TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-77177-2
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
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Attn: Karen Mixon

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Authorized for release by:
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Job ID: 580-77177-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-77177-2

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

Eighteen samples were received on 5/9/2018 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.0º C, 3.2º C, 3.6º C and 3.9º C.

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

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

Samples PDI-SG-S104 (580-77177-3), PDI-SG-S076 (580-77177-7), PDI-SG-S032 (580-77177-9), PDI-SG-S030 (580-77177-12) and PDI-SG-S081 (580-77177-14) were received broken lids. No volume was lost and the lids were replaced. Samples were stacked bottom to lid.

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.

DIOXIN/ FURAN

Samples PDI-SG-S073 (580-77177-1), PDI-SG-S099 (580-77177-2), PDI-SG-S104 (580-77177-3), PDI-SG-S104-D (580-77177-4), PDI-SG-S100 (580-77177-5), PDI-SG-S075 (580-77177-6), PDI-SG-S076 (580-77177-7), PDI-SG-S077 (580-77177-8), PDI-SG-S032 (580-77177-9), PDI-SG-S031 (580-77177-10), PDI-SG-S031-D (580-77177-11), PDI-SG-S030 (580-77177-12), PDI-SG-S029 (580-77177-13), PDI-SG-S081 (580-77177-14), PDI-SG-S083 (580-77177-15) and PDI-SG-S093 (580-77177-16) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 05/19/2018 and analyzed on 05/23/2018 and 05/24/2018.

1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 2,3,7,8-TCDF and OCDD were detected in method blank MB 320-224242/1-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-S073 (580-77177-1), PDI-SG-S099 (580-77177-2), PDI-SG-S104 (580-77177-3), PDI-SG-S104-D (580-77177-4), PDI-SG-S100 (580-77177-5), PDI-SG-S075 (580-77177-6), PDI-SG-S076 (580-77177-7), PDI-SG-S077 (580-77177-8), PDI-SG-S032 (580-77177-9), PDI-SG-S031 (580-77177-10), PDI-SG-S031-D (580-77177-11), PDI-SG-S030 (580-77177-12), PDI-SG-S029 (580-77177-13), PDI-SG-S081 (580-77177-14), PDI-SG-S083 (580-77177-15), PDI-SG-S093

Job ID: 580-77177-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

(580-77177-16), (CCV 320-224867/42), (CCV 320-224866/27), (LCS 320-224242/2-A), (LCSD 320-224242/3-A), (MB 320-224242/1-A) and (WDM 320-224866/28). 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 samples exceeded the instrument calibration range: PDI-SG-S099 (580-77177-2) and PDI-SG-S030 (580-77177-12). These analytes have been qualified; however, the peaks 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.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: PDI-SG-S099 (580-77177-2), PDI-SG-S030 (580-77177-12) and PDI-SG-S093 (580-77177-16). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-S073 (580-77177-1), PDI-SG-S099 (580-77177-2), PDI-SG-S104 (580-77177-3), PDI-SG-S104-D (580-77177-4), PDI-SG-S100 (580-77177-5), PDI-SG-S075 (580-77177-6), PDI-SG-S076 (580-77177-7), PDI-SG-S077 (580-77177-8), PDI-SG-S032 (580-77177-9), PDI-SG-S031 (580-77177-10), PDI-SG-S031-D (580-77177-11), PDI-SG-S030 (580-77177-12), PDI-SG-S029 (580-77177-13), PDI-SG-S081 (580-77177-14), PDI-SG-S083 (580-77177-15) and PDI-SG-S093 (580-77177-16). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-224242.

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

DIOXIN/ FURAN - Rinse Blank

Samples PDI-RB-VV-180508-1715 (580-77177-17) and PDI-RB-VV-180508-1700 (580-77177-18) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 05/23/2018 and analyzed on 05/24/2018 and 05/25/2018.

Several analytes were detected in method blank MB 320-224916/1-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.

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

Definitions/Glossary

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

TestAmerica Job ID: 580-77177-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
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.
*	Isotope Dilution analyte is outside acceptance limits.
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-S073
Date Collected: 05/07/18 11:45
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-1
Matrix: Solid
Percent Solids: 73.7

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	0.053	B	0.0034	0.00039	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,4,6,7,8-HpCDF	0.0064	B	0.0034	0.000080	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,4,7,8,9-HpCDF	0.0011	J	0.0034	0.000074	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,4,7,8-HxCDD	0.00037	J	0.0034	0.000069	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,4,7,8-HxCDF	0.0035		0.0034	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,6,7,8-HxCDD	0.00093	J	0.0034	0.000066	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,6,7,8-HxCDF	0.0021	J	0.0034	0.000097	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,7,8,9-HxCDD	0.0010	J	0.0034	0.000063	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,7,8,9-HxCDF	0.00041	J q	0.0034	0.000051	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,7,8-PeCDD	ND		0.0034	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
1,2,3,7,8-PeCDF	0.0013	J	0.0034	0.000057	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
2,3,4,6,7,8-HxCDF	0.00045	J	0.0034	0.000060	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
2,3,4,7,8-PeCDF	0.00092	J	0.0034	0.000068	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
2,3,7,8-TCDD	ND		0.00068	0.000092	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
OCDD	0.41	B	0.0068	0.00035	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1
OCDF	0.014		0.0068	0.000087	ug/Kg	☼	05/19/18 07:16	05/23/18 02:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*34*		*23 - 140*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*29*		*28 - 143*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*41*		*26 - 138*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,4,7,8-HxCDD	*35*		*32 - 141*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,4,7,8-HxCDF	*33*		*26 - 152*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,6,7,8-HxCDD	*36*		*28 - 130*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,6,7,8-HxCDF	*34*		*26 - 123*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,7,8,9-HxCDF	*46*		*29 - 147*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-2,3,4,6,7,8-HxCDF	*41*		*28 - 136*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-2,3,4,7,8-PeCDF	*48*		*21 - 178*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*05/19/18 07:16*	*05/23/18 02:21*	*1*
13C-OCDD	*26*		*17 - 157*	*05/19/18 07:16*	*05/23/18 02:21*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*122*		*35 - 197*	*05/19/18 07:16*	*05/23/18 02:21*	*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	0.0011	B	0.00068	0.000058	ug/Kg	☼	05/19/18 07:16	05/23/18 11:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*05/19/18 07:16*	*05/23/18 11:19*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*05/19/18 07:16*	*05/23/18 11:19*	*1*

Client Sample ID: PDI-SG-S099
Date Collected: 05/07/18 13:45
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-2
Matrix: Solid
Percent Solids: 60.9

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	0.53	B	0.0040	0.0024	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,4,6,7,8-HpCDF	0.17	B	0.0040	0.0014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,4,7,8,9-HpCDF	0.0047		0.0040	0.0015	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,4,7,8-HxCDD	0.0032	J	0.0040	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,4,7,8-HxCDF	0.0024	J	0.0040	0.00043	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,6,7,8-HxCDD	0.011		0.0040	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,6,7,8-HxCDF	0.0088		0.0040	0.00038	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,7,8,9-HxCDD	0.0071		0.0040	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,7,8,9-HxCDF	0.00021	J q	0.0040	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,7,8-PeCDD	0.0011	J	0.0040	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
1,2,3,7,8-PeCDF	0.0017	J	0.0040	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
2,3,4,6,7,8-HxCDF	0.0015	J	0.0040	0.00023	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
2,3,4,7,8-PeCDF	0.0013	J	0.0040	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
2,3,7,8-TCDD	ND		0.00080	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
OCDD	6.7	E B	0.0080	0.0030	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1
OCDF	0.28		0.0080	0.00021	ug/Kg	☼	05/19/18 07:16	05/23/18 03:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*30*		*23 - 140*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*26*	*	*28 - 143*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*32*		*26 - 138*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,4,7,8-HxCDD	*34*		*32 - 141*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,4,7,8-HxCDF	*32*		*26 - 152*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,6,7,8-HxCDD	*35*		*28 - 130*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,6,7,8-HxCDF	*34*		*26 - 123*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,7,8,9-HxCDF	*43*		*29 - 147*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,7,8-PeCDD	*44*		*25 - 181*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-1,2,3,7,8-PeCDF	*50*		*24 - 185*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-2,3,4,6,7,8-HxCDF	*39*		*28 - 136*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-2,3,4,7,8-PeCDF	*48*		*21 - 178*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-2,3,7,8-TCDD	*54*		*25 - 164*	*05/19/18 07:16*	*05/23/18 03:07*	*1*
13C-OCDD	*24*		*17 - 157*	*05/19/18 07:16*	*05/23/18 03:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*117*		*35 - 197*	*05/19/18 07:16*	*05/23/18 03:07*	*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	0.00080	0.000084	ug/Kg	☼	05/19/18 07:16	05/23/18 11:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*05/19/18 07:16*	*05/23/18 11:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*05/19/18 07:16*	*05/23/18 11:57*	*1*

Client Sample ID: PDI-SG-S104
Date Collected: 05/07/18 10:27
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-3
Matrix: Solid
Percent Solids: 54.9

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	0.20	B	0.0045	0.0011	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,4,6,7,8-HpCDF	0.063	B	0.0045	0.00075	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,4,7,8,9-HpCDF	0.0026	J	0.0045	0.00073	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,4,7,8-HxCDD	0.0014	J	0.0045	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,4,7,8-HxCDF	0.0038	J	0.0045	0.00029	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,6,7,8-HxCDD	0.0096		0.0045	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,6,7,8-HxCDF	0.0025	J	0.0045	0.00025	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,7,8,9-HxCDD	0.0044	J	0.0045	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,7,8,9-HxCDF	0.00026	J	0.0045	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,7,8-PeCDD	0.00095	J	0.0045	0.00021	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
1,2,3,7,8-PeCDF	0.0011	J	0.0045	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0045	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
2,3,4,7,8-PeCDF	0.0014	J	0.0045	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
2,3,7,8-TCDD	0.00032	J q	0.00091	0.000098	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
OCDD	1.7	B	0.0091	0.00095	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1
OCDF	0.15		0.0091	0.00019	ug/Kg	☼	05/19/18 07:16	05/23/18 03:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*37*		*23 - 140*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*31*		*28 - 143*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*43*		*26 - 138*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*36*		*32 - 141*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*35*		*26 - 152*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*37*		*28 - 130*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*37*		*26 - 123*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*52*		*29 - 147*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,7,8-PeCDD	*47*		*25 - 181*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-1,2,3,7,8-PeCDF	*56*		*24 - 185*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-2,3,4,7,8-PeCDF	*46*		*21 - 178*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*05/19/18 07:16*	*05/23/18 03:53*	*1*
13C-OCDD	*31*		*17 - 157*	*05/19/18 07:16*	*05/23/18 03:53*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*05/19/18 07:16*	*05/23/18 03:53*	*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	0.0015	B	0.00091	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 12:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*69*		*24 - 169*	*05/19/18 07:16*	*05/23/18 12:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*05/19/18 07:16*	*05/23/18 12:35*	*1*

