TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-78109-2
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: 580-78109-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-78109-2

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

Fifteen samples were received on 6/15/2018 12:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were -3.4º C, -1.3º C and -0.2º 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.

One of two jars for the following sample was received broken but contained in a Ziploc bag in the freezer. DI-SG-B427-BL1 (580-78109-6).

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-B208-BL1 (580-78109-1), PDI-SG-B389-BL1 (580-78109-2), PDI-SG-B391-BL1 (580-78109-3), PDI-SG-B392-BL1 (580-78109-4), PDI-SG-B428-BL1 (580-78109-5), PDI-SG-B427-BL1 (580-78109-6), PDI-SG-B426-BL1 (580-78109-7), PDI-SG-B415-BL1 (580-78109-8), PDI-SG-B320-BL1 (580-78109-9), PDI-SG-B404-BL1 (580-78109-10), PDI-SG-B419-BL1 (580-78109-11), PDI-SG-B421-BL1 (580-78109-12), PDI-SG-B422-BL1 (580-78109-13), PDI-SG-B192-BL1 (580-78109-14) and PDI-SG-B183-BL1 (580-78109-15) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 06/21/2018 and analyzed on 06/25/2018, 06/27/2018, 06/30/2018 and 07/04/2018.

Several analytes were detected in method blank MB 320-230281/1-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.

1,2,3,4,7,8,9-HpCDF, 1,2,3,7,8,9-HxCDF and OCDD were detected in method blank MB 320-230306/1-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 associated with the following samples run on instrument 4D5 exceeded this criteria: PDI-SG-B426-BL1 (580-78109-7), PDI-SG-B415-BL1 (580-78109-8), PDI-SG-B320-BL1 (580-78109-9),

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Laboratory: TestAmerica Seattle (Continued)

PDI-SG-B404-BL1 (580-78109-10), PDI-SG-B419-BL1 (580-78109-11), PDI-SG-B421-BL1 (580-78109-12), PDI-SG-B422-BL1 (580-78109-13), PDI-SG-B192-BL1 (580-78109-14), PDI-SG-B183-BL1 (580-78109-15), (CCV 320-231356/2), (CCV 320-231207/2), (LCS 320-230306/2-A), (LCSD 320-230306/3-A), (MB 320-230306/1-A) and (WDM 320-231207/1). 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.

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-B208-BL1 (580-78109-1), PDI-SG-B389-BL1 (580-78109-2), PDI-SG-B391-BL1 (580-78109-3), PDI-SG-B392-BL1 (580-78109-4), PDI-SG-B428-BL1 (580-78109-5), PDI-SG-B427-BL1 (580-78109-6) and (CCV 320-231886/13). 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 following sample exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SG-B183-BL1 (580-78109-15). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

: Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-B208-BL1 (580-78109-1), PDI-SG-B389-BL1 (580-78109-2), PDI-SG-B391-BL1 (580-78109-3), PDI-SG-B392-BL1 (580-78109-4), PDI-SG-B428-BL1 (580-78109-5), PDI-SG-B427-BL1 (580-78109-6), PDI-SG-B426-BL1 (580-78109-7), PDI-SG-B415-BL1 (580-78109-8), PDI-SG-B320-BL1 (580-78109-9), PDI-SG-B404-BL1 (580-78109-10), PDI-SG-B419-BL1 (580-78109-11), PDI-SG-B421-BL1 (580-78109-12), PDI-SG-B422-BL1 (580-78109-13), PDI-SG-B192-BL1 (580-78109-14) and PDI-SG-B183-BL1 (580-78109-15). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-230281.

