15:16*	*09/16/18 02:48*	*1*

Client Sample ID: PDI-SG-B444
Date Collected: 06/30/18 11:10
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-12
Matrix: Solid
Percent Solids: 50.4

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.028	B	0.0049	0.00017	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,4,6,7,8-HpCDF	0.0058	B	0.0049	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,4,7,8,9-HpCDF	0.00051	J B	0.0049	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,4,7,8-HxCDD	0.00050	J B	0.0049	0.000027	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,4,7,8-HxCDF	0.00056	J B	0.0049	0.000050	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,6,7,8-HxCDD	0.0015	J B	0.0049	0.000027	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,6,7,8-HxCDF	0.00036	J B	0.0049	0.000049	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,7,8,9-HxCDD	0.0012	J	0.0049	0.000025	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,7,8,9-HxCDF	0.00047	J B	0.0049	0.000032	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,7,8-PeCDD	0.00026	J	0.0049	0.000031	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
1,2,3,7,8-PeCDF	0.00019	J q B	0.0049	0.000037	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
2,3,4,6,7,8-HxCDF	0.00025	J B	0.0049	0.000037	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
2,3,4,7,8-PeCDF	0.00022	J B	0.0049	0.000038	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
2,3,7,8-TCDD	0.00029	J q	0.00098	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
2,3,7,8-TCDF	0.00057	J B	0.00098	0.000015	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
OCDD	0.25	B	0.0098	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1
OCDF	0.018	B	0.0098	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 03:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*37*		*28 - 143*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,4,7,8-HxCDF	*47*		*26 - 152*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,6,7,8-HxCDD	*47*		*28 - 130*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,6,7,8-HxCDF	*47*		*26 - 123*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,7,8,9-HxCDF	*53*		*29 - 147*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,7,8-PeCDD	*46*		*25 - 181*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-1,2,3,7,8-PeCDF	*47*		*24 - 185*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-2,3,4,6,7,8-HxCDF	*50*		*28 - 136*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/16/18 03:34*	*1*
13C-OCDD	*36*		*17 - 157*	*09/10/18 15:16*	*09/16/18 03:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*09/10/18 15:16*	*09/16/18 03:34*	*1*

Client Sample ID: PDI-SG-B448
Date Collected: 06/30/18 12:08
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-13
Matrix: Solid
Percent Solids: 54.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.18	B	0.0045	0.0012	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,4,6,7,8-HpCDF	0.031	B	0.0045	0.00046	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,4,7,8,9-HpCDF	0.0023	J B	0.0045	0.00048	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,4,7,8-HxCDD	0.0021	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,4,7,8-HxCDF	0.0028	J B	0.0045	0.00017	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,6,7,8-HxCDD	0.0074	B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,6,7,8-HxCDF	0.0028	J B	0.0045	0.00017	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,7,8,9-HxCDD	0.0042	J	0.0045	0.00010	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,7,8,9-HxCDF	0.00056	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,7,8-PeCDD	0.00083	J	0.0045	0.000064	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
1,2,3,7,8-PeCDF	0.00072	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
2,3,4,6,7,8-HxCDF	0.00078	J B	0.0045	0.00013	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
2,3,4,7,8-PeCDF	0.00066	J B	0.0045	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
2,3,7,8-TCDD	0.00082	J	0.00090	0.000022	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
OCDD	3.0	B	0.0090	0.0012	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1
OCDF	0.094	B	0.0090	0.000049	ug/Kg	☼	09/10/18 15:16	09/16/18 04:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*47*		*26 - 138*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,4,7,8-HxCDF	*48*		*26 - 152*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,6,7,8-HxCDD	*47*		*28 - 130*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,6,7,8-HxCDF	*48*		*26 - 123*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,7,8,9-HxCDF	*52*		*29 - 147*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,7,8-PeCDD	*46*		*25 - 181*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-1,2,3,7,8-PeCDF	*47*		*24 - 185*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-2,3,4,6,7,8-HxCDF	*51*		*28 - 136*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-2,3,4,7,8-PeCDF	*48*		*21 - 178*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*09/10/18 15:16*	*09/16/18 04:20*	*1*
13C-OCDD	*39*		*17 - 157*	*09/10/18 15:16*	*09/16/18 04:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*73*		*35 - 197*	*09/10/18 15:16*	*09/16/18 04:20*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00057	J B	0.00090	0.00010	ug/Kg	☼	09/10/18 15:16	09/17/18 17:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*09/10/18 15:16*	*09/17/18 17:51*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*09/10/18 15:16*	*09/17/18 17:51*	*1*

Client Sample ID: PDI-SG-B451
Date Collected: 06/30/18 14:45
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-14
Matrix: Solid
Percent Solids: 66.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.017	B	0.0038	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,4,6,7,8-HpCDF	0.0033	J B q	0.0038	0.000058	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,4,7,8,9-HpCDF	0.00029	J B	0.0038	0.000067	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,4,7,8-HxCDD	0.00029	J B	0.0038	0.000021	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,4,7,8-HxCDF	0.00030	J B	0.0038	0.000026	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,6,7,8-HxCDD	0.00072	J B	0.0038	0.000020	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,6,7,8-HxCDF	0.00022	J B	0.0038	0.000026	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,7,8,9-HxCDD	0.00056	J	0.0038	0.000019	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,7,8,9-HxCDF	0.00035	J B	0.0038	0.000017	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,7,8-PeCDD	0.00010	J	0.0038	0.000020	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
1,2,3,7,8-PeCDF	0.00014	J B	0.0038	0.000017	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
2,3,4,6,7,8-HxCDF	0.00012	J B	0.0038	0.000019	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
2,3,4,7,8-PeCDF	0.00011	J B	0.0038	0.000018	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
2,3,7,8-TCDD	ND		0.00075	0.000066	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
2,3,7,8-TCDF	0.00030	J B	0.00075	0.000012	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
OCDD	0.22	B	0.0075	0.00011	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1
OCDF	0.016	B	0.0075	0.000018	ug/Kg	☼	09/10/18 15:16	09/16/18 05:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*23 - 140*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*48*		*28 - 143*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,4,7,8-HxCDD	*51*		*32 - 141*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,7,8,9-HxCDF	*58*		*29 - 147*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-2,3,4,7,8-PeCDF	*51*		*21 - 178*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/16/18 05:06*	*1*
13C-OCDD	*43*		*17 - 157*	*09/10/18 15:16*	*09/16/18 05:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*74*		*35 - 197*	*09/10/18 15:16*	*09/16/18 05:06*	*1*

Client Sample ID: PDI-SG-B455
Date Collected: 06/30/18 15:55
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-15
Matrix: Solid
Percent Solids: 59.7

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.025	B	0.0041	0.00017	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,4,6,7,8-HpCDF	0.0039	J q B	0.0041	0.000083	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,4,7,8,9-HpCDF	0.00035	J B	0.0041	0.000088	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,4,7,8-HxCDD	0.00040	J B	0.0041	0.000032	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,4,7,8-HxCDF	0.00036	J B	0.0041	0.000041	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,6,7,8-HxCDD	0.0023	J B	0.0041	0.000031	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,6,7,8-HxCDF	0.00027	J B	0.0041	0.000042	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0041	0.000029	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,7,8,9-HxCDF	0.00053	J B	0.0041	0.000026	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,7,8-PeCDD	0.00024	J q	0.0041	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
1,2,3,7,8-PeCDF	0.00019	J q B	0.0041	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
2,3,4,6,7,8-HxCDF	0.00021	J B	0.0041	0.000030	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
2,3,4,7,8-PeCDF	0.00015	J B	0.0041	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
2,3,7,8-TCDD	0.00012	J q	0.00082	0.000013	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
2,3,7,8-TCDF	0.00060	J B	0.00082	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
OCDD	0.23	B	0.0082	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1
OCDF	0.011	B	0.0082	0.000027	ug/Kg	☼	09/10/18 15:16	09/16/18 05:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*44*		*23 - 140*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*36*		*28 - 143*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*43*		*26 - 138*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,4,7,8-HxCDD	*43*		*32 - 141*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,4,7,8-HxCDF	*43*		*26 - 152*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,6,7,8-HxCDD	*42*		*28 - 130*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,6,7,8-HxCDF	*41*		*26 - 123*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,7,8,9-HxCDF	*48*		*29 - 147*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,7,8-PeCDD	*42*		*25 - 181*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-1,2,3,7,8-PeCDF	*43*		*24 - 185*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-2,3,4,7,8-PeCDF	*47*		*21 - 178*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/16/18 05:52*	*1*
13C-OCDD	*31*		*17 - 157*	*09/10/18 15:16*	*09/16/18 05:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*09/10/18 15:16*	*09/16/18 05:52*	*1*