Client Sample ID: PDI-SG-S104-D

Date Collected: 05/07/18 10:28
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-4

Matrix: Solid
Percent Solids: 52.6

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	0.27	B	0.0046	0.0011	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,4,6,7,8-HpCDF	0.079	B	0.0046	0.00083	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,4,7,8,9-HpCDF	0.0026	J	0.0046	0.0011	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,4,7,8-HxCDD	0.0041	J q	0.0046	0.00028	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,4,7,8-HxCDF	0.0034	J	0.0046	0.00047	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,6,7,8-HxCDD	0.020		0.0046	0.00027	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,6,7,8-HxCDF	0.0026	J	0.0046	0.00041	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,7,8,9-HxCDD	0.011		0.0046	0.00026	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,7,8,9-HxCDF	0.00023	J q	0.0046	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,7,8-PeCDD	0.010		0.0046	0.00037	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
1,2,3,7,8-PeCDF	0.0017	J	0.0046	0.00023	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
2,3,4,6,7,8-HxCDF	0.0010	J q	0.0046	0.00026	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
2,3,4,7,8-PeCDF	0.0013	J	0.0046	0.00025	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
2,3,7,8-TCDD	0.0076		0.00093	0.00033	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
OCDD	2.4	B	0.0093	0.00096	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1
OCDF	0.19		0.0093	0.00023	ug/Kg	☼	05/19/18 07:16	05/23/18 04:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*33*		*23 - 140*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*29*		*28 - 143*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*30*		*26 - 138*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,4,7,8-HxCDD	*42*		*32 - 141*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,4,7,8-HxCDF	*41*		*26 - 152*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,6,7,8-HxCDD	*42*		*28 - 130*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,6,7,8-HxCDF	*41*		*26 - 123*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,7,8,9-HxCDF	*49*		*29 - 147*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,7,8-PeCDD	*47*		*25 - 181*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-1,2,3,7,8-PeCDF	*56*		*24 - 185*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-2,3,4,6,7,8-HxCDF	*45*		*28 - 136*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-2,3,4,7,8-PeCDF	*54*		*21 - 178*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*05/19/18 07:16*	*05/23/18 04:39*	*1*
13C-OCDD	*27*		*17 - 157*	*05/19/18 07:16*	*05/23/18 04:39*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*05/19/18 07:16*	*05/23/18 04:39*	*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	0.0018	B	0.00093	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 13:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*05/19/18 07:16*	*05/23/18 13:13*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*05/19/18 07:16*	*05/23/18 13:13*	*1*

Client Sample ID: PDI-SG-S100
Date Collected: 05/07/18 11:28
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-5
Matrix: Solid
Percent Solids: 47.9

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	0.36	B	0.0051	0.0016	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,4,6,7,8-HpCDF	0.049	B	0.0051	0.00073	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,4,7,8,9-HpCDF	0.0039	J	0.0051	0.00064	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,4,7,8-HxCDD	0.0039	J	0.0051	0.00026	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,4,7,8-HxCDF	0.012		0.0051	0.00042	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,6,7,8-HxCDD	0.015		0.0051	0.00024	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,6,7,8-HxCDF	0.0065		0.0051	0.00035	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,7,8,9-HxCDD	0.0057		0.0051	0.00023	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,7,8,9-HxCDF	0.00047	J q	0.0051	0.00018	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,7,8-PeCDD	0.0021	J	0.0051	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
1,2,3,7,8-PeCDF	0.0079		0.0051	0.00028	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
2,3,4,6,7,8-HxCDF	0.0017	J	0.0051	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
2,3,4,7,8-PeCDF	0.0042	J	0.0051	0.00039	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
2,3,7,8-TCDD	0.0010		0.0010	0.000089	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
OCDD	3.5	B	0.010	0.0017	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1
OCDF	0.11		0.010	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 05:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*41*		*23 - 140*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*35*		*28 - 143*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*43*		*26 - 152*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,6,7,8-HxCDF	*47*		*26 - 123*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,7,8-PeCDD	*56*		*25 - 181*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-2,3,4,6,7,8-HxCDF	*53*		*28 - 136*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*05/19/18 07:16*	*05/23/18 05:25*	*1*
13C-OCDD	*36*		*17 - 157*	*05/19/18 07:16*	*05/23/18 05:25*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/19/18 07:16*	*05/23/18 05:25*	*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	0.0068	B	0.0010	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 13:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*70*		*24 - 169*	*05/19/18 07:16*	*05/23/18 13:50*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*05/19/18 07:16*	*05/23/18 13:50*	*1*

Client Sample ID: PDI-SG-S075
Date Collected: 05/07/18 13:23
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-6
Matrix: Solid
Percent Solids: 72.6

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	0.014	B	0.0034	0.00012	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,4,6,7,8-HpCDF	0.0021	J B	0.0034	0.000075	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,4,7,8,9-HpCDF	0.00021	J	0.0034	0.000082	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,4,7,8-HxCDD	0.00026	J	0.0034	0.000043	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,4,7,8-HxCDF	0.00062	J	0.0034	0.000080	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,6,7,8-HxCDD	0.00057	J q	0.0034	0.000041	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,6,7,8-HxCDF	0.00021	J q	0.0034	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,7,8,9-HxCDD	0.00040	J q	0.0034	0.000039	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,7,8,9-HxCDF	0.000090	J	0.0034	0.000034	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,7,8-PeCDD	0.00015	J	0.0034	0.000054	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
1,2,3,7,8-PeCDF	0.00028	J	0.0034	0.000036	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
2,3,4,6,7,8-HxCDF	0.000086	J	0.0034	0.000043	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
2,3,4,7,8-PeCDF	0.00018	J	0.0034	0.000039	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
2,3,7,8-TCDD	ND		0.00068	0.000042	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
2,3,7,8-TCDF	0.00035	J B	0.00068	0.000027	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
OCDD	0.12	B	0.0068	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1
OCDF	0.0076		0.0068	0.000093	ug/Kg	☼	05/19/18 07:16	05/23/18 06:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*39*		*23 - 140*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*41*		*28 - 143*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,4,7,8-HxCDD	*48*		*32 - 141*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,4,7,8-HxCDF	*48*		*26 - 152*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,6,7,8-HxCDD	*47*		*28 - 130*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,6,7,8-HxCDF	*48*		*26 - 123*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-2,3,4,6,7,8-HxCDF	*54*		*28 - 136*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-2,3,4,7,8-PeCDF	*69*		*21 - 178*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-2,3,7,8-TCDF	*77*		*24 - 169*	*05/19/18 07:16*	*05/23/18 06:11*	*1*
13C-OCDD	*33*		*17 - 157*	*05/19/18 07:16*	*05/23/18 06:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*118*		*35 - 197*	*05/19/18 07:16*	*05/23/18 06:11*	*1*

Client Sample ID: PDI-SG-S076
Date Collected: 05/07/18 14:18
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-7
Matrix: Solid
Percent Solids: 75.9

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	**0.0023**	**J B**	0.0033	0.000068	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,4,6,7,8-HpCDF	**0.00023**	**J q B**	0.0033	0.000051	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,4,7,8,9-HpCDF	ND		0.0033	0.000048	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,4,7,8-HxCDD	**0.00015**	**J**	0.0033	0.000042	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.000045	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,6,7,8-HxCDD	**0.00019**	**J**	0.0033	0.000041	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.000040	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,7,8,9-HxCDD	**0.00020**	**J q**	0.0033	0.000039	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,7,8,9-HxCDF	ND		0.0033	0.000020	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000056	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
1,2,3,7,8-PeCDF	ND		0.0033	0.000033	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000025	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
2,3,4,7,8-PeCDF	ND		0.0033	0.000039	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
2,3,7,8-TCDD	ND		0.00067	0.000034	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
2,3,7,8-TCDF	**0.000083**	**J q B**	0.00067	0.000019	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
OCDD	**0.031**	**B**	0.0067	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1
OCDF	**0.00090**	**J**	0.0067	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 06:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*38*		*23 - 140*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*38*		*28 - 143*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*49*		*26 - 138*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,4,7,8-HxCDD	*47*		*32 - 141*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*46*		*26 - 152*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,6,7,8-HxCDF	*47*		*26 - 123*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,7,8,9-HxCDF	*58*		*29 - 147*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,7,8-PeCDD	*53*		*25 - 181*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-2,3,4,6,7,8-HxCDF	*53*		*28 - 136*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-2,3,4,7,8-PeCDF	*61*		*21 - 178*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-2,3,7,8-TCDF	*78*		*24 - 169*	*05/19/18 07:16*	*05/23/18 06:57*	*1*
13C-OCDD	*29*		*17 - 157*	*05/19/18 07:16*	*05/23/18 06:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*120*		*35 - 197*	*05/19/18 07:16*	*05/23/18 06:57*	*1*

Client Sample ID: PDI-SG-S077
Date Collected: 05/07/18 16:00
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-8
Matrix: Solid
Percent Solids: 70.0