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

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference

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-B208-BL1
Date Collected: 05/20/18 10:00
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-1
Matrix: Solid
Percent Solids: 70.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.024	B	0.0036	0.00019	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,4,6,7,8-HpCDF	0.0031	J B q	0.0036	0.000099	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,4,7,8,9-HpCDF	0.00035	J B	0.0036	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,4,7,8-HxCDD	0.00030	J B q	0.0036	0.000062	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,4,7,8-HxCDF	0.00048	J	0.0036	0.000079	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,6,7,8-HxCDD	0.0016	J B	0.0036	0.000059	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,6,7,8-HxCDF	0.00018	J	0.0036	0.000087	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,7,8,9-HxCDD	0.0010	J B	0.0036	0.000056	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,7,8,9-HxCDF	0.00012	J B q	0.0036	0.000047	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,7,8-PeCDD	0.00024	J	0.0036	0.000054	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
1,2,3,7,8-PeCDF	0.00016	J B	0.0036	0.000041	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000061	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
2,3,4,7,8-PeCDF	0.000094	J B q	0.0036	0.000043	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
2,3,7,8-TCDD	0.000082	J q	0.00072	0.000049	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
2,3,7,8-TCDF	0.00022	J B	0.00072	0.000031	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
OCDD	0.21	B	0.0072	0.00014	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1
OCDF	0.010	B	0.0072	0.000048	ug/Kg	☼	06/21/18 13:34	06/30/18 05:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*23 - 140*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,4,7,8-HxCDD	*59*		*32 - 141*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,4,7,8-HxCDF	*58*		*26 - 152*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,6,7,8-HxCDD	*60*		*28 - 130*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,6,7,8-HxCDF	*56*		*26 - 123*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,7,8-PeCDD	*64*		*25 - 181*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-1,2,3,7,8-PeCDF	*72*		*24 - 185*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-2,3,4,7,8-PeCDF	*73*		*21 - 178*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-2,3,7,8-TCDD	*65*		*25 - 164*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-2,3,7,8-TCDF	*76*		*24 - 169*	*06/21/18 13:34*	*06/30/18 05:30*	*1*
13C-OCDD	*61*		*17 - 157*	*06/21/18 13:34*	*06/30/18 05:30*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*127*		*35 - 197*	*06/21/18 13:34*	*06/30/18 05:30*	*1*

Client Sample ID: PDI-SG-B389-BL1
Date Collected: 05/20/18 14:28
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-2
Matrix: Solid
Percent Solids: 51.8

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	0.56	B	0.0047	0.0026	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,4,6,7,8-HpCDF	0.058	B q	0.0047	0.00089	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,4,7,8,9-HpCDF	0.0032	J B	0.0047	0.00094	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,4,7,8-HxCDD	0.0062	B	0.0047	0.00039	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,4,7,8-HxCDF	0.0041	J	0.0047	0.00080	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,6,7,8-HxCDD	0.028	B	0.0047	0.00039	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,6,7,8-HxCDF	0.0054		0.0047	0.00087	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,7,8,9-HxCDD	0.015	B	0.0047	0.00037	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,7,8,9-HxCDF	ND		0.0047	0.00044	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,7,8-PeCDD	0.0035	J	0.0047	0.00016	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
1,2,3,7,8-PeCDF	0.0015	J B	0.0047	0.00027	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
2,3,4,6,7,8-HxCDF	0.0022	J B	0.0047	0.00057	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
2,3,4,7,8-PeCDF	0.00087	J B	0.0047	0.00029	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
2,3,7,8-TCDD	0.00026	J q	0.00094	0.000084	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
2,3,7,8-TCDF	0.00067	J B	0.00094	0.000069	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
OCDD	3.1	B	0.0094	0.0016	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1
OCDF	0.14	B	0.0094	0.00012	ug/Kg	☼	06/21/18 13:34	06/30/18 06:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*50*		*23 - 140*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*52*		*28 - 143*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,4,7,8-HxCDD	*54*		*32 - 141*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,4,7,8-HxCDF	*51*		*26 - 152*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,6,7,8-HxCDD	*52*		*28 - 130*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,6,7,8-HxCDF	*49*		*26 - 123*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,7,8-PeCDD	*58*		*25 - 181*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-2,3,4,6,7,8-HxCDF	*52*		*28 - 136*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-2,3,4,7,8-PeCDF	*70*		*21 - 178*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-2,3,7,8-TCDD	*62*		*25 - 164*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-2,3,7,8-TCDF	*74*		*24 - 169*	*06/21/18 13:34*	*06/30/18 06:16*	*1*
13C-OCDD	*48*		*17 - 157*	*06/21/18 13:34*	*06/30/18 06:16*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*130*		*35 - 197*	*06/21/18 13:34*	*06/30/18 06:16*	*1*

Client Sample ID: PDI-SG-B391-BL1

Date Collected: 05/20/18 16:11
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-3