Client Sample ID: PDI-SG-B450
Date Collected: 07/01/18 10:30
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-16
Matrix: Solid
Percent Solids: 61.1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0026	J B	0.0041	0.000034	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,4,6,7,8-HpCDF	0.00055	J q B	0.0041	0.000030	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,4,7,8,9-HpCDF	0.00026	J q B	0.0041	0.000032	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,4,7,8-HxCDD	0.00018	J B	0.0041	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,4,7,8-HxCDF	0.000087	J B	0.0041	0.000017	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,6,7,8-HxCDD	0.00016	J B	0.0041	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,6,7,8-HxCDF	0.000054	J q B	0.0041	0.000018	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,7,8,9-HxCDD	0.00026	J	0.0041	0.000015	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,7,8,9-HxCDF	0.00046	J B	0.0041	0.000011	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,7,8-PeCDD	0.000054	J	0.0041	0.000017	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
1,2,3,7,8-PeCDF	0.000084	J B	0.0041	0.000015	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
2,3,4,6,7,8-HxCDF	0.000037	J B	0.0041	0.000013	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
2,3,4,7,8-PeCDF	0.000038	J q B	0.0041	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
2,3,7,8-TCDD	ND		0.00083	0.000052	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
2,3,7,8-TCDF	0.00014	J B	0.00083	0.0000068	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
OCDD	0.026	B	0.0083	0.000039	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1
OCDF	0.0018	J B	0.0083	0.000021	ug/Kg	☼	09/10/18 15:16	09/16/18 06:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*42*		*23 - 140*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*34*		*28 - 143*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*41*		*26 - 138*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,4,7,8-HxCDD	*39*		*32 - 141*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,4,7,8-HxCDF	*41*		*26 - 152*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,6,7,8-HxCDD	*40*		*28 - 130*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,6,7,8-HxCDF	*39*		*26 - 123*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,7,8,9-HxCDF	*47*		*29 - 147*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,7,8-PeCDD	*42*		*25 - 181*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-1,2,3,7,8-PeCDF	*43*		*24 - 185*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-2,3,4,6,7,8-HxCDF	*44*		*28 - 136*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-2,3,4,7,8-PeCDF	*45*		*21 - 178*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-2,3,7,8-TCDF	*57*		*24 - 169*	*09/10/18 15:16*	*09/16/18 06:38*	*1*
13C-OCDD	*29*		*17 - 157*	*09/10/18 15:16*	*09/16/18 06:38*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*78*		*35 - 197*	*09/10/18 15:16*	*09/16/18 06:38*	*1*

Client Sample ID: PDI-SG-B454
Date Collected: 07/01/18 12:42
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-17
Matrix: Solid
Percent Solids: 58.2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.019	B	0.0043	0.00010	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,4,6,7,8-HpCDF	0.0040	J q B	0.0043	0.000080	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,4,7,8,9-HpCDF	0.00037	J B	0.0043	0.000083	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,4,7,8-HxCDD	0.00038	J B	0.0043	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,4,7,8-HxCDF	0.00048	J B	0.0043	0.000035	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,6,7,8-HxCDD	0.00094	J B	0.0043	0.000023	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,6,7,8-HxCDF	0.00024	J B	0.0043	0.000036	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,7,8,9-HxCDD	0.00082	J	0.0043	0.000022	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,7,8,9-HxCDF	0.00044	J B	0.0043	0.000023	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,7,8-PeCDD	0.00018	J	0.0043	0.000036	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
1,2,3,7,8-PeCDF	0.00015	J B	0.0043	0.000024	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
2,3,4,6,7,8-HxCDF	0.00015	J B	0.0043	0.000026	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
2,3,4,7,8-PeCDF	0.00014	J B	0.0043	0.000026	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
2,3,7,8-TCDD	0.00010	J q	0.00086	0.000014	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
2,3,7,8-TCDF	0.00026	J q B	0.00086	0.000016	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
OCDD	0.17	B	0.0086	0.000082	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1
OCDF	0.014	B	0.0086	0.000025	ug/Kg	☼	09/10/18 15:16	09/16/18 07:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*58*		*23 - 140*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*47*		*28 - 143*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,4,7,8-HxCDD	*51*		*32 - 141*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,7,8-PeCDD	*49*		*25 - 181*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-1,2,3,7,8-PeCDF	*49*		*24 - 185*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/16/18 07:24*	*1*
13C-OCDD	*45*		*17 - 157*	*09/10/18 15:16*	*09/16/18 07:24*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*09/10/18 15:16*	*09/16/18 07:24*	*1*

Client Sample ID: PDI-SG-B453
Date Collected: 07/01/18 11:41
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-18
Matrix: Solid
Percent Solids: 48.9

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.031	B	0.0051	0.00018	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,4,6,7,8-HpCDF	0.0082	B q	0.0051	0.00016	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,4,7,8,9-HpCDF	0.00068	J B	0.0051	0.00016	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,4,7,8-HxCDD	0.00055	J B	0.0051	0.000049	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,4,7,8-HxCDF	0.0011	J B	0.0051	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,6,7,8-HxCDD	0.0016	J B	0.0051	0.000052	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,6,7,8-HxCDF	0.00041	J B	0.0051	0.000099	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0051	0.000046	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,7,8,9-HxCDF	0.00063	J B	0.0051	0.000071	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,7,8-PeCDD	0.00024	J q	0.0051	0.000081	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
1,2,3,7,8-PeCDF	0.00021	J B q	0.0051	0.000069	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
2,3,4,6,7,8-HxCDF	0.00026	J B	0.0051	0.000072	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
2,3,4,7,8-PeCDF	0.00025	J B	0.0051	0.000069	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
2,3,7,8-TCDD	ND		0.0010	0.00020	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
2,3,7,8-TCDF	0.00046	J B	0.0010	0.000069	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
OCDD	0.28	B	0.010	0.00015	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1
OCDF	0.028	B	0.010	0.00012	ug/Kg	☼	09/10/18 15:16	09/16/18 08:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*56*		*26 - 138*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,4,7,8-HxCDF	*46*		*26 - 152*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,7,8,9-HxCDF	*54*		*29 - 147*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-2,3,7,8-TCDF	*50*		*24 - 169*	*09/10/18 15:16*	*09/16/18 08:10*	*1*
13C-OCDD	*53*		*17 - 157*	*09/10/18 15:16*	*09/16/18 08:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*77*		*35 - 197*	*09/10/18 15:16*	*09/16/18 08:10*	*1*

Client Sample ID: PDI-SG-B453-D
Date Collected: 07/01/18 11:41
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-19
Matrix: Solid
Percent Solids: 49.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.034	B	0.0051	0.00085	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,4,6,7,8-HpCDF	0.0084	q B	0.0051	0.00017	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,4,7,8,9-HpCDF	0.00067	J B	0.0051	0.00016	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,4,7,8-HxCDD	0.00057	J B	0.0051	0.000060	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,4,7,8-HxCDF	0.00086	J B	0.0051	0.00010	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,6,7,8-HxCDD	0.0016	J B	0.0051	0.000058	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,6,7,8-HxCDF	0.00038	J B	0.0051	0.00010	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0051	0.000054	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,7,8,9-HxCDF	0.00080	J B	0.0051	0.000070	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,7,8-PeCDD	0.00022	J	0.0051	0.000090	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
1,2,3,7,8-PeCDF	0.00024	J q B	0.0051	0.000061	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
2,3,4,6,7,8-HxCDF	0.00022	J B	0.0051	0.000080	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
2,3,4,7,8-PeCDF	0.00022	J B	0.0051	0.000064	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
2,3,7,8-TCDD	ND		0.0010	0.00013	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
2,3,7,8-TCDF	0.00038	J q B	0.0010	0.000064	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
OCDD	0.72	B	0.010	0.00043	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1
OCDF	0.028	B	0.010	0.00013	ug/Kg	☼	09/10/18 15:16	09/16/18 08:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*46*		*23 - 140*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*33*		*28 - 143*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,4,7,8-HxCDF	*45*		*26 - 152*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,6,7,8-HxCDD	*45*		*28 - 130*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,6,7,8-HxCDF	*44*		*26 - 123*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,7,8,9-HxCDF	*48*		*29 - 147*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-2,3,4,6,7,8-HxCDF	*45*		*28 - 136*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-2,3,7,8-TCDF	*58*		*24 - 169*	*09/10/18 15:16*	*09/16/18 08:56*	*1*
13C-OCDD	*33*		*17 - 157*	*09/10/18 15:16*	*09/16/18 08:56*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*09/10/18 15:16*	*09/16/18 08:56*	*1*

Client Sample ID: PDI-SG-B452
Date Collected: 07/01/18 15:13
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-20
Matrix: Solid
Percent Solids: 54.0