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	0.070	B	0.0036	0.00058	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,4,6,7,8-HpCDF	0.0061	B	0.0036	0.000090	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,4,7,8,9-HpCDF	0.00050	J q	0.0036	0.000087	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,4,7,8-HxCDD	0.00030	J q	0.0036	0.000069	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,4,7,8-HxCDF	0.0017	J	0.0036	0.000079	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,6,7,8-HxCDD	0.0014	J	0.0036	0.000061	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,6,7,8-HxCDF	0.00049	J q	0.0036	0.000071	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,7,8,9-HxCDD	0.0010	J	0.0036	0.000061	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000041	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,7,8-PeCDD	ND		0.0036	0.00013	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
1,2,3,7,8-PeCDF	0.0010	J	0.0036	0.000057	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
2,3,4,6,7,8-HxCDF	0.00017	J	0.0036	0.000048	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
2,3,4,7,8-PeCDF	0.00064	J	0.0036	0.000054	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
2,3,7,8-TCDD	ND		0.00071	0.000084	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
OCDD	0.55	B	0.0071	0.00021	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1
OCDF	0.020		0.0071	0.000090	ug/Kg	☼	05/19/18 07:16	05/23/18 07:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*41*		*23 - 140*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*52*		*26 - 138*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,4,7,8-HxCDD	*49*		*32 - 141*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,4,7,8-HxCDF	*50*		*26 - 152*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,6,7,8-HxCDD	*44*		*28 - 130*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,6,7,8-HxCDF	*46*		*26 - 123*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-1,2,3,7,8-PeCDF	*66*		*24 - 185*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-2,3,4,6,7,8-HxCDF	*52*		*28 - 136*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-2,3,7,8-TCDD	*66*		*25 - 164*	*05/19/18 07:16*	*05/23/18 07:43*	*1*
13C-OCDD	*35*		*17 - 157*	*05/19/18 07:16*	*05/23/18 07:43*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*132*		*35 - 197*	*05/19/18 07:16*	*05/23/18 07:43*	*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	0.0014	B	0.00071	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 14:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*89*		*24 - 169*	*05/19/18 07:16*	*05/23/18 14:28*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*05/19/18 07:16*	*05/23/18 14:28*	*1*

Client Sample ID: PDI-SG-S032
Date Collected: 05/08/18 10:55
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-9
Matrix: Solid
Percent Solids: 74.8

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	0.021	B	0.0034	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,4,6,7,8-HpCDF	0.0039	B q	0.0034	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,4,7,8,9-HpCDF	0.00025	J	0.0034	0.000095	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,4,7,8-HxCDD	0.00030	J q	0.0034	0.000051	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,4,7,8-HxCDF	0.00033	J q	0.0034	0.000092	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,6,7,8-HxCDD	0.0010	J	0.0034	0.000049	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,6,7,8-HxCDF	0.00023	J	0.0034	0.000081	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,7,8,9-HxCDD	0.00062	J	0.0034	0.000047	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,7,8,9-HxCDF	0.000091	J	0.0034	0.000039	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,7,8-PeCDD	0.00016	J	0.0034	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
1,2,3,7,8-PeCDF	0.00013	J q	0.0034	0.000045	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
2,3,4,6,7,8-HxCDF	0.00014	J q	0.0034	0.000046	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
2,3,4,7,8-PeCDF	0.00020	J q	0.0034	0.000049	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
2,3,7,8-TCDD	ND		0.00067	0.000055	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
2,3,7,8-TCDF	0.00032	J B	0.00067	0.000033	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
OCDD	0.19	B	0.0067	0.00012	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1
OCDF	0.010		0.0067	0.000095	ug/Kg	☼	05/19/18 07:16	05/23/18 12:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*33*		*23 - 140*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*29*		*28 - 143*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*40*		*26 - 138*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,4,7,8-HxCDD	*39*		*32 - 141*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,4,7,8-HxCDF	*34*		*26 - 152*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,6,7,8-HxCDD	*38*		*28 - 130*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,6,7,8-HxCDF	*34*		*26 - 123*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,7,8,9-HxCDF	*46*		*29 - 147*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,7,8-PeCDD	*50*		*25 - 181*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-1,2,3,7,8-PeCDF	*56*		*24 - 185*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-2,3,4,6,7,8-HxCDF	*41*		*28 - 136*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-2,3,4,7,8-PeCDF	*55*		*21 - 178*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*05/19/18 07:16*	*05/23/18 12:09*	*1*
13C-OCDD	*26*		*17 - 157*	*05/19/18 07:16*	*05/23/18 12:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*05/19/18 07:16*	*05/23/18 12:09*	*1*

Client Sample ID: PDI-SG-S031
Date Collected: 05/08/18 12:15
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-10
Matrix: Solid
Percent Solids: 36.7

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	0.22	B	0.0068	0.0010	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,4,6,7,8-HpCDF	0.035	B	0.0068	0.00062	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,4,7,8,9-HpCDF	0.0023	J	0.0068	0.00059	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,4,7,8-HxCDD	0.0021	J	0.0068	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,4,7,8-HxCDF	0.0048	J	0.0068	0.00034	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,6,7,8-HxCDD	0.0073		0.0068	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0068	0.00030	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,7,8,9-HxCDD	0.0059	J	0.0068	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,7,8,9-HxCDF	0.00023	J	0.0068	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,7,8-PeCDD	0.0011	J q	0.0068	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
1,2,3,7,8-PeCDF	0.0016	J	0.0068	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
2,3,4,6,7,8-HxCDF	0.0014	J	0.0068	0.00018	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
2,3,4,7,8-PeCDF	0.0017	J	0.0068	0.00019	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
2,3,7,8-TCDD	0.00031	J q	0.0014	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
OCDD	1.8	B	0.014	0.00086	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1
OCDF	0.13		0.014	0.00013	ug/Kg	☼	05/19/18 07:16	05/23/18 12:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*44*		*23 - 140*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*39*		*28 - 143*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,4,7,8-HxCDD	*46*		*32 - 141*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,4,7,8-HxCDF	*42*		*26 - 152*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,6,7,8-HxCDD	*48*		*28 - 130*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,6,7,8-HxCDF	*43*		*26 - 123*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,7,8,9-HxCDF	*53*		*29 - 147*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,7,8-PeCDD	*58*		*25 - 181*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-2,3,4,7,8-PeCDF	*58*		*21 - 178*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*05/19/18 07:16*	*05/23/18 12:55*	*1*
13C-OCDD	*38*		*17 - 157*	*05/19/18 07:16*	*05/23/18 12:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*114*		*35 - 197*	*05/19/18 07:16*	*05/23/18 12:55*	*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	0.0026	B	0.0014	0.000098	ug/Kg	☼	05/19/18 07:16	05/24/18 01:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*05/19/18 07:16*	*05/24/18 01:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*97*		*35 - 197*	*05/19/18 07:16*	*05/24/18 01:55*	*1*

Client Sample ID: PDI-SG-S031-D
Date Collected: 05/08/18 12:15
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-11
Matrix: Solid
Percent Solids: 36.8

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	0.22	B	0.0068	0.0010	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,4,6,7,8-HpCDF	0.036	B	0.0068	0.00070	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,4,7,8,9-HpCDF	0.0023	J	0.0068	0.00065	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,4,7,8-HxCDD	0.0022	J	0.0068	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,4,7,8-HxCDF	0.0053	J	0.0068	0.00025	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,6,7,8-HxCDD	0.0076		0.0068	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0068	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,7,8,9-HxCDD	0.0060	J	0.0068	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,7,8,9-HxCDF	0.00023	J q	0.0068	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,7,8-PeCDD	0.0014	J	0.0068	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
1,2,3,7,8-PeCDF	0.0018	J	0.0068	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
2,3,4,6,7,8-HxCDF	0.0015	J	0.0068	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
2,3,4,7,8-PeCDF	0.0018	J	0.0068	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
2,3,7,8-TCDD	0.00047	J q	0.0014	0.000093	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
OCDD	1.8	B	0.014	0.00067	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1
OCDF	0.13		0.014	0.00016	ug/Kg	☼	05/19/18 07:16	05/23/18 13:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*39*		*23 - 140*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*35*		*28 - 143*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,4,7,8-HxCDD	*45*		*32 - 141*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,4,7,8-HxCDF	*40*		*26 - 152*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,6,7,8-HxCDD	*43*		*28 - 130*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,6,7,8-HxCDF	*41*		*26 - 123*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,7,8,9-HxCDF	*52*		*29 - 147*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,7,8-PeCDD	*55*		*25 - 181*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-2,3,4,7,8-PeCDF	*58*		*21 - 178*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*05/19/18 07:16*	*05/23/18 13:41*	*1*
13C-OCDD	*33*		*17 - 157*	*05/19/18 07:16*	*05/23/18 13:41*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*05/19/18 07:16*	*05/23/18 13:41*	*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	0.0027	B	0.0014	0.00011	ug/Kg	☼	05/19/18 07:16	05/24/18 02:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*05/19/18 07:16*	*05/24/18 02:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*101*		*35 - 197*	*05/19/18 07:16*	*05/24/18 02:33*	*1*

Client Sample ID: PDI-SG-S030
Date Collected: 05/08/18 14:32
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-12
Matrix: Solid
Percent Solids: 53.7