Matrix: Solid
Percent Solids: 86.3

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.062	B	0.0029	0.00043	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,4,6,7,8-HpCDF	0.0090	B q	0.0029	0.00020	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,4,7,8,9-HpCDF	ND		0.0029	0.00022	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,4,7,8-HxCDD	0.00037	J B	0.0029	0.000079	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,4,7,8-HxCDF	0.00072	J	0.0029	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,6,7,8-HxCDD	0.0020	J B	0.0029	0.000073	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,6,7,8-HxCDF	0.00041	J	0.0029	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,7,8,9-HxCDD	0.0012	J B	0.0029	0.000071	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,7,8,9-HxCDF	0.00025	J B	0.0029	0.000059	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,7,8-PeCDD	0.00027	J	0.0029	0.000070	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
1,2,3,7,8-PeCDF	0.00020	J B	0.0029	0.000052	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
2,3,4,6,7,8-HxCDF	0.00026	J B	0.0029	0.000077	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
2,3,4,7,8-PeCDF	0.00027	J B	0.0029	0.000058	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
2,3,7,8-TCDD	0.00010	J q	0.00057	0.000052	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
OCDD	0.60	B	0.0057	0.00035	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1
OCDF	0.032	B	0.0057	0.000040	ug/Kg	☼	06/21/18 13:34	06/30/18 07:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*23 - 140*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*69*		*26 - 138*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,4,7,8-HxCDD	*57*		*32 - 141*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,4,7,8-HxCDF	*55*		*26 - 152*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,6,7,8-HxCDD	*57*		*28 - 130*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,6,7,8-HxCDF	*53*		*26 - 123*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*24 - 185*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-2,3,4,6,7,8-HxCDF	*56*		*28 - 136*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-2,3,4,7,8-PeCDF	*67*		*21 - 178*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*06/21/18 13:34*	*06/30/18 07:02*	*1*
13C-OCDD	*63*		*17 - 157*	*06/21/18 13:34*	*06/30/18 07:02*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*128*		*35 - 197*	*06/21/18 13:34*	*06/30/18 07:02*	*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	0.00036	J B	0.00057	0.000089	ug/Kg	☼	06/21/18 13:34	07/04/18 03:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*55*		*24 - 169*	*06/21/18 13:34*	*07/04/18 03:41*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*06/21/18 13:34*	*07/04/18 03:41*	*1*

Client Sample ID: PDI-SG-B392-BL1
Date Collected: 05/20/18 17:31
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-4
Matrix: Solid
Percent Solids: 66.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.14	B	0.0037	0.00065	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,4,6,7,8-HpCDF	0.017	B	0.0037	0.00033	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,4,7,8,9-HpCDF	0.0016	J B	0.0037	0.00026	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,4,7,8-HxCDD	0.00088	J B	0.0037	0.00017	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,4,7,8-HxCDF	0.0012	J q	0.0037	0.00032	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,6,7,8-HxCDD	0.0044	B	0.0037	0.00015	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,6,7,8-HxCDF	0.00059	J	0.0037	0.00030	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,7,8,9-HxCDD	0.0023	J B	0.0037	0.00015	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,7,8,9-HxCDF	ND		0.0037	0.00016	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,7,8-PeCDD	0.00052	J q	0.0037	0.00017	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
1,2,3,7,8-PeCDF	0.00035	J B q	0.0037	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
2,3,4,6,7,8-HxCDF	0.00043	J B q	0.0037	0.00019	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
2,3,4,7,8-PeCDF	0.00047	J B	0.0037	0.00012	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
2,3,7,8-TCDD	0.00029	J	0.00075	0.00013	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
OCDD	1.4	B	0.0075	0.00044	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1
OCDF	0.077	B	0.0075	0.00013	ug/Kg	☼	06/21/18 13:34	06/30/18 07:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*43*		*23 - 140*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*40*		*28 - 143*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*46*		*26 - 138*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,4,7,8-HxCDD	*61*		*32 - 141*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,6,7,8-HxCDD	*51*		*28 - 130*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*24 - 185*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-2,3,4,7,8-PeCDF	*84*		*21 - 178*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-2,3,7,8-TCDD	*69*		*25 - 164*	*06/21/18 13:34*	*06/30/18 07:48*	*1*
13C-OCDD	*39*		*17 - 157*	*06/21/18 13:34*	*06/30/18 07:48*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*135*		*35 - 197*	*06/21/18 13:34*	*06/30/18 07:48*	*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	0.00058	J B	0.00075	0.00018	ug/Kg	☼	06/21/18 13:34	07/04/18 04:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*73*		*24 - 169*	*06/21/18 13:34*	*07/04/18 04:19*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*117*		*35 - 197*	*06/21/18 13:34*	*07/04/18 04:19*	*1*

Client Sample ID: PDI-SG-B428-BL1
Date Collected: 05/21/18 10:35
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-5
Matrix: Solid
Percent Solids: 78.6