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.017	B	0.0047	0.00015	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,4,6,7,8-HpCDF	0.0038	J B	0.0047	0.000081	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,4,7,8,9-HpCDF	0.00030	J B	0.0047	0.000087	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,4,7,8-HxCDD	0.00038	J B	0.0047	0.000036	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,4,7,8-HxCDF	0.00034	J B	0.0047	0.000069	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,6,7,8-HxCDD	0.00086	J B	0.0047	0.000034	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,6,7,8-HxCDF	0.00018	J q B	0.0047	0.000067	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,7,8,9-HxCDD	0.00077	J	0.0047	0.000032	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,7,8,9-HxCDF	0.00036	J B	0.0047	0.000044	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,7,8-PeCDD	0.00014	J q	0.0047	0.000057	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
1,2,3,7,8-PeCDF	ND		0.0047	0.000040	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
2,3,4,6,7,8-HxCDF	0.000066	J B	0.0047	0.000048	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
2,3,4,7,8-PeCDF	ND		0.0047	0.000044	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
2,3,7,8-TCDD	ND		0.00094	0.00013	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
2,3,7,8-TCDF	0.00028	J B	0.00094	0.000031	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
OCDD	0.15	B	0.0094	0.00013	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1
OCDF	0.013	B	0.0094	0.000067	ug/Kg	☼	09/10/18 15:16	09/16/18 09:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*61*		*23 - 140*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*49*		*28 - 143*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*57*		*26 - 138*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,4,7,8-HxCDD	*51*		*32 - 141*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-1,2,3,7,8-PeCDF	*55*		*24 - 185*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*09/10/18 15:16*	*09/16/18 09:42*	*1*
13C-OCDD	*49*		*17 - 157*	*09/10/18 15:16*	*09/16/18 09:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*73*		*35 - 197*	*09/10/18 15:16*	*09/16/18 09:42*	*1*

Client Sample ID: PDI-SG-B457
Date Collected: 07/01/18 15:30
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-21
Matrix: Solid
Percent Solids: 53.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.38	B	0.0046	0.0028	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,4,6,7,8-HpCDF	0.050	B	0.0046	0.00072	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,4,7,8,9-HpCDF	0.0028	J B	0.0046	0.00079	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,4,7,8-HxCDD	0.0036	J B	0.0046	0.00024	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,4,7,8-HxCDF	0.0047	B	0.0046	0.00036	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,6,7,8-HxCDD	0.016	B	0.0046	0.00024	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,6,7,8-HxCDF	0.0031	J B	0.0046	0.00032	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,7,8,9-HxCDD	0.0083	B	0.0046	0.00022	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,7,8,9-HxCDF	0.00050	J B	0.0046	0.00024	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,7,8-PeCDD	0.0018	J	0.0046	0.00013	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
1,2,3,7,8-PeCDF	0.0013	J B	0.0046	0.00020	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
2,3,4,6,7,8-HxCDF	0.0014	J	0.0046	0.00026	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
2,3,4,7,8-PeCDF	0.0012	J	0.0046	0.00021	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
2,3,7,8-TCDD	0.00096		0.00092	0.000033	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
OCDD	5.2	E B	0.0092	0.0020	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1
OCDF	0.14	B	0.0092	0.000082	ug/Kg	☼	09/11/18 11:31	09/16/18 16:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*52*		*23 - 140*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*42*		*28 - 143*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,4,7,8-HxCDD	*51*		*32 - 141*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,7,8,9-HxCDF	*54*		*29 - 147*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-1,2,3,7,8-PeCDF	*48*		*24 - 185*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-2,3,7,8-TCDD	*53*		*25 - 164*	*09/11/18 11:31*	*09/16/18 16:20*	*1*
13C-OCDD	*46*		*17 - 157*	*09/11/18 11:31*	*09/16/18 16:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*77*		*35 - 197*	*09/11/18 11:31*	*09/16/18 16:20*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0012	B	0.00092	0.00010	ug/Kg	☼	09/11/18 11:31	09/17/18 18:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*51*		*24 - 169*	*09/11/18 11:31*	*09/17/18 18:29*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*09/11/18 11:31*	*09/17/18 18:29*	*1*

Client Sample ID: PDI-SG-B459
Date Collected: 07/01/18 12:20
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-22
Matrix: Solid
Percent Solids: 50.3

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.078	B	0.0049	0.00046	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,4,6,7,8-HpCDF	0.020	B	0.0049	0.00020	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,4,7,8,9-HpCDF	0.0045	J B	0.0049	0.00025	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,4,7,8-HxCDD	0.00086	J B	0.0049	0.000063	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,4,7,8-HxCDF	0.0032	J B	0.0049	0.00015	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,6,7,8-HxCDD	0.0041	J B	0.0049	0.000060	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,6,7,8-HxCDF	0.0011	J B	0.0049	0.00014	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,7,8,9-HxCDD	0.0019	J B	0.0049	0.000057	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,7,8,9-HxCDF	0.00041	J q B	0.0049	0.00010	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,7,8-PeCDD	0.00046	J	0.0049	0.000089	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
1,2,3,7,8-PeCDF	0.00033	J B	0.0049	0.00018	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
2,3,4,6,7,8-HxCDF	0.00083	J	0.0049	0.00011	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
2,3,4,7,8-PeCDF	0.00049	J	0.0049	0.00019	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
2,3,7,8-TCDD	0.00014	J q	0.00098	0.000042	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
2,3,7,8-TCDF	0.00075	J B	0.00098	0.000062	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
OCDD	0.70	B	0.0098	0.00035	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1
OCDF	0.068	B	0.0098	0.000062	ug/Kg	☼	09/11/18 11:31	09/16/18 17:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*52*		*23 - 140*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*44*		*28 - 143*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,4,7,8-HxCDD	*52*		*32 - 141*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,6,7,8-HxCDD	*53*		*28 - 130*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,6,7,8-HxCDF	*56*		*26 - 123*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,7,8,9-HxCDF	*54*		*29 - 147*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-2,3,4,7,8-PeCDF	*50*		*21 - 178*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-2,3,7,8-TCDF	*55*		*24 - 169*	*09/11/18 11:31*	*09/16/18 17:06*	*1*
13C-OCDD	*44*		*17 - 157*	*09/11/18 11:31*	*09/16/18 17:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*75*		*35 - 197*	*09/11/18 11:31*	*09/16/18 17:06*	*1*

Client Sample ID: PDI-SG-B460
Date Collected: 07/01/18 11:15
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-23
Matrix: Solid
Percent Solids: 43.8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.027	B	0.0057	0.00019	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,4,6,7,8-HpCDF	0.0065	B	0.0057	0.00015	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,4,7,8,9-HpCDF	0.00060	J B	0.0057	0.00016	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,4,7,8-HxCDD	0.00053	J B	0.0057	0.000045	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,4,7,8-HxCDF	0.00056	J B	0.0057	0.000061	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,6,7,8-HxCDD	0.0015	J B	0.0057	0.000047	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,6,7,8-HxCDF	0.00034	J B	0.0057	0.000059	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,7,8,9-HxCDD	0.0011	J B	0.0057	0.000042	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,7,8,9-HxCDF	0.00070	J B	0.0057	0.000043	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,7,8-PeCDD	0.00024	J	0.0057	0.000041	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
1,2,3,7,8-PeCDF	0.00025	J B	0.0057	0.000036	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
2,3,4,6,7,8-HxCDF	0.00021	J q	0.0057	0.000046	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
2,3,4,7,8-PeCDF	0.00020	J	0.0057	0.000038	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
2,3,7,8-TCDD	ND		0.0011	0.00019	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
2,3,7,8-TCDF	0.00053	J B	0.0011	0.000022	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
OCDD	0.23	B	0.011	0.00021	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1
OCDF	0.024	B	0.011	0.000051	ug/Kg	☼	09/11/18 11:31	09/16/18 17:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*47*		*23 - 140*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*38*		*28 - 143*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*45*		*26 - 138*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,4,7,8-HxCDD	*50*		*32 - 141*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,4,7,8-HxCDF	*50*		*26 - 152*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,6,7,8-HxCDF	*51*		*26 - 123*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,7,8,9-HxCDF	*50*		*29 - 147*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,7,8-PeCDD	*49*		*25 - 181*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-1,2,3,7,8-PeCDF	*48*		*24 - 185*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-2,3,4,6,7,8-HxCDF	*52*		*28 - 136*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-2,3,4,7,8-PeCDF	*49*		*21 - 178*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-2,3,7,8-TCDF	*54*		*24 - 169*	*09/11/18 11:31*	*09/16/18 17:52*	*1*
13C-OCDD	*40*		*17 - 157*	*09/11/18 11:31*	*09/16/18 17:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*76*		*35 - 197*	*09/11/18 11:31*	*09/16/18 17:52*	*1*

Client Sample ID: PDI-SG-B461
Date Collected: 07/01/18 10:00
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-24
Matrix: Solid
Percent Solids: 50.5