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	1.1	B	0.0046	0.0037	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,4,6,7,8-HpCDF	0.058	B q	0.0046	0.00098	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,4,7,8,9-HpCDF	0.0029	J	0.0046	0.00097	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,4,7,8-HxCDD	0.0042	J	0.0046	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,4,7,8-HxCDF	0.0045	J	0.0046	0.00036	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,6,7,8-HxCDD	0.022		0.0046	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,6,7,8-HxCDF	0.0029	J	0.0046	0.00032	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,7,8,9-HxCDD	0.011		0.0046	0.00020	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,7,8,9-HxCDF	0.00030	J	0.0046	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,7,8-PeCDD	0.0022	J	0.0046	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
1,2,3,7,8-PeCDF	0.0019	J	0.0046	0.00018	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
2,3,4,6,7,8-HxCDF	0.0022	J	0.0046	0.00019	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
2,3,4,7,8-PeCDF	0.0024	J	0.0046	0.00021	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
2,3,7,8-TCDD	0.00061	J	0.00091	0.000083	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
OCDD	7.3	E B	0.0091	0.0021	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1
OCDF	0.16		0.0091	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 14:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*32*		*23 - 140*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*25*	*	*28 - 143*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*32*		*26 - 138*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,4,7,8-HxCDD	*37*		*32 - 141*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,4,7,8-HxCDF	*34*		*26 - 152*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,6,7,8-HxCDD	*38*		*28 - 130*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,6,7,8-HxCDF	*34*		*26 - 123*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,7,8,9-HxCDF	*46*		*29 - 147*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,7,8-PeCDD	*51*		*25 - 181*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-2,3,4,6,7,8-HxCDF	*41*		*28 - 136*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-2,3,4,7,8-PeCDF	*53*		*21 - 178*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*05/19/18 07:16*	*05/23/18 14:27*	*1*
13C-OCDD	*27*		*17 - 157*	*05/19/18 07:16*	*05/23/18 14:27*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/19/18 07:16*	*05/23/18 14:27*	*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	0.0034	B	0.00091	0.000095	ug/Kg	☼	05/19/18 07:16	05/24/18 03:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*72*		*24 - 169*	*05/19/18 07:16*	*05/24/18 03:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*05/19/18 07:16*	*05/24/18 03:11*	*1*

Client Sample ID: PDI-SG-S029
Date Collected: 05/08/18 15:32
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-13
Matrix: Solid
Percent Solids: 42.8

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	0.10	B	0.0057	0.00040	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,4,6,7,8-HpCDF	0.015	B q	0.0057	0.00032	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,4,7,8,9-HpCDF	0.0010	J	0.0057	0.00032	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,4,7,8-HxCDD	0.00098	J	0.0057	0.000081	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,4,7,8-HxCDF	0.0021	J	0.0057	0.00014	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,6,7,8-HxCDD	0.0031	J	0.0057	0.000074	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,6,7,8-HxCDF	0.00095	J	0.0057	0.00012	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,7,8,9-HxCDD	0.0027	J	0.0057	0.000072	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,7,8,9-HxCDF	0.00019	J	0.0057	0.000060	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,7,8-PeCDD	0.00051	J q	0.0057	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
1,2,3,7,8-PeCDF	0.00068	J	0.0057	0.000073	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
2,3,4,6,7,8-HxCDF	0.00061	J	0.0057	0.000075	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
2,3,4,7,8-PeCDF	0.00076	J	0.0057	0.000089	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
2,3,7,8-TCDD	0.00025	J	0.0011	0.000071	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
OCDD	0.89	B	0.011	0.00034	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1
OCDF	0.054		0.011	0.00013	ug/Kg	☼	05/19/18 07:16	05/23/18 15:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*42*		*23 - 140*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*38*		*28 - 143*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,4,7,8-HxCDF	*42*		*26 - 152*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,6,7,8-HxCDF	*43*		*26 - 123*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,7,8,9-HxCDF	*55*		*29 - 147*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,7,8-PeCDD	*57*		*25 - 181*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-2,3,4,7,8-PeCDF	*57*		*21 - 178*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*05/19/18 07:16*	*05/23/18 15:13*	*1*
13C-OCDD	*37*		*17 - 157*	*05/19/18 07:16*	*05/23/18 15:13*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*117*		*35 - 197*	*05/19/18 07:16*	*05/23/18 15:13*	*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	0.0011	0.000077	ug/Kg	☼	05/19/18 07:16	05/24/18 03:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*05/19/18 07:16*	*05/24/18 03:49*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*05/19/18 07:16*	*05/24/18 03:49*	*1*

Client Sample ID: PDI-SG-S081
Date Collected: 05/08/18 10:24
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-14
Matrix: Solid
Percent Solids: 76.1

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	**0.0086**	**B**	0.0033	0.000084	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,4,6,7,8-HpCDF	**0.00078**	**J B**	0.0033	0.000081	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,4,7,8,9-HpCDF	ND		0.0033	0.000077	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,4,7,8-HxCDD	**0.00019**	**J q**	0.0033	0.000034	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,4,7,8-HxCDF	**0.00044**	**J**	0.0033	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,6,7,8-HxCDD	**0.00033**	**J**	0.0033	0.000032	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.000064	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,7,8,9-HxCDD	**0.00047**	**J**	0.0033	0.000031	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,7,8,9-HxCDF	**0.000094**	**J**	0.0033	0.000032	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,7,8-PeCDD	ND		0.0033	0.000062	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
1,2,3,7,8-PeCDF	**0.00037**	**J**	0.0033	0.000029	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.000040	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
2,3,4,7,8-PeCDF	**0.00016**	**J**	0.0033	0.000032	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
2,3,7,8-TCDD	ND		0.00065	0.000048	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
2,3,7,8-TCDF	**0.00028**	**J B**	0.00065	0.000026	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
OCDD	**0.061**	**B**	0.0065	0.000073	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1
OCDF	**0.0027**	**J**	0.0065	0.000067	ug/Kg	☼	05/19/18 07:16	05/23/18 15:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*38*		*23 - 140*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*36*		*28 - 143*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,4,7,8-HxCDF	*40*		*26 - 152*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,6,7,8-HxCDD	*43*		*28 - 130*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,6,7,8-HxCDF	*40*		*26 - 123*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,7,8,9-HxCDF	*49*		*29 - 147*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,7,8-PeCDD	*52*		*25 - 181*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-2,3,4,6,7,8-HxCDF	*46*		*28 - 136*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-2,3,4,7,8-PeCDF	*56*		*21 - 178*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-2,3,7,8-TCDD	*57*		*25 - 164*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-2,3,7,8-TCDF	*66*		*24 - 169*	*05/19/18 07:16*	*05/23/18 15:59*	*1*
13C-OCDD	*33*		*17 - 157*	*05/19/18 07:16*	*05/23/18 15:59*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*113*		*35 - 197*	*05/19/18 07:16*	*05/23/18 15:59*	*1*

Client Sample ID: PDI-SG-S083
Date Collected: 05/08/18 11:41
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-15
Matrix: Solid
Percent Solids: 62.7

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	0.041	B	0.0040	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,4,6,7,8-HpCDF	0.0051	B	0.0040	0.000086	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,4,7,8,9-HpCDF	0.00070	J	0.0040	0.000084	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,4,7,8-HxCDD	0.00037	J	0.0040	0.000038	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,4,7,8-HxCDF	0.0034	J	0.0040	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,6,7,8-HxCDD	0.0012	J	0.0040	0.000035	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,6,7,8-HxCDF	0.00092	J	0.0040	0.000062	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,7,8,9-HxCDD	0.0011	J	0.0040	0.000034	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,7,8,9-HxCDF	0.00015	J q	0.0040	0.000031	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,7,8-PeCDD	0.00021	J	0.0040	0.000074	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
1,2,3,7,8-PeCDF	0.0017	J	0.0040	0.000045	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
2,3,4,6,7,8-HxCDF	0.00030	J	0.0040	0.000040	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
2,3,4,7,8-PeCDF	0.00067	J q	0.0040	0.000055	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
2,3,7,8-TCDD	0.00011	J q	0.00079	0.000075	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
OCDD	0.33	B	0.0079	0.00013	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1
OCDF	0.017		0.0079	0.000049	ug/Kg	☼	05/19/18 07:16	05/23/18 16:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*48*		*23 - 140*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*43*		*28 - 143*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*56*		*26 - 138*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,4,7,8-HxCDD	*44*		*32 - 141*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,4,7,8-HxCDF	*41*		*26 - 152*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,6,7,8-HxCDD	*46*		*28 - 130*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,6,7,8-HxCDF	*43*		*26 - 123*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,7,8,9-HxCDF	*55*		*29 - 147*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,7,8-PeCDD	*58*		*25 - 181*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-2,3,4,6,7,8-HxCDF	*48*		*28 - 136*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-2,3,4,7,8-PeCDF	*52*		*21 - 178*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-2,3,7,8-TCDD	*58*		*25 - 164*	*05/19/18 07:16*	*05/23/18 16:45*	*1*
13C-OCDD	*49*		*17 - 157*	*05/19/18 07:16*	*05/23/18 16:45*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/19/18 07:16*	*05/23/18 16:45*	*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	0.0014	B	0.00079	0.000052	ug/Kg	☼	05/19/18 07:16	05/24/18 04:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*67*		*24 - 169*	*05/19/18 07:16*	*05/24/18 04:27*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*05/19/18 07:16*	*05/24/18 04:27*	*1*

Client Sample ID: PDI-SG-S093
Date Collected: 05/08/18 16:20
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-16
Matrix: Solid
Percent Solids: 56.7

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	0.070	B	0.0045	0.00028	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,4,6,7,8-HpCDF	0.012	B q	0.0045	0.00022	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,4,7,8,9-HpCDF	0.00063	J	0.0045	0.00019	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,4,7,8-HxCDD	0.00071	J	0.0045	0.000078	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,4,7,8-HxCDF	0.0024	J	0.0045	0.00017	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,6,7,8-HxCDD	0.0035	J	0.0045	0.000071	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,6,7,8-HxCDF	0.00096	J	0.0045	0.00015	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,7,8,9-HxCDD	0.0018	J	0.0045	0.000070	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,7,8,9-HxCDF	0.00015	J	0.0045	0.000068	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,7,8-PeCDD	0.00041	J	0.0045	0.00011	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
1,2,3,7,8-PeCDF	0.00073	J	0.0045	0.000090	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
2,3,4,6,7,8-HxCDF	0.00067	J q	0.0045	0.000088	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
2,3,4,7,8-PeCDF	0.00088	J	0.0045	0.00010	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
2,3,7,8-TCDD	0.000091	J	0.00089	0.000067	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
OCDD	0.53	B	0.0089	0.00026	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1
OCDF	0.025		0.0089	0.00013	ug/Kg	☼	05/19/18 07:16	05/23/18 17:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*30*		*23 - 140*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*26*	*	*28 - 143*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*38*		*26 - 138*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,4,7,8-HxCDD	*35*		*32 - 141*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,4,7,8-HxCDF	*32*		*26 - 152*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,6,7,8-HxCDD	*35*		*28 - 130*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,6,7,8-HxCDF	*33*		*26 - 123*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,7,8,9-HxCDF	*44*		*29 - 147*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,7,8-PeCDD	*48*		*25 - 181*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-1,2,3,7,8-PeCDF	*53*		*24 - 185*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-2,3,4,6,7,8-HxCDF	*38*		*28 - 136*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-2,3,4,7,8-PeCDF	*51*		*21 - 178*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-2,3,7,8-TCDD	*56*		*25 - 164*	*05/19/18 07:16*	*05/23/18 17:31*	*1*
13C-OCDD	*23*		*17 - 157*	*05/19/18 07:16*	*05/23/18 17:31*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/19/18 07:16*	*05/23/18 17:31*	*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	0.00083	J B	0.00089	0.000057	ug/Kg	☼	05/19/18 07:16	05/24/18 05:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*05/19/18 07:16*	*05/24/18 05:05*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*110*		*35 - 197*	*05/19/18 07:16*	*05/24/18 05:05*	*1*