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	**0.0015**	**J B**	0.0032	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,4,6,7,8-HpCDF	**0.00036**	**J B**	0.0032	0.000096	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,4,7,8,9-HpCDF	ND		0.0032	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,4,7,8-HxCDD	ND		0.0032	0.000068	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,4,7,8-HxCDF	ND		0.0032	0.00013	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,6,7,8-HxCDD	ND		0.0032	0.000061	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,6,7,8-HxCDF	ND		0.0032	0.00013	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,7,8,9-HxCDD	ND		0.0032	0.000061	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,7,8,9-HxCDF	**0.00015**	**J B q**	0.0032	0.000070	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,7,8-PeCDD	ND		0.0032	0.000077	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
1,2,3,7,8-PeCDF	ND		0.0032	0.000065	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.000087	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
2,3,4,7,8-PeCDF	ND		0.0032	0.000071	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
2,3,7,8-TCDD	ND		0.00064	0.000074	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
2,3,7,8-TCDF	ND		0.00064	0.000048	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
OCDD	**0.017**	**B**	0.0064	0.00013	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1
OCDF	**0.0012**	**J B**	0.0064	0.00011	ug/Kg	☼	06/21/18 13:34	06/30/18 08:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*44*		*23 - 140*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*49*		*28 - 143*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*53*		*26 - 138*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,4,7,8-HxCDF	*52*		*26 - 152*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,6,7,8-HxCDD	*56*		*28 - 130*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,6,7,8-HxCDF	*52*		*26 - 123*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,7,8-PeCDD	*59*		*25 - 181*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-1,2,3,7,8-PeCDF	*69*		*24 - 185*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-2,3,4,6,7,8-HxCDF	*54*		*28 - 136*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-2,3,4,7,8-PeCDF	*69*		*21 - 178*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-2,3,7,8-TCDF	*69*		*24 - 169*	*06/21/18 13:34*	*06/30/18 08:34*	*1*
13C-OCDD	*44*		*17 - 157*	*06/21/18 13:34*	*06/30/18 08:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*126*		*35 - 197*	*06/21/18 13:34*	*06/30/18 08:34*	*1*

Client Sample ID: PDI-SG-B427-BL1
Date Collected: 05/21/18 11:40
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-6
Matrix: Solid
Percent Solids: 86.0

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	**0.0061**	**B**	0.0029	0.000086	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,4,6,7,8-HpCDF	**0.00070**	**J B q**	0.0029	0.000049	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,4,7,8,9-HpCDF	**0.00015**	**J B**	0.0029	0.000054	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,4,7,8-HxCDD	**0.00012**	**J B**	0.0029	0.000045	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,4,7,8-HxCDF	ND		0.0029	0.000079	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,6,7,8-HxCDD	**0.00019**	**J B q**	0.0029	0.000043	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,6,7,8-HxCDF	ND		0.0029	0.000082	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,7,8,9-HxCDD	**0.00021**	**J B**	0.0029	0.000041	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,7,8,9-HxCDF	**0.00012**	**J B q**	0.0029	0.000042	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,7,8-PeCDD	ND		0.0029	0.000060	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
1,2,3,7,8-PeCDF	ND		0.0029	0.000035	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
2,3,4,6,7,8-HxCDF	ND		0.0029	0.000057	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
2,3,4,7,8-PeCDF	ND		0.0029	0.000036	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
2,3,7,8-TCDD	**0.00010**	**J**	0.00058	0.000039	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
2,3,7,8-TCDF	**0.000089**	**J B**	0.00058	0.000032	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
OCDD	**0.070**	**B**	0.0058	0.000076	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1
OCDF	**0.0033**	**J B**	0.0058	0.000053	ug/Kg	☼	06/21/18 13:34	06/30/18 09:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*56*		*23 - 140*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*61*		*28 - 143*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*67*		*26 - 138*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,4,7,8-HxCDF	*61*		*26 - 152*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,6,7,8-HxCDD	*64*		*28 - 130*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,7,8,9-HxCDF	*68*		*29 - 147*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-1,2,3,7,8-PeCDF	*81*		*24 - 185*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-2,3,4,7,8-PeCDF	*83*		*21 - 178*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-2,3,7,8-TCDD	*72*		*25 - 164*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-2,3,7,8-TCDF	*82*		*24 - 169*	*06/21/18 13:34*	*06/30/18 09:20*	*1*
13C-OCDD	*54*		*17 - 157*	*06/21/18 13:34*	*06/30/18 09:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*126*		*35 - 197*	*06/21/18 13:34*	*06/30/18 09:20*	*1*

Client Sample ID: PDI-SG-B426-BL1
Date Collected: 05/21/18 13:30
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-7
Matrix: Solid
Percent Solids: 83.2