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.030	B	0.0049	0.00024	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,4,6,7,8-HpCDF	0.0055	q B	0.0049	0.00011	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,4,7,8,9-HpCDF	0.00053	J B	0.0049	0.00013	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,4,7,8-HxCDD	0.00055	J B	0.0049	0.000035	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,4,7,8-HxCDF	ND		0.0049	0.000050	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,6,7,8-HxCDD	0.0015	J B	0.0049	0.000035	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,6,7,8-HxCDF	0.00038	J B	0.0049	0.000047	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,7,8,9-HxCDD	0.0012	J B	0.0049	0.000032	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,7,8,9-HxCDF	0.00055	J B	0.0049	0.000034	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,7,8-PeCDD	0.00025	J	0.0049	0.000038	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
1,2,3,7,8-PeCDF	0.00022	J B	0.0049	0.000033	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
2,3,4,6,7,8-HxCDF	0.00024	J	0.0049	0.000035	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
2,3,4,7,8-PeCDF	0.00017	J	0.0049	0.000034	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
2,3,7,8-TCDD	0.00010	J q	0.00097	0.000028	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
2,3,7,8-TCDF	0.00038	J q B	0.00097	0.000022	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
OCDD	0.26	B	0.0097	0.00016	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1
OCDF	0.019	B	0.0097	0.000044	ug/Kg	☼	09/11/18 11:31	09/16/18 18:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*42*		*28 - 143*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDD	*52*		*32 - 141*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,4,7,8-HxCDF	*53*		*26 - 152*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-1,2,3,7,8-PeCDF	*51*		*24 - 185*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-2,3,4,6,7,8-HxCDF	*57*		*28 - 136*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-2,3,4,7,8-PeCDF	*51*		*21 - 178*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-2,3,7,8-TCDF	*59*		*24 - 169*	*09/11/18 11:31*	*09/16/18 18:38*	*1*
13C-OCDD	*40*		*17 - 157*	*09/11/18 11:31*	*09/16/18 18:38*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*74*		*35 - 197*	*09/11/18 11:31*	*09/16/18 18:38*	*1*

Client Sample ID: PDI-SG-B461-D
Date Collected: 07/01/18 10:00
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-25
Matrix: Solid
Percent Solids: 50.7

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.023	B	0.0050	0.00016	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,4,6,7,8-HpCDF	0.0047	J q B	0.0050	0.00010	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,4,7,8,9-HpCDF	0.00040	J B	0.0050	0.00012	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,4,7,8-HxCDD	0.00052	J B	0.0050	0.000036	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,4,7,8-HxCDF	0.00042	J B	0.0050	0.000060	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,6,7,8-HxCDD	0.0012	J B	0.0050	0.000034	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,6,7,8-HxCDF	0.00026	J B	0.0050	0.000056	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,7,8,9-HxCDD	0.0011	J B	0.0050	0.000032	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,7,8,9-HxCDF	0.00026	J B	0.0050	0.000041	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,7,8-PeCDD	0.00026	J	0.0050	0.000033	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
1,2,3,7,8-PeCDF	0.00018	J B	0.0050	0.000038	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
2,3,4,6,7,8-HxCDF	0.00020	J	0.0050	0.000043	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
2,3,4,7,8-PeCDF	0.00015	J	0.0050	0.000041	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
2,3,7,8-TCDD	0.00012	J q	0.00099	0.000028	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
2,3,7,8-TCDF	0.00039	J B	0.00099	0.000021	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
OCDD	0.20	B	0.0099	0.00013	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1
OCDF	0.020	B	0.0099	0.000045	ug/Kg	☼	09/11/18 11:31	09/16/18 19:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*42*		*28 - 143*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,4,7,8-HxCDD	*49*		*32 - 141*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,6,7,8-HxCDD	*54*		*28 - 130*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,6,7,8-HxCDF	*55*		*26 - 123*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,7,8,9-HxCDF	*54*		*29 - 147*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-1,2,3,7,8-PeCDF	*49*		*24 - 185*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-2,3,4,7,8-PeCDF	*50*		*21 - 178*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*09/11/18 11:31*	*09/16/18 19:24*	*1*
13C-OCDD	*41*		*17 - 157*	*09/11/18 11:31*	*09/16/18 19:24*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*73*		*35 - 197*	*09/11/18 11:31*	*09/16/18 19:24*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-244815/1-A
Matrix: Solid
Analysis Batch: 245783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244815

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000126	J	0.0050	0.000012	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,4,6,7,8-HpCDF	0.0000811	J	0.0050	0.000014	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,4,7,8,9-HpCDF	0.000141	J	0.0050	0.000017	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,4,7,8-HxCDD	0.000137	J	0.0050	0.0000096	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,4,7,8-HxCDF	0.0000348	J q	0.0050	0.000012	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,6,7,8-HxCDD	0.0000160	J q	0.0050	0.0000093	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,6,7,8-HxCDF	0.0000287	J q	0.0050	0.000011	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.0000086	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,7,8,9-HxCDF	0.000396	J	0.0050	0.0000084	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000014	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
1,2,3,7,8-PeCDF	0.0000783	J	0.0050	0.000011	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
2,3,4,6,7,8-HxCDF	0.0000216	J	0.0050	0.0000089	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
2,3,4,7,8-PeCDF	0.0000490	J	0.0050	0.000012	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
2,3,7,8-TCDD	ND		0.0010	0.000036	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
2,3,7,8-TCDF	0.000221	J	0.0010	0.0000074	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
OCDD	0.000803	J	0.010	0.000016	ug/Kg		09/10/18 15:16	09/15/18 14:48	1
OCDF	0.000133	J	0.010	0.000011	ug/Kg		09/10/18 15:16	09/15/18 14:48	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*23 - 140*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*68*		*28 - 143*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*71*		*26 - 138*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,4,7,8-HxCDF	*70*		*26 - 152*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,6,7,8-HxCDF	*70*		*26 - 123*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-1,2,3,7,8-PeCDF	*59*		*24 - 185*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-2,3,4,6,7,8-HxCDF	*69*		*28 - 136*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*09/10/18 15:16*	*09/15/18 14:48*	*1*
13C-OCDD	*66*		*17 - 157*	*09/10/18 15:16*	*09/15/18 14:48*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*72*		*35 - 197*	*09/10/18 15:16*	*09/15/18 14:48*	*1*

Lab Sample ID: LCS 320-244815/2-A
Matrix: Solid
Analysis Batch: 245783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244815

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.109		ug/Kg		109	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.111		ug/Kg		111	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.113		ug/Kg		113	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.113		ug/Kg		113	72 - 134

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-244815/2-A
Matrix: Solid
Analysis Batch: 245783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244815

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.111		ug/Kg		111	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.114		ug/Kg		114	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.115		ug/Kg		115	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.114		ug/Kg		114	78 - 130
1,2,3,7,8-PeCDD	0.100	0.109		ug/Kg		109	70 - 142
1,2,3,7,8-PeCDF	0.100	0.112		ug/Kg		112	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	70 - 156
2,3,4,7,8-PeCDF	0.100	0.112		ug/Kg		112	68 - 160
2,3,7,8-TCDD	0.0200	0.0197		ug/Kg		99	67 - 158
2,3,7,8-TCDF	0.0200	0.0231		ug/Kg		116	75 - 158
OCDD	0.200	0.210		ug/Kg		105	78 - 144
OCDF	0.200	0.229		ug/Kg		115	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*69*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*71*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*65*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*69*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*68*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*69*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*68*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*61*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*59*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*69*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*59*		*13 - 328*
13C-2,3,7,8-TCDD	*67*		*20 - 175*
13C-2,3,7,8-TCDF	*61*		*22 - 152*
13C-OCDD	*66*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*76*		*31 - 191*

Lab Sample ID: LCSD 320-244815/3-A
Matrix: Solid
Analysis Batch: 245783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244815

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.114		ug/Kg		114	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF	0.100	0.112		ug/Kg		112	78 - 138	1	50
1,2,3,4,7,8-HxCDD	0.100	0.115		ug/Kg		115	70 - 164	2	50
1,2,3,4,7,8-HxCDF	0.100	0.114		ug/Kg		114	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.114		ug/Kg		114	76 - 134	3	50
1,2,3,6,7,8-HxCDF	0.100	0.116		ug/Kg		116	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.119		ug/Kg		119	64 - 162	3	50
1,2,3,7,8,9-HxCDF	0.100	0.115		ug/Kg		115	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.109		ug/Kg		109	70 - 142	0	50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-244815/3-A
Matrix: Solid
Analysis Batch: 245783

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 244815

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			0.100	0.114		ug/Kg		114	80 - 134	1	50
2,3,4,6,7,8-HxCDF			0.100	0.113		ug/Kg		113	70 - 156	1	50
2,3,4,7,8-PeCDF			0.100	0.113		ug/Kg		113	68 - 160	1	50
2,3,7,8-TCDD			0.0200	0.0197		ug/Kg		98	67 - 158	0	50
2,3,7,8-TCDF			0.0200	0.0233		ug/Kg		116	75 - 158	1	50
OCDD			0.200	0.209		ug/Kg		105	78 - 144	0	50
OCDF			0.200	0.231		ug/Kg		115	63 - 170	1	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*84*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*72*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*76*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*69*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*73*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*71*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*72*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*73*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*66*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*63*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*73*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*62*		*13 - 328*
13C-2,3,7,8-TCDD	*72*		*20 - 175*
13C-2,3,7,8-TCDF	*65*		*22 - 152*
13C-OCDD	*72*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*77*		*31 - 191*

Lab Sample ID: MB 320-245002/1-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245002