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

TestAmerica Job ID: 580-77177-2

Client Sample ID: PDI-RB-VV-180508-1715
Date Collected: 05/08/18 17:15
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-17
Matrix: Water

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	1.8	J B	48	0.13	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,4,6,7,8-HpCDF	0.75	J q B	48	0.12	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,4,7,8,9-HpCDF	0.57	J q B	48	0.14	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,4,7,8-HxCDD	1.4	J B	48	0.17	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,4,7,8-HxCDF	ND		48	0.22	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,6,7,8-HxCDD	0.58	J q	48	0.16	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,6,7,8-HxCDF	ND		48	0.19	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,7,8,9-HxCDD	0.80	J q B	48	0.16	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,7,8,9-HxCDF	0.83	J q B	48	0.11	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,7,8-PeCDD	0.46	J q	48	0.33	pg/L		05/23/18 07:27	05/24/18 23:55	1
1,2,3,7,8-PeCDF	0.52	J q	48	0.16	pg/L		05/23/18 07:27	05/24/18 23:55	1
2,3,4,6,7,8-HxCDF	0.55	J	48	0.13	pg/L		05/23/18 07:27	05/24/18 23:55	1
2,3,4,7,8-PeCDF	0.43	J q	48	0.18	pg/L		05/23/18 07:27	05/24/18 23:55	1
2,3,7,8-TCDD	ND		9.6	0.28	pg/L		05/23/18 07:27	05/24/18 23:55	1
2,3,7,8-TCDF	0.77	J B	9.6	0.16	pg/L		05/23/18 07:27	05/24/18 23:55	1
OCDD	4.9	J B	96	0.16	pg/L		05/23/18 07:27	05/24/18 23:55	1
OCDF	1.6	J B	96	0.18	pg/L		05/23/18 07:27	05/24/18 23:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*23 - 140*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*66*		*26 - 138*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,4,7,8-HxCDD	*68*		*32 - 141*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,7,8-PeCDD	*66*		*25 - 181*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-1,2,3,7,8-PeCDF	*76*		*24 - 185*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-2,3,4,7,8-PeCDF	*72*		*21 - 178*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-2,3,7,8-TCDF	*78*		*24 - 169*	*05/23/18 07:27*	*05/24/18 23:55*	*1*
13C-OCDD	*53*		*17 - 157*	*05/23/18 07:27*	*05/24/18 23:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*05/23/18 07:27*	*05/24/18 23:55*	*1*

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

TestAmerica Job ID: 580-77177-2

Client Sample ID: PDI-RB-VV-180508-1700
Date Collected: 05/08/18 17:00
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-18
Matrix: Water

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	1.7	J B	53	0.12	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,4,6,7,8-HpCDF	0.69	J q B	53	0.14	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,4,7,8,9-HpCDF	0.45	J q B	53	0.17	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,4,7,8-HxCDD	1.7	J B	53	0.17	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,4,7,8-HxCDF	0.49	J	53	0.22	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,6,7,8-HxCDD	0.45	J q	53	0.16	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,6,7,8-HxCDF	0.23	J q	53	0.19	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,7,8,9-HxCDD	0.64	J B	53	0.16	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,7,8,9-HxCDF	0.70	J q B	53	0.11	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,7,8-PeCDD	ND		53	0.28	pg/L		05/23/18 07:27	05/25/18 00:41	1
1,2,3,7,8-PeCDF	ND		53	0.19	pg/L		05/23/18 07:27	05/25/18 00:41	1
2,3,4,6,7,8-HxCDF	0.33	J q	53	0.13	pg/L		05/23/18 07:27	05/25/18 00:41	1
2,3,4,7,8-PeCDF	ND		53	0.20	pg/L		05/23/18 07:27	05/25/18 00:41	1
2,3,7,8-TCDD	ND		11	0.19	pg/L		05/23/18 07:27	05/25/18 00:41	1
2,3,7,8-TCDF	0.41	J q B	11	0.11	pg/L		05/23/18 07:27	05/25/18 00:41	1
OCDD	6.1	J B	110	0.18	pg/L		05/23/18 07:27	05/25/18 00:41	1
OCDF	1.7	J B	110	0.21	pg/L		05/23/18 07:27	05/25/18 00:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*62*		*28 - 143*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,4,7,8-HxCDD	*66*		*32 - 141*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,4,7,8-HxCDF	*65*		*26 - 152*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,7,8-PeCDD	*68*		*25 - 181*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-1,2,3,7,8-PeCDF	*79*		*24 - 185*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-2,3,4,6,7,8-HxCDF	*67*		*28 - 136*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-2,3,4,7,8-PeCDF	*77*		*21 - 178*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-2,3,7,8-TCDD	*75*		*25 - 164*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-2,3,7,8-TCDF	*86*		*24 - 169*	*05/23/18 07:27*	*05/25/18 00:41*	*1*
13C-OCDD	*48*		*17 - 157*	*05/23/18 07:27*	*05/25/18 00:41*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*05/23/18 07:27*	*05/25/18 00:41*	*1*

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

Lab Sample ID: MB 320-224242/1-A
Matrix: Solid
Analysis Batch: 224866

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224242

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000114	J q	0.0050	0.000037	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,4,6,7,8-HpCDF	0.0000563	J q	0.0050	0.000024	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.000029	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.000051	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00013	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000046	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.00011	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000045	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.000065	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000077	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000043	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000076	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000046	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
2,3,7,8-TCDD	ND		0.0010	0.000077	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
2,3,7,8-TCDF	0.000102	J q	0.0010	0.000054	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
OCDD	0.000158	J q	0.010	0.000041	ug/Kg		05/19/18 07:16	05/23/18 00:03	1
OCDF	ND		0.010	0.000078	ug/Kg		05/19/18 07:16	05/23/18 00:03	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*23 - 140*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*67*		*28 - 143*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,4,7,8-HxCDF	*63*		*26 - 152*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,6,7,8-HxCDD	*69*		*28 - 130*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,6,7,8-HxCDF	*66*		*26 - 123*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,7,8,9-HxCDF	*71*		*29 - 147*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,7,8-PeCDD	*64*		*25 - 181*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-1,2,3,7,8-PeCDF	*71*		*24 - 185*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-2,3,4,7,8-PeCDF	*70*		*21 - 178*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-2,3,7,8-TCDF	*78*		*24 - 169*	*05/19/18 07:16*	*05/23/18 00:03*	*1*
13C-OCDD	*59*		*17 - 157*	*05/19/18 07:16*	*05/23/18 00:03*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*115*		*35 - 197*	*05/19/18 07:16*	*05/23/18 00:03*	*1*

Lab Sample ID: LCS 320-224242/2-A
Matrix: Solid
Analysis Batch: 224866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224242

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.109		ug/Kg		109	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.0990		ug/Kg		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.0963		ug/Kg		96	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.0996		ug/Kg		100	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.0987		ug/Kg		99	72 - 134

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

Lab Sample ID: LCS 320-224242/2-A
Matrix: Solid
Analysis Batch: 224866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224242

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3,6,7,8-HxCDD			0.100	0.0905		ug/Kg		90	76 - 134		
1,2,3,6,7,8-HxCDF			0.100	0.0997		ug/Kg		100	84 - 130		
1,2,3,7,8,9-HxCDD			0.100	0.113		ug/Kg		113	64 - 162		
1,2,3,7,8,9-HxCDF			0.100	0.0983		ug/Kg		98	78 - 130		
1,2,3,7,8-PeCDD			0.100	0.107		ug/Kg		107	70 - 142		
1,2,3,7,8-PeCDF			0.100	0.0962		ug/Kg		96	80 - 134		
2,3,4,6,7,8-HxCDF			0.100	0.0993		ug/Kg		99	70 - 156		
2,3,4,7,8-PeCDF			0.100	0.0998		ug/Kg		100	68 - 160		
2,3,7,8-TCDD			0.0200	0.0207		ug/Kg		103	67 - 158		
2,3,7,8-TCDF			0.0200	0.0180		ug/Kg		90	75 - 158		
OCDD			0.200	0.211		ug/Kg		106	78 - 144		
OCDF			0.200	0.210		ug/Kg		105	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*61*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*56*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*55*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*63*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*56*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*67*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*63*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*71*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*60*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*63*		*13 - 328*
13C-2,3,7,8-TCDD	*68*		*20 - 175*
13C-2,3,7,8-TCDF	*75*		*22 - 152*
13C-OCDD	*56*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*113*		*31 - 191*