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000114	J	0.0050	0.000011	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,4,6,7,8-HpCDF	0.0000773	J	0.0050	0.000013	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,4,7,8,9-HpCDF	0.000128	J q	0.0050	0.000016	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,4,7,8-HxCDD	0.000118	J q	0.0050	0.000013	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,4,7,8-HxCDF	0.0000298	J q	0.0050	0.000024	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,6,7,8-HxCDD	0.0000238	J q	0.0050	0.000013	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,6,7,8-HxCDF	0.0000287	J q	0.0050	0.000022	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,7,8,9-HxCDD	0.0000370	J q	0.0050	0.000012	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,7,8,9-HxCDF	0.000297	J	0.0050	0.000018	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000018	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
1,2,3,7,8-PeCDF	0.0000363	J q	0.0050	0.000017	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000018	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000019	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
2,3,7,8-TCDD	ND		0.0010	0.000026	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
2,3,7,8-TCDF	0.000149	J	0.0010	0.000013	ug/Kg		09/11/18 11:31	09/16/18 14:02	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-245002/1-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245002

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000911	J	0.010	0.000016	ug/Kg		09/11/18 11:31	09/16/18 14:02	1
OCDF	0.000133	J	0.010	0.000023	ug/Kg		09/11/18 11:31	09/16/18 14:02	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*86*		*23 - 140*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*76*		*28 - 143*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*78*		*26 - 138*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*71*		*32 - 141*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*77*		*26 - 152*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*80*		*28 - 130*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*83*		*26 - 123*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*76*		*29 - 147*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*25 - 181*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*79*		*28 - 136*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-2,3,4,7,8-PeCDF	*67*		*21 - 178*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-2,3,7,8-TCDD	*76*		*25 - 164*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*09/11/18 11:31*	*09/16/18 14:02*	*1*
13C-OCDD	*73*		*17 - 157*	*09/11/18 11:31*	*09/16/18 14:02*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*80*		*35 - 197*	*09/11/18 11:31*	*09/16/18 14:02*	*1*

Lab Sample ID: LCS 320-245002/2-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245002

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.100		ug/Kg		100	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.107		ug/Kg		107	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.108		ug/Kg		108	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.108		ug/Kg		108	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.109		ug/Kg		109	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.114		ug/Kg		114	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.111		ug/Kg		111	78 - 130
1,2,3,7,8-PeCDD	0.100	0.105		ug/Kg		105	70 - 142
1,2,3,7,8-PeCDF	0.100	0.108		ug/Kg		108	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	70 - 156
2,3,4,7,8-PeCDF	0.100	0.107		ug/Kg		107	68 - 160
2,3,7,8-TCDD	0.0200	0.0187		ug/Kg		93	67 - 158
2,3,7,8-TCDF	0.0200	0.0213		ug/Kg		107	75 - 158
OCDD	0.200	0.202		ug/Kg		101	78 - 144
OCDF	0.200	0.224		ug/Kg		112	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*73*		*26 - 166*

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-245002/2-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245002

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDD	65		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,6,7,8-HxCDF	68		22 - 176
13C-2,3,4,7,8-PeCDF	55		13 - 328
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-OCDD	65		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	78		31 - 191

Lab Sample ID: LCSD 320-245002/3-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 245002

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD			0.100	0.0999		ug/Kg		100	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF			0.100	0.106		ug/Kg		106	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF			0.100	0.109		ug/Kg		109	78 - 138	1	50
1,2,3,4,7,8-HxCDD			0.100	0.108		ug/Kg		108	70 - 164	0	50
1,2,3,4,7,8-HxCDF			0.100	0.110		ug/Kg		110	72 - 134	1	50
1,2,3,6,7,8-HxCDD			0.100	0.110		ug/Kg		110	76 - 134	1	50
1,2,3,6,7,8-HxCDF			0.100	0.111		ug/Kg		111	84 - 130	0	50
1,2,3,7,8,9-HxCDD			0.100	0.111		ug/Kg		111	64 - 162	3	50
1,2,3,7,8,9-HxCDF			0.100	0.110		ug/Kg		110	78 - 130	1	50
1,2,3,7,8-PeCDD			0.100	0.104		ug/Kg		104	70 - 142	0	50
1,2,3,7,8-PeCDF			0.100	0.108		ug/Kg		108	80 - 134	0	50
2,3,4,6,7,8-HxCDF			0.100	0.109		ug/Kg		109	70 - 156	1	50
2,3,4,7,8-PeCDF			0.100	0.110		ug/Kg		110	68 - 160	3	50
2,3,7,8-TCDD			0.0200	0.0187		ug/Kg		93	67 - 158	0	50
2,3,7,8-TCDF			0.0200	0.0218		ug/Kg		109	75 - 158	2	50
OCDD			0.200	0.207		ug/Kg		104	78 - 144	3	50
OCDF			0.200	0.224		ug/Kg		112	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	81		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	72		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	74		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	73		25 - 163

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-245002/3-A
Matrix: Solid
Analysis Batch: 245785

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 245002

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-1,2,3,7,8-PeCDD	66		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-2,3,4,7,8-PeCDF	58		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-OCDD	72		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	75		31 - 191

Client Sample ID: PDI-SG-B434
Date Collected: 06/29/18 11:36
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-1
Matrix: Solid
Percent Solids: 51.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 09:42	AS	TAL SAC

Client Sample ID: PDI-SG-B435
Date Collected: 06/29/18 13:43
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-2
Matrix: Solid
Percent Solids: 51.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245751	09/15/18 10:28	AS	TAL SAC

Client Sample ID: PDI-SG-B441
Date Collected: 06/29/18 15:20
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-3
Matrix: Solid
Percent Solids: 62.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 17:06	AS	TAL SAC

Client Sample ID: PDI-SG-B442
Date Collected: 06/29/18 16:22
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-4
Matrix: Solid
Percent Solids: 47.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 17:52	AS	TAL SAC

Client Sample ID: PDI-SG-B439
Date Collected: 06/29/18 11:51
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-5
Matrix: Solid
Percent Solids: 55.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 18:38	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 17:13	ALM	TAL SAC

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Client Sample ID: PDI-SG-B440
Date Collected: 06/29/18 14:12
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-6
Matrix: Solid
Percent Solids: 41.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 19:24	AS	TAL SAC

Client Sample ID: PDI-SG-B445
Date Collected: 06/29/18 16:35
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-7
Matrix: Solid
Percent Solids: 59.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 20:10	AS	TAL SAC

Client Sample ID: PDI-SG-B446
Date Collected: 06/30/18 11:36
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-8
Matrix: Solid
Percent Solids: 58.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 20:56	AS	TAL SAC

Client Sample ID: PDI-SG-B447
Date Collected: 06/30/18 14:02
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-9
Matrix: Solid
Percent Solids: 50.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 21:42	AS	TAL SAC

Client Sample ID: PDI-SG-B449
Date Collected: 06/30/18 15:38
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-10
Matrix: Solid
Percent Solids: 51.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245783	09/15/18 22:28	AS	TAL SAC

Client Sample ID: PDI-SG-B443
Date Collected: 06/30/18 10:21
Date Received: 07/02/18 14:30

Lab Sample ID: 580-78527-11
Matrix: Solid
Percent Solids: 59.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 02:48	AS	TAL SAC

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Client Sample ID: PDI-SG-B444
Lab Sample ID: 580-78527-12
Date Collected: 06/30/18 11:10
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 50.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 03:34	AS	TAL SAC

Client Sample ID: PDI-SG-B448
Lab Sample ID: 580-78527-13
Date Collected: 06/30/18 12:08
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 54.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 04:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 17:51	ALM	TAL SAC

Client Sample ID: PDI-SG-B451
Lab Sample ID: 580-78527-14
Date Collected: 06/30/18 14:45
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 66.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 05:06	AS	TAL SAC

Client Sample ID: PDI-SG-B455
Lab Sample ID: 580-78527-15
Date Collected: 06/30/18 15:55
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 59.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 05:52	AS	TAL SAC

Client Sample ID: PDI-SG-B450
Lab Sample ID: 580-78527-16
Date Collected: 07/01/18 10:30
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 61.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 06:38	AS	TAL SAC

Client Sample ID: PDI-SG-B454
Lab Sample ID: 580-78527-17
Date Collected: 07/01/18 12:42
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 58.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Client Sample ID: PDI-SG-B454
Lab Sample ID: 580-78527-17
Date Collected: 07/01/18 12:42
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 58.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	245784	09/16/18 07:24	AS	TAL SAC

Client Sample ID: PDI-SG-B453
Lab Sample ID: 580-78527-18
Date Collected: 07/01/18 11:41
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 48.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 08:10	AS	TAL SAC

Client Sample ID: PDI-SG-B453-D
Lab Sample ID: 580-78527-19
Date Collected: 07/01/18 11:41
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 49.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 08:56	AS	TAL SAC

Client Sample ID: PDI-SG-B452
Lab Sample ID: 580-78527-20
Date Collected: 07/01/18 15:13
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 54.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			244815	09/10/18 15:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245784	09/16/18 09:42	AS	TAL SAC

Client Sample ID: PDI-SG-B457
Lab Sample ID: 580-78527-21
Date Collected: 07/01/18 15:30
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 53.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245785	09/16/18 16:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	246104	09/17/18 18:29	ALM	TAL SAC

Client Sample ID: PDI-SG-B459
Lab Sample ID: 580-78527-22
Date Collected: 07/01/18 12:20
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 50.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245785	09/16/18 17:06	AS	TAL SAC

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Client Sample ID: PDI-SG-B460

Lab Sample ID: 580-78527-23
Date Collected: 07/01/18 11:15
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 43.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245785	09/16/18 17:52	AS	TAL SAC

Client Sample ID: PDI-SG-B461

Lab Sample ID: 580-78527-24
Date Collected: 07/01/18 10:00
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 50.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245785	09/16/18 18:38	AS	TAL SAC

Client Sample ID: PDI-SG-B461-D

Lab Sample ID: 580-78527-25
Date Collected: 07/01/18 10:00
Matrix: Solid
Date Received: 07/02/18 14:30
Percent Solids: 50.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			245002	09/11/18 11:31	SR1	TAL SAC
Total/NA	Analysis	1613B		1	245785	09/16/18 19:24	AS	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-78527-8
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Sample Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-78527-1	PDI-SG-B434	Solid	06/29/18 11:36	07/02/18 14:30
580-78527-2	PDI-SG-B435	Solid	06/29/18 13:43	07/02/18 14:30
580-78527-3	PDI-SG-B441	Solid	06/29/18 15:20	07/02/18 14:30
580-78527-4	PDI-SG-B442	Solid	06/29/18 16:22	07/02/18 14:30
580-78527-5	PDI-SG-B439	Solid	06/29/18 11:51	07/02/18 14:30
580-78527-6	PDI-SG-B440	Solid	06/29/18 14:12	07/02/18 14:30
580-78527-7	PDI-SG-B445	Solid	06/29/18 16:35	07/02/18 14:30
580-78527-8	PDI-SG-B446	Solid	06/30/18 11:36	07/02/18 14:30
580-78527-9	PDI-SG-B447	Solid	06/30/18 14:02	07/02/18 14:30
580-78527-10	PDI-SG-B449	Solid	06/30/18 15:38	07/02/18 14:30
580-78527-11	PDI-SG-B443	Solid	06/30/18 10:21	07/02/18 14:30
580-78527-12	PDI-SG-B444	Solid	06/30/18 11:10	07/02/18 14:30
580-78527-13	PDI-SG-B448	Solid	06/30/18 12:08	07/02/18 14:30
580-78527-14	PDI-SG-B451	Solid	06/30/18 14:45	07/02/18 14:30
580-78527-15	PDI-SG-B455	Solid	06/30/18 15:55	07/02/18 14:30
580-78527-16	PDI-SG-B450	Solid	07/01/18 10:30	07/02/18 14:30
580-78527-17	PDI-SG-B454	Solid	07/01/18 12:42	07/02/18 14:30
580-78527-18	PDI-SG-B453	Solid	07/01/18 11:41	07/02/18 14:30
580-78527-19	PDI-SG-B453-D	Solid	07/01/18 11:41	07/02/18 14:30
580-78527-20	PDI-SG-B452	Solid	07/01/18 15:13	07/02/18 14:30
580-78527-21	PDI-SG-B457	Solid	07/01/18 15:30	07/02/18 14:30
580-78527-22	PDI-SG-B459	Solid	07/01/18 12:20	07/02/18 14:30
580-78527-23	PDI-SG-B460	Solid	07/01/18 11:15	07/02/18 14:30
580-78527-24	PDI-SG-B461	Solid	07/01/18 10:00	07/02/18 14:30
580-78527-25	PDI-SG-B461-D	Solid	07/01/18 10:00	07/02/18 14:30

SURFACE SEDIMENT
CHAIN OF CUSTODY

7/2/2018 COC No: 1 — 1 of 3 pages

TestAmerica-Seattle	Project Contact: Amy Dahl / Chelsey Cook
5755-8th-Street-East	Tel: (206) 438-2261 / (206) 438-2010
Tacoma, WA 98424-1317	Analysis Turnaround Time
Ph: 253-922-2310 Fax: 253-922-5047	Calendar (C) or Work Days (W) _____
Client Contact	☐ 21 days
AECOM	☒ Other _ASAP_____
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: Surface Sediment	
Sample Type: D/U	

Site Contact: Jennifer Ray
Laboratory Contact: Elaine-Walker
Carrier: Courier

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Sample Specific Notes:
PDI-SG-B434	6/29/2018	11:36	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B435	6/29/2018	13:43	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B441	6/29/2018	15:20	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B442	6/29/2018	16:22	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B439	6/29/2018	11:51	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B440	6/29/2018	14:12	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B445	6/29/2018	16:35	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B446	6/30/2018	11:36	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B447	6/30/2018	14:02	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B449	6/30/2018	15:38	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B443	6/30/2018	10:21	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B444	6/30/2018	15:20	SS		MT	7		H	H	H	x	H	H	H	

580-78527 Chain of Custody

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

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:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

6,01,07,23,02,30,2

Relinquished by:	Company: AECOM	Date/Time: 7/2/18 1257	Received by:	Company: M-E-	Date/Time: 7/2/18 1257
Relinquished by:	Company: M-E-	Date/Time: 7/2/18 1430	Received by:	Company: TAPOR	Date/Time: 7/2/18 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

7/2/2018 COC No: 1 — 2 of 3 pages

TestAmerica-Seattle	Project Contact: Amy Dahl / Chelsey Cook
5755-8th-Street-East	Tel: (206) 438-2261 / (206) 438-2010
Tacoma, WA 98424-1317	Site Contact: Jennifer Ray
Ph: 253-922-2310 Fax: 253-922-5047	Laboratory Contact: Elaine-Walker
Client Contact	Carrier: Courier
AECOM	Analysis Turnaround Time
1111 3rd Ave Suite 1600	Calendar (C) or Work Days (W) _____
Seattle, WA 98101	☐ 21 days
Phone: (206) 438-2700 Fax: 1+(866) 495-5288	☒ Other _ASAP_____
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	
Portland, OR	
Project #: 60566335 Study: Surface Sediment	
Sample Type: D/U	

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Krom/Unger	Atterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SG-B448	6/30/2018	12:08	SS		MT	7		H	H	H	x	H	H	H		
PDI-SG-B451	6/30/2018	14:45	SS		AC	7		H	H	H	x	H	H	H		
PDI-SG-B455	6/30/2018	15:55	SS		AC	7		H	H	H	x	H	H	H		
PDI-SG-B450	7/1/2018	10:30	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B454	7/1/2018	1242 1245	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B453	7/1/2018	11:41	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B453-D	7/1/2018	11:41	SS		SH	6		H	H	H		H	H	H		
PDI-SG-B452	7/1/2018	15:13	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B457	7/1/2018	15:30	SS	MS/MSD	AC	13		H	H	H	x	H	H	H		
PDI-SG-B459	7/1/2018	12:20	SS		AC	8		H	H	H	x	H	H	H	H	
PDI-SG-B460	7/1/2018	11:15	SS		MT	8		H	H	H	x	H	H	H	H	
PDI-SG-B461	7/1/2018	10:00	SS		MT	8		H	H	H	x	H	H	H	H	

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

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:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

Relinquished by:	Company: AECOM	Date/Time: 7/2/18/1257	Received by:	Company: M-E.	Date/Time: 7/2/18 1257
Relinquished by:	Company: M-E-	Date/Time: 7/2/18 1430	Received by:	Company: TAPOR	Date/Time: 7/2/18 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310** **Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**7/2/2018** COC No: 1 3 of 3 pages
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: Surface Sediment Sample Type: D/U	**Analysis Turnaround Time** Calendar (C) or Work Days (W) ☐ 21 days ☒ Other _ASAP_____	**Carrier: Courier**	

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Krom/Unger	Atterberg Limits ASTM D4318	WQ-PCB Congeners 1668A	WQ-PCDD/Fs 1613B	WQ-TPH Diesel NWTPH-Dx	WQ-Metals, Hg 6020B, 7470	WQ-TOC SM5310B	WQ PAHs, 8270 SIM	WQ-BEHP 8270D-LL	WQ-TBT Krone/Unger	Sample Specific Notes:
PDI-SG-B461-D	7/1/2018	10:00	SS		AC	6		H	H	H		H	H	H		X	X	X	X	X	X	X	X	
PDI-SG-RB-20180630	6/30/18	17:15	W		AC	14										X	X	X	X	X	X	X	X	

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

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:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

Relinquished by:	Company: AECOM	Date/Time: 7/2/18 1257	Received by:	Company: M.E.	Date/Time: 7/2/18 1257
Relinquished by:	Company: M.E.	Date/Time: 7/2/18 1430	Received by:	Company: TAPOA	Date/Time: 7/2/18 1430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**7/2/2018** **Carrier: Courier**	COC No: 1 __1__ of __3__ pages

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

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Sample Specific Notes:
PDI-SG-B434	6/29/2018	11:36	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B435	6/29/2018	13:43	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B441	6/29/2018	15:20	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B442	6/29/2018	16:22	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B439	6/29/2018	11:51	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B440	6/29/2018	14:12	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B445	6/29/2018	16:35	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B446	6/30/2018	11:36	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B447	6/30/2018	14:02	SS		SH	7		H	H	H	x	H	H	H	
PDI-SG-B449	6/30/2018	15:38	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B443	6/30/2018	10:21	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B444	6/30/2018	1520	SS		MT	7		H	H	H	x	H	H	H	

580-78527 Chain of Custody

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

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:

Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.