Lab Sample ID: LCSD 320-224242/3-A
Matrix: Solid
Analysis Batch: 224866

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224242

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	0.106		ug/Kg		106	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF			0.100	0.0957		ug/Kg		96	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF			0.100	0.0938		ug/Kg		94	78 - 138	3	50
1,2,3,4,7,8-HxCDD			0.100	0.0918		ug/Kg		92	70 - 164	8	50
1,2,3,4,7,8-HxCDF			0.100	0.0956		ug/Kg		96	72 - 134	3	50
1,2,3,6,7,8-HxCDD			0.100	0.0900		ug/Kg		90	76 - 134	1	50
1,2,3,6,7,8-HxCDF			0.100	0.0963		ug/Kg		96	84 - 130	3	50
1,2,3,7,8,9-HxCDD			0.100	0.115		ug/Kg		115	64 - 162	2	50
1,2,3,7,8,9-HxCDF			0.100	0.0961		ug/Kg		96	78 - 130	2	50
1,2,3,7,8-PeCDD			0.100	0.103		ug/Kg		103	70 - 142	4	50

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

Lab Sample ID: LCSD 320-224242/3-A
Matrix: Solid
Analysis Batch: 224866

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224242

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			0.100	0.0939		ug/Kg		94	80 - 134	2	50
2,3,4,6,7,8-HxCDF			0.100	0.0955		ug/Kg		95	70 - 156	4	50
2,3,4,7,8-PeCDF			0.100	0.0942		ug/Kg		94	68 - 160	6	50
2,3,7,8-TCDD			0.0200	0.0197		ug/Kg		99	67 - 158	5	50
2,3,7,8-TCDF			0.0200	0.0174		ug/Kg		87	75 - 158	3	50
OCDD			0.200	0.204		ug/Kg		102	78 - 144	3	50
OCDF			0.200	0.202		ug/Kg		101	63 - 170	4	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*64*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*63*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*70*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*55*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*54*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*61*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*59*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*69*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*65*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*72*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*64*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*61*		*13 - 328*
13C-2,3,7,8-TCDD	*69*		*20 - 175*
13C-2,3,7,8-TCDF	*75*		*22 - 152*
13C-OCDD	*58*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*113*		*31 - 191*

Lab Sample ID: MB 320-224916/1-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224916

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.62	J	50	0.19	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,6,7,8-HpCDF	0.692	J q	50	0.14	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8,9-HpCDF	0.480	J	50	0.18	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8-HxCDD	1.91	J	50	0.26	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,4,7,8-HxCDF	ND		50	0.44	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,6,7,8-HxCDD	ND		50	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,6,7,8-HxCDF	ND		50	0.39	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8,9-HxCDD	0.516	J	50	0.24	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8,9-HxCDF	0.758	J	50	0.22	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8-PeCDD	ND		50	0.46	pg/L		05/23/18 07:27	05/24/18 21:37	1
1,2,3,7,8-PeCDF	ND		50	0.26	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,4,6,7,8-HxCDF	ND		50	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,4,7,8-PeCDF	ND		50	0.28	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,7,8-TCDD	ND		10	0.31	pg/L		05/23/18 07:27	05/24/18 21:37	1
2,3,7,8-TCDF	0.629	J	10	0.18	pg/L		05/23/18 07:27	05/24/18 21:37	1

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

Lab Sample ID: MB 320-224916/1-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224916

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	5.48	J	100	0.25	pg/L		05/23/18 07:27	05/24/18 21:37	1
OCDF	1.51	J q	100	0.36	pg/L		05/23/18 07:27	05/24/18 21:37	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*28 - 143*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,6,7,8-HxCDD	*61*		*28 - 130*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8-PeCDD	*62*		*25 - 181*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,4,7,8-PeCDF	*72*		*21 - 178*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-2,3,7,8-TCDF	*79*		*24 - 169*	*05/23/18 07:27*	*05/24/18 21:37*	*1*
13C-OCDD	*48*		*17 - 157*	*05/23/18 07:27*	*05/24/18 21:37*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*116*		*35 - 197*	*05/23/18 07:27*	*05/24/18 21:37*	*1*

Lab Sample ID: LCS 320-224916/2-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224916

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	1000	1120		pg/L		112	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	998		pg/L		100	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	972		pg/L		97	78 - 138
1,2,3,4,7,8-HxCDD	1000	1010		pg/L		101	70 - 164
1,2,3,4,7,8-HxCDF	1000	1010		pg/L		101	72 - 134
1,2,3,6,7,8-HxCDD	1000	951		pg/L		95	76 - 134
1,2,3,6,7,8-HxCDF	1000	1020		pg/L		102	84 - 130
1,2,3,7,8,9-HxCDD	1000	1080		pg/L		108	64 - 162
1,2,3,7,8,9-HxCDF	1000	1010		pg/L		101	78 - 130
1,2,3,7,8-PeCDD	1000	1100		pg/L		110	70 - 142
1,2,3,7,8-PeCDF	1000	983		pg/L		98	80 - 134
2,3,4,6,7,8-HxCDF	1000	1000		pg/L		100	70 - 156
2,3,4,7,8-PeCDF	1000	988		pg/L		99	68 - 160
2,3,7,8-TCDD	200	213		pg/L		107	67 - 158
2,3,7,8-TCDF	200	189		pg/L		94	75 - 158
OCDD	2000	2060		pg/L		103	78 - 144
OCDF	2000	2000		pg/L		100	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*26 - 166*

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

Lab Sample ID: LCS 320-224916/2-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224916

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,4,7,8-HxCDF	60		19 - 202
13C-1,2,3,6,7,8-HxCDD	62		25 - 163
13C-1,2,3,6,7,8-HxCDF	60		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	73		21 - 192
13C-2,3,4,6,7,8-HxCDF	65		22 - 176
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	79		22 - 152
13C-OCDD	52		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	108		31 - 191

Lab Sample ID: LCSD 320-224916/3-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224916

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD			1000	895		pg/L		89	70 - 140	22	50
1,2,3,4,6,7,8-HpCDF			1000	816		pg/L		82	82 - 122	20	50
1,2,3,4,7,8,9-HpCDF			1000	798		pg/L		80	78 - 138	20	50
1,2,3,4,7,8-HxCDD			1000	820		pg/L		82	70 - 164	20	50
1,2,3,4,7,8-HxCDF			1000	856		pg/L		86	72 - 134	17	50
1,2,3,6,7,8-HxCDD			1000	788		pg/L		79	76 - 134	19	50
1,2,3,6,7,8-HxCDF			1000	868		pg/L		87	84 - 130	16	50
1,2,3,7,8,9-HxCDD			1000	959		pg/L		96	64 - 162	12	50
1,2,3,7,8,9-HxCDF			1000	875		pg/L		87	78 - 130	15	50
1,2,3,7,8-PeCDD			1000	964		pg/L		96	70 - 142	13	50
1,2,3,7,8-PeCDF			1000	873		pg/L		87	80 - 134	12	50
2,3,4,6,7,8-HxCDF			1000	882		pg/L		88	70 - 156	13	50
2,3,4,7,8-PeCDF			1000	898		pg/L		90	68 - 160	10	50
2,3,7,8-TCDD			200	199		pg/L		100	67 - 158	7	50
2,3,7,8-TCDF			200	178		pg/L		89	75 - 158	6	50
OCDD			2000	1630		pg/L		81	78 - 144	23	50
OCDF			2000	1570		pg/L		78	63 - 170	24	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	52		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	54		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	54		20 - 186
13C-1,2,3,4,7,8-HxCDD	53		21 - 193
13C-1,2,3,4,7,8-HxCDF	52		19 - 202
13C-1,2,3,6,7,8-HxCDD	56		25 - 163

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

Lab Sample ID: LCSD 320-224916/3-A
Matrix: Water
Analysis Batch: 225469

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224916

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	54		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	69		21 - 192
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-OCDD	46		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	115		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-77177-2

Client Sample ID: PDI-SG-S073
Date Collected: 05/07/18 11:45
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-1
Matrix: Solid
Percent Solids: 73.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 02:21	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 11:19	ALM	TAL SAC

Client Sample ID: PDI-SG-S099
Date Collected: 05/07/18 13:45
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-2
Matrix: Solid
Percent Solids: 60.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 03:07	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 11:57	ALM	TAL SAC

Client Sample ID: PDI-SG-S104
Date Collected: 05/07/18 10:27
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-3
Matrix: Solid
Percent Solids: 54.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 03:53	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 12:35	ALM	TAL SAC

Client Sample ID: PDI-SG-S104-D
Date Collected: 05/07/18 10:28
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-4
Matrix: Solid
Percent Solids: 52.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 04:39	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 13:13	ALM	TAL SAC

Client Sample ID: PDI-SG-S100
Date Collected: 05/07/18 11:28
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-5
Matrix: Solid
Percent Solids: 47.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 05:25	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77177-2

Client Sample ID: PDI-SG-S100
Date Collected: 05/07/18 11:28
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-5
Matrix: Solid
Percent Solids: 47.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 13:50	ALM	TAL SAC

Client Sample ID: PDI-SG-S075
Date Collected: 05/07/18 13:23
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-6
Matrix: Solid
Percent Solids: 72.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 06:11	SMA	TAL SAC

Client Sample ID: PDI-SG-S076
Date Collected: 05/07/18 14:18
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-7
Matrix: Solid
Percent Solids: 75.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 06:57	SMA	TAL SAC

Client Sample ID: PDI-SG-S077
Date Collected: 05/07/18 16:00
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-8
Matrix: Solid
Percent Solids: 70.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224866	05/23/18 07:43	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 14:28	ALM	TAL SAC

Client Sample ID: PDI-SG-S032
Date Collected: 05/08/18 10:55
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-9
Matrix: Solid
Percent Solids: 74.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 12:09	ALM	TAL SAC

Client Sample ID: PDI-SG-S031
Date Collected: 05/08/18 12:15
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-10
Matrix: Solid
Percent Solids: 36.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 12:55	ALM	TAL SAC

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 01:55	KSS	TAL SAC

Client Sample ID: PDI-SG-S031-D
Lab Sample ID: 580-77177-11
Date Collected: 05/08/18 12:15
Matrix: Solid
Date Received: 05/09/18 13:30
Percent Solids: 36.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 13:41	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 02:33	KSS	TAL SAC

Client Sample ID: PDI-SG-S030
Lab Sample ID: 580-77177-12
Date Collected: 05/08/18 14:32
Matrix: Solid
Date Received: 05/09/18 13:30
Percent Solids: 53.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 14:27	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 03:11	KSS	TAL SAC