Separate reports for each lab.

.6,10,107,23,02,302

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	7/2/18 1257		M-E-	7/2/18 1257
	M-E-	7/2/18 1430		TAPOR	7/2/18 1430
	TAPOR	7/2/18 1800		TASEA	7-3-18 0945

IR5 0.3/0.3
1.8/1.8
1.4/1.4

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**7/2/2018** COC No: 1 **Carrier: Courier** 2 of 3 pages

Client Contact	Analysis Turnaround Time
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: **Surface Sediment** Sample Type: **D/U**	Calendar (C) or Work Days (W) ☐ 21 days ☒ Other ASAP

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL Kron/Unger	Atterberg Limits ASTM D4318	Sample Specific Notes:
PDI-SG-B448	6/30/2018	12:08	SS		MT	7		H	H	H	x	H	H	H		
PDI-SG-B451	6/30/2018	14:45	SS		AC	7		H	H	H	x	H	H	H		
PDI-SG-B455	6/30/2018	15:55	SS		AC	7		H	H	H	x	H	H	H		
PDI-SG-B450	7/1/2018	10:30	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B454	7/1/2018	1327	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B453	7/1/2018	11:41	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B453-D	7/1/2018	11:41	SS		SH	6		H	H	H		H	H	H		
PDI-SG-B452	7/1/2018	15:13	SS		SH	7		H	H	H	x	H	H	H		
PDI-SG-B457	7/1/2018	15:30	SS	MS/MSD	AC	13		H	H	H	x	H	H	H		
PDI-SG-B459	7/1/2018	12:20	SS		AC	8		H	H	H	x	H	H	H	H	
PDI-SG-B460	7/1/2018	11:15	SS		MT	8		H	H	H	x	H	H	H	H	
PDI-SG-B461	7/1/2018	10:00	SS		MT	8		H	H	H	x	H	H	H	H	

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

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:

Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.

Separate reports for each lab.

Relinquished by:	Company: Aecom	Date/Time: 7/2/18 1257	Received by:	Company: M-E.	Date/Time: 7/2/18 1257
Relinquished by:	Company: M-E.	Date/Time: 7/2/18 1430	Received by:	Company: TAPOR	Date/Time: 7/2/18 1430
Relinquished by:	Company: TAPOR	Date/Time: 7/2/18 1800	Received by:	Company: TAGEA	Date/Time: 7-3-18 0945

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**7/2/2018** **Carrier: Courier**	COC No: 1 3 of 3 pages

Client Contact	Analysis Turnaround Time
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: Surface Sediment Sample Type: D/U	Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other ASAP_____

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Atterberg Limits ASTM D4318	WQ-PCB Congeners 1668A	WQ-PCDD/Fs 1613B	WQ-TPH Diesel, NWTPH-Dx	WQ-Metals, Hg 6020B, 7470	WQ-TOC SM5310B	WQ-PAHs, 8270 SIM	WQ-BEHP, 8270-LL	WQ-TBT Kuwa/Unger	Sample Specific Notes:
PDI-SG-B461-D	7/1/2018	10:00	SS		AC	6		H	H	H		H	H	H										
PDI-SG-RB-20180630	6/30/18	17:15	W		AC	14										X	X	X	X	X	X	X	X	

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

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:

Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.

Separate reports for each lab.

Relinquished by:	Company: AECOM	Date/Time: 7/2/18 1257	Received by:	Company: M.E.	Date/Time: 7/2/18 1257
Relinquished by:	Company: M.E.	Date/Time: 7/2/18 1430	Received by:	Company: TAOR	Date/Time: 7/2/18 1430
Relinquished by:	Company: TAOR	Date/Time: 7/2/18 1800	Received by:	Company: TASEA	Date/Time: 7-3-18 0945

Revised 78527

TestAmerica-Seattle
5755 8th Street East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

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 #: 60564335 Study: Surface Sediment
Sample Type: DMU

SURFACE SEDIMENT CHAIN OF CUSTODY

Project Contact: Amy Dahl / Chelsey Cook
Tel: (206) 438-2261 / (206) 438-2010
Analysis Turnaround Time
Calendar (C) or Work Days (W)
☐ 21 days
☒ Other_ASAP_________

Site Contact: Jennifer Ray
Laboratory Contact: Elaine Walker
Carrier: Courier
7/2/2018 COC No: 1
1 of 3 pages

	Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Preservative	PCB Congeners 1668A	PCDD/F 1613B	TBT, Metals, Mercury / 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids (9060 & 160.3)	Archive Archive -20 C	PAHs, SVOC, Pesticides, ...									Sample Specific Notes
-	PDI-SG-B434	6/29/2018	11:38	SS		MT	7		H	H	H	x	H	H	H									
-	PDI-SG-B435	6/29/2018	13:43	SS		MT	7		H	H	H	x	H	H	H									
-	PDI-SG-B441	6/29/2018	15:20	SS		MT	7		H	H	(H)	(x)	(H)	H	H									
-	PDI-SG-B442	6/29/2018	16:22	SS		MT	7		H	H	H	x	H	H	H									
-	PDI-SG-B439	6/29/2018	11:51	SS		SH	7		H	H	H	x	H	H	H									
-	PDI-SG-B440	6/29/2018	14:12	SS		SH	7		H	H	H	x	H	H	H									
-	PDI-SG-B445	6/29/2018	16:35	SS		SH	7		H	H	H	x	H	H	H									
-	PDI-SG-B446	6/30/2018	11:36	SS		SH	7		H	H	H	x	H	H	H									
-	PDI-SG-B447	6/30/2018	14:02	SS		SH	7		H	H	H	x	H	H	H									
-	PDI-SG-B449	6/30/2018	15:38	SS		MT	7		H	H	H	x	H	H	H									
-	PDI-SG-B443	6/30/2018	16:21	SS		MT	7		H	H	H	x	H	H	H									
-	PDI-SG-B444	6/30/2018	12:10 [illegible]	SS		MT	7		H	H	H	x	H	H	H									

Container Type: WMG=Wide Mouth Glass Jar, Poly/HPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column
Preservation: 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
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

① Analyze sample PDI-SG-B441 for metals (6020B), TOC (9060, 10+4 TOC) and grain size (ASTM D7928/D6913) on rush TAT.

Relinquished by: [signature]	Company: AECOM	Date/Time: 7/2/18 / 1257	Received by: [signature]	Company: M.E.	Date/Time: 7/2/18 1257
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: K Hassler	Company: TA	Date/Time: 7/2/18

COC 1414
Samples 1435

TestAmerica-Seattle
5755-8th Street East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

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: Surface Sediment
Sample Type: D/D

SURFACE SEDIMENT
CHAIN OF CUSTODY

Project Contact: Amy Dahl / Chelsey Cook
Tel: (206) 438-2261 / (206) 438-2818
Analysis Turnaround Time
Calendar (C) or Work Days (W)

☐ 21 days
☒ Other_ASAP__________

Site Contact: Jennifer Key
Laboratory Contact: Elaine Walker
Carrier: Courier
7/2/2018 COC No: 1
2 of 3 pages

#	Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	[illegible]	PCB Congeners 1668A	PCDD/Fs 1613B	TTPH Metals, Metals, Mercury 7471A, 6020, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (TOC & TOC)	Archive Archive -20 C	PAHs, ..., Tributyltin, 8270-SIM, ..., Lipids/Moisture	Atterberg Limits ASTM D4318	Sample Specific Notes:
-	PDI-SG-B448	6/30/2018	12:08	SS		MT	7		H	H	H	x	H	H	H		
-	PDI-SG-B451	6/30/2018	14:45	SS		AC	7		H	H	H	x	H	H	H		
-	PDI-SG-B455	6/30/2018	15:55	SS		AC	7		H	H	(H)	(x)	(H)	H	H		
-	PDI-SG-B450	7/1/2018	10:30	SS		SH	7		H	H	H	x	H	H	H		
-	PDI-SG-B454	7/1/2018	[illegible]	SS		SH	7		H	H	(H)	(x)	(H)	H	H		
-	PDI-SG-B453	7/1/2018	11:41	SS		SH	7		H	H	(H)	(x)	(H)	H	H		
-	PDI-SG-B453-D	7/1/2018	11:41	SS		SH	6		H	H	(H)		(H)	H	H		
-	PDI-SG-B452	7/1/2018	15:13	SS		SH	7		H	H	H	x	H	H	H		
-	PDI-SG-B457	7/1/2018	15:30	SS	MS/MSD	AC	13		H	H	H	x	H	H	H		
-	PDI-SG-B459	7/1/2018	12:20	SS		AC	8		H	H	H	x	H	H	H	H	
-	PDI-SG-B460	7/1/2018	11:15	SS		MT	8		H	H	(H)	(x)	(H)	H	H	H	
-	PDI-SG-B461	7/1/2018	10:00	SS		MT	8 ✓.		H	H	H	x	H	H	H	H	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column
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:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

○ ANALYZE SAMPLES PDI-SG-B455, PDI-SG-B453, PDI-SG-454, PDI-SG-B460, AND
NO GRAIN SIZE → PDI-SG-453-D FOR METALS (6020), TOC (9060, 104-TOC), AND GRAIN SIZE (ASTM D7928/D6913) ON RUSH TAT.