Client Sample ID: PDI-SG-S029
Lab Sample ID: 580-77177-13
Date Collected: 05/08/18 15:32
Matrix: Solid
Date Received: 05/09/18 13:30
Percent Solids: 42.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 15:13	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 03:49	KSS	TAL SAC

Client Sample ID: PDI-SG-S081
Lab Sample ID: 580-77177-14
Date Collected: 05/08/18 10:24
Matrix: Solid
Date Received: 05/09/18 13:30
Percent Solids: 76.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 15:59	ALM	TAL SAC

Client Sample ID: PDI-SG-S083
Lab Sample ID: 580-77177-15
Date Collected: 05/08/18 11:41
Matrix: Solid
Date Received: 05/09/18 13:30
Percent Solids: 62.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-77177-2

Client Sample ID: PDI-SG-S083

Date Collected: 05/08/18 11:41
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-15

Matrix: Solid
Percent Solids: 62.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	224867	05/23/18 16:45	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 04:27	KSS	TAL SAC

Client Sample ID: PDI-SG-S093

Date Collected: 05/08/18 16:20
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-16

Matrix: Solid
Percent Solids: 56.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224867	05/23/18 17:31	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224242	05/19/18 07:16	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 05:05	KSS	TAL SAC

Client Sample ID: PDI-RB-VV-180508-1715

Date Collected: 05/08/18 17:15
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			224916	05/23/18 07:27	A1A	TAL SAC
Total/NA	Analysis	1613B		1	225469	05/24/18 23:55	SMA	TAL SAC

Client Sample ID: PDI-RB-VV-180508-1700

Date Collected: 05/08/18 17:00
Date Received: 05/09/18 13:30

Lab Sample ID: 580-77177-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			224916	05/23/18 07:27	A1A	TAL SAC
Total/NA	Analysis	1613B		1	225469	05/25/18 00:41	SMA	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: 580-77177-2
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
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	10-31-18
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
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
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
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-18
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	07-31-18
USDA	Federal		P330-11-00436	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: 580-77177-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77177-1	PDI-SG-S073	Solid	05/07/18 11:45	05/09/18 13:30
580-77177-2	PDI-SG-S099	Solid	05/07/18 13:45	05/09/18 13:30
580-77177-3	PDI-SG-S104	Solid	05/07/18 10:27	05/09/18 13:30
580-77177-4	PDI-SG-S104-D	Solid	05/07/18 10:28	05/09/18 13:30
580-77177-5	PDI-SG-S100	Solid	05/07/18 11:28	05/09/18 13:30
580-77177-6	PDI-SG-S075	Solid	05/07/18 13:23	05/09/18 13:30
580-77177-7	PDI-SG-S076	Solid	05/07/18 14:18	05/09/18 13:30
580-77177-8	PDI-SG-S077	Solid	05/07/18 16:00	05/09/18 13:30
580-77177-9	PDI-SG-S032	Solid	05/08/18 10:55	05/09/18 13:30
580-77177-10	PDI-SG-S031	Solid	05/08/18 12:15	05/09/18 13:30
580-77177-11	PDI-SG-S031-D	Solid	05/08/18 12:15	05/09/18 13:30
580-77177-12	PDI-SG-S030	Solid	05/08/18 14:32	05/09/18 13:30
580-77177-13	PDI-SG-S029	Solid	05/08/18 15:32	05/09/18 13:30
580-77177-14	PDI-SG-S081	Solid	05/08/18 10:24	05/09/18 13:30
580-77177-15	PDI-SG-S083	Solid	05/08/18 11:41	05/09/18 13:30
580-77177-16	PDI-SG-S093	Solid	05/08/18 16:20	05/09/18 13:30
580-77177-17	PDI-RB-VV-180508-1715	Water	05/08/18 17:15	05/09/18 13:30
580-77177-18	PDI-RB-VV-180508-1700	Water	05/08/18 17:00	05/09/18 13:30

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**	**5/9/2018** COC No: 1 **Carrier: Courier** 1 of 2 pages

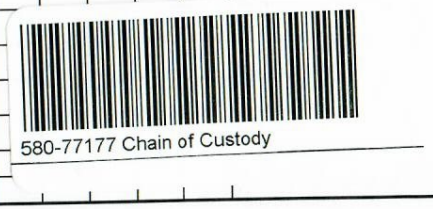
Client Contact

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-SMA

Analysis Turnaround Time
Calendar (C) or Work Days (W) _____
[x] 21 days
[ ] Other _____

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	Sample Specific Notes:
PDI-SG-S073	5/7/2018	11:45	SS		NM	5		x	x	x	x	x	
PDI-SG-S099	5/7/2018	13:45	SS		NM	5		x	x	x	x	x	
PDI-SG-S104	5/7/2018	10:27	SS		MT	5		x	x	x	x	x	
PDI-SG-S104-D	5/7/2018	10:28	SS		MT	4		x	x		x	x	
PDI-SG-S100	5/7/2018	11:28	SS		MT	5		x	x	x	x	x	
PDI-SG-S075	5/7/2018	13:23	SS		MT	5		x	x	x	x	x	
PDI-SG-S076	5/7/2018	14:18	SS		MT	5		x	x	x	x	x	
PDI-SG-S077	5/7/2018	16:00	SS		MT	5		x	x	x	x	x	
PDI-SG-S032	5/8/2018	10:55	SS	MS/MSD	NM	9		x	x	x	x	x	
PDI-SG-S031	5/8/2018	12:15	SS		NM	5		x	x	x	x	x	
PDI-SG-S031-D	5/8/2018	12:15	SS		NM	4		x	x		x	x	
PDI-SG-S030	5/4/2018	14:32	SS		AM	5		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 [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:
Separate reports for each lab
SMA Study samples - Log in seperately from SS Study samples

3.6, 2.0, 3.2, 3.9

Relinquished by:	Company: AECOM	Date/Time: 5/9/18 1257	Received by:	Company: M.E.	Date/Time: 5/9/18 1257
Relinquished by:	Company: M.E.	Date/Time: 5/9/18 1330	Received by:	Company: TA-POR	Date/Time: 5/9/18 1330
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**	**5/9/2018** **Carrier: Courier**	COC No: 1 2 of 2 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-SMA	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWTPH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM5310B	Sample Specific Notes:
PDI-SG-S029	5/8/2018	15:32	SS		NM	5		x	x	x	x	x						
PDI-SG-S081	5/8/2018	10:24	SS		NM	5		x	x	x	x	x						
PDI-SG-S083	5/8/2018	11:41	SS		MT	5		x	x	x	x	x						
PDI-SG-S093	5/8/2018	16:20	SS		ED	5		x	x	x	x	x						
PDI-RB-VV-180508-1715	5/8/2018	17:15	W		MT	8							x	x	x	x	x	
PDI-RB-VV-180508-1700	5/8/2018	17:00	W		NM	8							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 [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:
Separate reports for each lab
SMA Study samples - Log in seperately from SS Study samples

Relinquished by:	Company: AECOM	Date/Time: 5/9/18 1257	Received by:	Company: M.E.	Date/Time: 5/9/18 1257
Relinquished by:	Company: M.E.	Date/Time: 5/9/18 1330	Received by:	Company: TA-POR	Date/Time: 5/9/18 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Revised 5/11/18

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	5/9/2018 COC No: 1 Carrier: Courier 1 of 2 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-SMA	Analysis Turnaround Time Calendar (C) or Work Days (W) _____ ☒ 21 days ☐ Other _____		

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Filtered (Yes/No)	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	Sample Specific Notes:
PDI-SG-S073	5/7/2018	11:45	SS		NM	5		x	x	x	x	x	
PDI-SG-S099	5/7/2018	13:45	SS		NM	5		x	x	x	x	x	
PDI-SG-S104	5/7/2018	10:27	SS		MT	5		x	x	x	x	x	
PDI-SG-S104-D	5/7/2018	10:28	SS		MT	4		x	x		x	x	
PDI-SG-S100	5/7/2018	11:28	SS		MT	5		x	x	x	x	x	
PDI-SG-S075	5/7/2018	13:23	SS		MT	5		x	x	x	x	x	
PDI-SG-S076	5/7/2018	14:18	SS		MT	5		x	x	x	x	x	
PDI-SG-S077	5/7/2018	16:00	SS		MT	5		x	x	x	x	x	
PDI-SG-S032	5/8/2018	10:55	SS	MS/MSD	NM	9		x	x	x	x	x	
PDI-SG-S031	5/8/2018	12:15	SS		NM	5		x	x	x	x	x	
PDI-SG-S031-D	5/8/2018	12:15	SS		NM	4		x	x		x	x	
PDI-SG-S030	5/8/2018	14:32	SS		AM	5		x	x	x	x	x	

580-77177 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)

mew 5/11/18 Per AECOM

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

Special Instructions/QC Requirements & Comments:
Separate reports for each lab
SMA Study samples - Log in seperately from SS Study samples

3.6, 2.0, 3.2, 3.9

Relinquished by:	Company: AECOM	Date/Time: 5/9/18 1257	Received by:	Company: M.E.	Date/Time: 5/9/18 1257
Relinquished by:	Company: M.E.	Date/Time: 5/9/18 1330	Received by:	Company: TA-POR	Date/Time: 5/9/18 1330
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	5/9/2018 Carrier: Courier	COC No 1 2 of 2 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-SMA	Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Filtered	PCB Congeners 1668A	PCDD/Fs 1613B	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWTPH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM5310B	Sample Specific Notes:
PDI-SG-S029	5/8/2018	15:32	SS		NM	5		x	x	x	x	x						
PDI-SG-S081	5/8/2018	10:24	SS		NM	5		x	x	x	x	x						
PDI-SG-S083	5/8/2018	11:41	SS		MT	5		x	x	x	x	x						
PDI-SG-S093	5/8/2018	16:20	SS		ED	5		x	x	x	x	x						
PDI-RB-VV-180508-1715	5/8/2018	17 15	W		MT	8							x	x	x	x	x	
PDI-RB-VV-180508-1700	5/8/2018	17:00	W		NM	8							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 [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