Relinquished by: [signature]	Company: AECOM	Date/Time: 7/2/18/1257	Received by: [signature]	Company: TA-E	Date/Time: 7/2/18 1257
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle
5755 8th Street East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

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 #: 60565335 Study: Surface Sediment
Sample Type: D/U

Project Contacts: Amy Dahl / Chelsey Cook
Tel: (206) 438-2361 / (206) 438-2059
Analysis Turnaround Time
Calendar (C) or Work Days (W)
☐ 21 days
☒ Other_ASAP

Site Contact: Jennifer Ray
Laboratory Contact: Elaine Walker
Carrier: Courier
7/2/2018 COC No: 1
3 of 3 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Filtered	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (TOC & TS)	Archive - 20 C	PAHs, SVOCs, Tributyltin, 8270-SIM, 8270, I.L. Krone/Unger	Atterberg Limits ASTM D4318	WD-PCB Congeners 1668A	WD-PCDD/Fs 1613B	WD-TPH Diesel NWTPH-Dx	WD-Metals, Hg 6020B, 7470	WD-TOC SM5310B	WD-PAHs 8270 SIM	WD-SVOC 8270D-LL	WD-TBT Krone/Unger	Sample Specific Notes:
PDI-SG-B461-D	7/1/2018	10:00	SE		AC	6		H	H	H		H	H	H										
~~PDI-SE-RB-20180630~~ PDI-RB-180630 *** Per Aecom 7/22/18 ***	6/30/18	17:15	W		AC	14										X	X	X	X	X	X	X	X	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, HC=Resin Column
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid
Fraction: D = Dissolved, PRT = Particulate, T = Total (Bulk)

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

Special Instructions/QC Requirements & Comments:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

Relinquished by: [signature]	Company: AECOM	Date/Time: 7/2/18/1257	Received by: [signature]	Company: TA-S	Date/Time: 7/2/18 1257
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

*** Changed Sample ID to: PDI-RB-180630 Per Aecom 7/22/18 (EW)

*** Added MN to RB sample Per aecom 7/22/18 (EW)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-56927.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-78527-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/19/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/1613B_Sox_Sep_P (MOD) Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
PDI-SG-RB-20180630 (580-78527-26)	6/30/18	17:15 Pacific		Water			X	2	

Hold
Cracked lid & taped for #5
on 7-7-18

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	7/6/18 1700	TAL SAC	[signature]	7-7-18 0905	TALSAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 5.2, 5.8

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78527-8

Login Number: 78527
List Number: 1
Creator: Antonson, Angeline D

List Source: TestAmerica Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78527-8

Login Number: 78527
List Number: 5
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 07/07/18 04:24 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	False	only for #26
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	lid received broken anf taped
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78527-8

Login Number: 78527
List Number: 6
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 07/07/18 04:43 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.8,5.2
COC is present.	False	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78527-8

Login Number: 78527
List Number: 7
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 07/07/18 04:45 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.8,5.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-78527-1	PDI-SG-B434	39	29	38	40	41	41	42	46
580-78527-2	PDI-SG-B435	44	32	42	43	43	44	44	49
580-78527-3	PDI-SG-B441	41	33	41	41	42	41	41	47
580-78527-4	PDI-SG-B442	47	38	46	45	48	45	46	50
580-78527-5	PDI-SG-B439	43	35	37	44	46	45	47	48
580-78527-5 - RA	PDI-SG-B439								
580-78527-6	PDI-SG-B440	51	34	48	50	51	49	52	54
580-78527-7	PDI-SG-B445	54	45	49	51	53	52	53	56
580-78527-8	PDI-SG-B446	49	39	48	48	49	47	49	53
580-78527-9	PDI-SG-B447	46	37	43	45	45	44	45	49
580-78527-10	PDI-SG-B449	51	43	50	48	49	48	48	53
580-78527-11	PDI-SG-B443	50	39	47	47	47	45	46	51
580-78527-12	PDI-SG-B444	50	37	48	47	47	47	47	53
580-78527-13	PDI-SG-B448	50	39	47	47	48	47	48	52
580-78527-13 - RA	PDI-SG-B448								
580-78527-14	PDI-SG-B451	58	48	55	51	53	53	52	58
580-78527-15	PDI-SG-B455	44	36	43	43	43	42	41	48
580-78527-16	PDI-SG-B450	42	34	41	39	41	40	39	47
580-78527-17	PDI-SG-B454	58	47	55	51	52	53	52	57
580-78527-18	PDI-SG-B453	56	46	56	56	46	53	54	54
580-78527-19	PDI-SG-B453-D	46	33	46	44	45	45	44	48
580-78527-20	PDI-SG-B452	61	49	57	51	52	54	52	59
580-78527-21	PDI-SG-B457	52	42	48	51	51	53	57	54
580-78527-21 - RA	PDI-SG-B457								
580-78527-22	PDI-SG-B459	52	44	46	52	52	53	56	54
580-78527-23	PDI-SG-B460	47	38	45	50	50	48	51	50
580-78527-24	PDI-SG-B461	50	42	48	52	53	54	54	56
580-78527-25	PDI-SG-B461-D	50	42	46	49	52	54	55	54
MB 320-244815/1-A	Method Blank	78	68	71	66	70	68	70	69
MB 320-245002/1-A	Method Blank	86	76	78	71	77	80	83	76

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-78527-1	PDI-SG-B434	43	42	45	44	54	53	29
580-78527-2	PDI-SG-B435	47	47	48	49	58	59	32
580-78527-3	PDI-SG-B441	43	43	44	45	55	54	29
580-78527-4	PDI-SG-B442	46	46	49	49	57	57	38
580-78527-5	PDI-SG-B439	46	45	48	48	55		35
580-78527-5 - RA	PDI-SG-B439						59	
580-78527-6	PDI-SG-B440	49	47	53	49	56	54	40
580-78527-7	PDI-SG-B445	50	50	56	52	60	57	43
580-78527-8	PDI-SG-B446	48	49	51	51	60	61	36
580-78527-9	PDI-SG-B447	44	44	48	47	57	56	33
580-78527-10	PDI-SG-B449	47	47	52	49	58	58	40
580-78527-11	PDI-SG-B443	46	45	49	47	56	56	37
580-78527-12	PDI-SG-B444	46	47	50	49	58	58	36
580-78527-13	PDI-SG-B448	46	47	51	48	58		39
580-78527-13 - RA	PDI-SG-B448						67	
580-78527-14	PDI-SG-B451	50	50	55	51	61	58	43

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-78527-15	PDI-SG-B455	42	43	46	47	56	58	31
580-78527-16	PDI-SG-B450	42	43	44	45	54	57	29
580-78527-17	PDI-SG-B454	49	49	55	49	60	58	45
580-78527-18	PDI-SG-B453	59	57	60	60	57	50	53
580-78527-19	PDI-SG-B453-D	51	50	45	52	54	58	33
580-78527-20	PDI-SG-B452	57	55	58	54	64	63	49
580-78527-21	PDI-SG-B457	50	48	55	49	53		46
580-78527-21 - RA	PDI-SG-B457						51	
580-78527-22	PDI-SG-B459	51	51	55	50	58	55	44
580-78527-23	PDI-SG-B460	49	48	52	49	54	54	40
580-78527-24	PDI-SG-B461	50	51	57	51	61	59	40
580-78527-25	PDI-SG-B461-D	50	49	55	50	59	56	41
MB 320-244815/1-A	Method Blank	62	59	69	59	67	61	66
MB 320-245002/1-A	Method Blank	73	67	79	67	76	67	73

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-244815/2-A	Lab Control Sample	78	69	71	65	69	68	69	68
LCS 320-245002/2-A	Lab Control Sample	73	63	68	63	63	65	69	67
LCSD 320-244815/3-A	Lab Control Sample Dup	84	72	76	69	73	71	72	73
LCSD 320-245002/3-A	Lab Control Sample Dup	81	72	74	66	70	73	76	71

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-244815/2-A	Lab Control Sample	61	59	69	59	67	61	66
LCS 320-245002/2-A	Lab Control Sample	65	61	68	55	68	61	65
LCSD 320-244815/3-A	Lab Control Sample Dup	66	63	73	62	72	65	72
LCSD 320-245002/3-A	Lab Control Sample Dup	66	62	76	58	70	60	72

Isotope Dilution Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78527-8

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HxDD = 13C-1,2,3,6,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
PeCDD = 13C-1,2,3,7,8-PeCDD
PeCDF = 13C-1,2,3,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
TCDD = 13C-2,3,7,8-TCDD
TCDF = 13C-2,3,7,8-TCDF
OCDD = 13C-OCDD