Separate reports for each lab

SMA Study samples - Log in seperately from SS Study samples

Relinquished by:	Company: RECOM	Date/Time: 5/9/18 1257	Received by:	Company: M. E.	Date/Time: 5/9/18 1257
Relinquished by:	Company: M.E.	Date/Time: 5/9/18 1330	Received by:	Company: TA-Fix	Date/Time: 5/9/18 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

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: 580-55290.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-77177-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 5/25/2018			
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=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PDI-SG-S073 (580-77177-1)	5/7/18	11:45 Pacific		Solid			X	X		2	
PDI-SG-S099 (580-77177-2)	5/7/18	13:45 Pacific		Solid			X	X		2	
* PDI-SG-S104 (580-77177-3)	5/7/18	10:27 Pacific		Solid			X	X		2	
PDI-SG-S104-D (580-77177-4)	5/7/18	10:28 Pacific		Solid			X	X		2	
PDI-SG-S100 (580-77177-5)	5/7/18	11:28 Pacific		Solid			X	X		2	
PDI-SG-S075 (580-77177-6)	5/7/18	13:23 Pacific		Solid			X	X		2	
* PDI-SG-S076 (580-77177-7)	5/7/18	14:18 Pacific		Solid			X	X		2	
PDI-SG-S077 (580-77177-8)	5/7/18	16:00 Pacific		Solid			X	X		2	
* PDI-SG-S032 (580-77177-9)	5/8/18	10:55 Pacific		Solid			X	X		2	

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
	[signature]	5/4/18 1700	TAL SAC	[signature]	5/10/18 840	TA-Sac
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	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: 2.6

* Sample recieved w/ broken lid. MG

Ver: 09/20/2016

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: 580-55290.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-77177-1
Address: 880 Riverside Parkway, .	Due Date Requested: 5/25/2018			
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=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	1613B/1613B_Sox_Sep_P Full List w/o Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
PDI-SG-S031 (580-77177-10)	5/8/18	12:15 Pacific		Solid			X	X		2	
PDI-SG-S031-D (580-77177-11)	5/8/18	12:15 Pacific		Solid			X	X		2	
PDI-SG-S030 (580-77177-12)	5/4/18	14:32 Pacific		Solid			X	X		2	
PDI-SG-S029 (580-77177-13)	5/8/18	15:32 Pacific		Solid			X	X		2	
PDI-SG-S081 (580-77177-14)	5/8/18	10:24 Pacific		Solid			X	X		2	
PDI-SG-S083 (580-77177-15)	5/8/18	11:41 Pacific		Solid			X	X		2	
PDI-SG-S093 (580-77177-16)	5/8/18	16:20 Pacific		Solid			X	X		2	
PDI-RB-VV-180508-1715 (580-77177-17)	5/8/18	17:15 Pacific		Water					X	2	
PDI-RB-VV-180508-1700 (580-77177-18)	5/8/18	17:00 Pacific		Water					X	2	

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. I

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
	[signature]	5/9/18 1700	TAPOR	[signature]	5/10/18 840	TA-Sac
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	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: 2.6

* Sample received w/broken Lid. 5/12/18

Ver: 09/20/2016

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5/31/2018

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77177-2

Login Number: 77177
List Number: 1
Creator: Rogers, 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.	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: 580-77177-2

Login Number: 77177
List Number: 2
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/10/18 04:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	2.6c
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").	N/A	
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: 580-77177-2

Login Number: 77177
List Number: 5
Creator: Gooch, Mayce

List Source: TestAmerica Sacramento
List Creation: 05/11/18 01:25 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	2.6c, 2.3c
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.	False	Received broken lids.
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

580-77177 Field Sheet

Job:_____

Tracking #4236 5923 2505 SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes: Sample #9C & #12C were recieved w/ broken lids. They were stacked bottom to lid. MG 5/10/18

#3B also broken lid.
#7C " "
#14B " "

Therm. ID: AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other_____

Ice Y Wet Y Gel _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: —

Cooler ID: MG 1 of 2

Temp: Observed 2.6

From: Temp Blank ☐ Sample ☑

NCM Filed: Yes ☑ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: MG Date: 5/10/18 Time 840

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

F10E/1045 W20D

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Sample Receiving Notes

Job:_____

Tracking #4236 5923 2516 SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Notes:_____

Therm. ID: AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other_____

Ice Y Wet Y Gel _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: —

Cooler ID: 2 of 2

Temp: Observed 2.3

From: Temp Blank ☐ Sample ☑

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: MG Date: 5/10/18 Time 840

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77177-2

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)
580-77177-1	PDI-SG-S073	34	29	41	35	33	36	34	46
580-77177-1 - RA	PDI-SG-S073								
580-77177-2	PDI-SG-S099	30	26 *	32	34	32	35	34	43
580-77177-2 - RA	PDI-SG-S099								
580-77177-3	PDI-SG-S104	37	31	43	36	35	37	37	52
580-77177-3 - RA	PDI-SG-S104								
580-77177-4	PDI-SG-S104-D	33	29	30	42	41	42	41	49
580-77177-4 - RA	PDI-SG-S104-D								
580-77177-5	PDI-SG-S100	41	35	50	44	43	46	47	59
580-77177-5 - RA	PDI-SG-S100								
580-77177-6	PDI-SG-S075	39	41	48	48	48	47	48	59
580-77177-7	PDI-SG-S076	38	38	49	47	46	46	47	58
580-77177-8	PDI-SG-S077	41	39	52	49	50	44	46	56
580-77177-8 - RA	PDI-SG-S077								
580-77177-9	PDI-SG-S032	33	29	40	39	34	38	34	46
580-77177-10	PDI-SG-S031	44	39	50	46	42	48	43	53
580-77177-10 - RA	PDI-SG-S031								
580-77177-11	PDI-SG-S031-D	39	35	46	45	40	43	41	52
580-77177-11 - RA	PDI-SG-S031-D								
580-77177-12	PDI-SG-S030	32	25 *	32	37	34	38	34	46
580-77177-12 - RA	PDI-SG-S030								
580-77177-13	PDI-SG-S029	42	38	50	44	42	46	43	55
580-77177-13 - RA	PDI-SG-S029								
580-77177-14	PDI-SG-S081	38	36	46	44	40	43	40	49
580-77177-15	PDI-SG-S083	48	43	56	44	41	46	43	55
580-77177-15 - RA	PDI-SG-S083								
580-77177-16	PDI-SG-S093	30	26 *	38	35	32	35	33	44
580-77177-16 - RA	PDI-SG-S093								
MB 320-224242/1-A	Method Blank	64	67	72	63	63	69	66	71

		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)	
580-77177-1	PDI-SG-S073	52	58	41	48	59		26	
580-77177-1 - RA	PDI-SG-S073						71		
580-77177-2	PDI-SG-S099	44	50	39	48	54		24	
580-77177-2 - RA	PDI-SG-S099						66		
580-77177-3	PDI-SG-S104	47	56	46	46	57		31	
580-77177-3 - RA	PDI-SG-S104						69		
580-77177-4	PDI-SG-S104-D	47	56	45	54	58		27	
580-77177-4 - RA	PDI-SG-S104-D						68		
580-77177-5	PDI-SG-S100	56	66	53	52	63		36	
580-77177-5 - RA	PDI-SG-S100						70		
580-77177-6	PDI-SG-S075	59	70	54	69	63	77	33	
580-77177-7	PDI-SG-S076	53	64	53	61	61	78	29	
580-77177-8	PDI-SG-S077	59	66	52	63	66		35	
580-77177-8 - RA	PDI-SG-S077						89		
580-77177-9	PDI-SG-S032	50	56	41	55	56	67	26	
580-77177-10	PDI-SG-S031	58	63	48	58	62		38	
580-77177-10 - RA	PDI-SG-S031						67		

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77177-2

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)
580-77177-11	PDI-SG-S031-D	55	61	46	58	61		33
580-77177-11 - RA	PDI-SG-S031-D						66	
580-77177-12	PDI-SG-S030	51	57	41	53	59		27
580-77177-12 - RA	PDI-SG-S030						72	
580-77177-13	PDI-SG-S029	57	64	48	57	63		37
580-77177-13 - RA	PDI-SG-S029						68	
580-77177-14	PDI-SG-S081	52	57	46	56	57	66	33
580-77177-15	PDI-SG-S083	58	63	48	52	58		49
580-77177-15 - RA	PDI-SG-S083						67	
580-77177-16	PDI-SG-S093	48	53	38	51	56		23
580-77177-16 - RA	PDI-SG-S093						71	
MB 320-224242/1-A	Method Blank	64	71	66	70	72	78	59

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 320-224242/2-A	Lab Control Sample	61	61	68	56	55	63	56	67
LCSD 320-224242/3-A	Lab Control Sample Dup	64	63	70	55	54	61	59	69

		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 320-224242/2-A	Lab Control Sample	63	71	60	63	68	75	56
LCSD 320-224242/3-A	Lab Control Sample Dup	65	72	64	61	69	75	58

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: Water **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)
580-77177-17	PDI-RB-VV-180508-1715	59	64	66	68	65	67	65	69
580-77177-18	PDI-RB-VV-180508-1700	56	62	63	66	65	66	65	69
MB 320-224916/1-A	Method Blank	54	59	59	62	58	61	57	61

		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)	
580-77177-17	PDI-RB-VV-180508-1715	66	76	66	72	71	78	53	
580-77177-18	PDI-RB-VV-180508-1700	68	79	67	77	75	86	48	
MB 320-224916/1-A	Method Blank	62	70	60	72	69	79	48	

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: Water **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 320-224916/2-A	Lab Control Sample	57	60	64	62	60	62	60	67
LCSD 320-224916/3-A	Lab Control Sample Dup	52	54	54	53	52	56	54	60

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

TestAmerica Job ID: 580-77177-2

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

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

		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 320-224916/2-A	Lab Control Sample	65	73	65	69	69	79	52
LCSD 320-224916/3-A	Lab Control Sample Dup	61	69	60	61	66	76	46

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