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0075		0.0029	0.00020	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,4,6,7,8-HpCDF	0.0016	J	0.0029	0.000094	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,4,7,8,9-HpCDF	0.00053	J B	0.0029	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,4,7,8-HxCDD	0.00024	J q	0.0029	0.000097	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,4,7,8-HxCDF	0.00015	J q	0.0029	0.000077	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,6,7,8-HxCDD	0.00055	J q	0.0029	0.000089	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,6,7,8-HxCDF	0.00010	J q	0.0029	0.000074	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,7,8,9-HxCDD	0.00045	J	0.0029	0.000080	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,7,8,9-HxCDF	0.00034	J B	0.0029	0.000065	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,7,8-PeCDD	ND		0.0029	0.000083	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
1,2,3,7,8-PeCDF	ND		0.0029	0.000075	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
2,3,4,6,7,8-HxCDF	ND		0.0029	0.000064	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
2,3,4,7,8-PeCDF	ND		0.0029	0.000082	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
2,3,7,8-TCDD	ND		0.00058	0.000074	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
2,3,7,8-TCDF	ND		0.00058	0.000077	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
OCDD	0.047	B	0.0058	0.00041	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1
OCDF	0.0031	J	0.0058	0.00016	ug/Kg	☼	06/21/18 15:50	06/27/18 05:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*57*		*23 - 140*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*55*		*28 - 143*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,4,7,8-HxCDD	*65*		*32 - 141*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,4,7,8-HxCDF	*61*		*26 - 152*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,6,7,8-HxCDD	*69*		*28 - 130*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,6,7,8-HxCDF	*61*		*26 - 123*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,7,8,9-HxCDF	*59*		*29 - 147*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,7,8-PeCDD	*78*		*25 - 181*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-1,2,3,7,8-PeCDF	*64*		*24 - 185*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-2,3,4,6,7,8-HxCDF	*63*		*28 - 136*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*06/21/18 15:50*	*06/27/18 05:01*	*1*
13C-OCDD	*54*		*17 - 157*	*06/21/18 15:50*	*06/27/18 05:01*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/21/18 15:50*	*06/27/18 05:01*	*1*

Client Sample ID: PDI-SG-B415-BL1
Date Collected: 05/22/18 16:24
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-8
Matrix: Solid
Percent Solids: 85.0

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	**0.0027**	**J**	0.0029	0.000092	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,4,6,7,8-HpCDF	**0.00056**	**J q**	0.0029	0.000074	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,4,7,8,9-HpCDF	**0.00017**	**J B q**	0.0029	0.000095	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,4,7,8-HxCDD	ND		0.0029	0.000094	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,4,7,8-HxCDF	ND		0.0029	0.000050	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,6,7,8-HxCDD	ND		0.0029	0.000088	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,6,7,8-HxCDF	ND		0.0029	0.000047	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,7,8,9-HxCDD	ND		0.0029	0.000078	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,7,8,9-HxCDF	**0.00020**	**J B**	0.0029	0.000044	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,7,8-PeCDD	ND		0.0029	0.000078	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
1,2,3,7,8-PeCDF	ND		0.0029	0.000060	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
2,3,4,6,7,8-HxCDF	ND		0.0029	0.000044	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
2,3,4,7,8-PeCDF	ND		0.0029	0.000068	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
2,3,7,8-TCDD	ND		0.00058	0.000069	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
2,3,7,8-TCDF	ND		0.00058	0.000061	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
OCDD	**0.020**	**B**	0.0058	0.00022	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1
OCDF	**0.0015**	**J**	0.0058	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 05:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*59*		*28 - 143*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*26 - 138*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,4,7,8-HxCDF	*66*		*26 - 152*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,6,7,8-HxCDD	*77*		*28 - 130*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,6,7,8-HxCDF	*66*		*26 - 123*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,7,8,9-HxCDF	*66*		*29 - 147*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,7,8-PeCDD	*89*		*25 - 181*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-2,3,4,6,7,8-HxCDF	*64*		*28 - 136*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-2,3,7,8-TCDD	*67*		*25 - 164*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-2,3,7,8-TCDF	*71*		*24 - 169*	*06/21/18 15:50*	*06/27/18 05:44*	*1*
13C-OCDD	*60*		*17 - 157*	*06/21/18 15:50*	*06/27/18 05:44*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/21/18 15:50*	*06/27/18 05:44*	*1*

Client Sample ID: PDI-SG-B320-BL1
Date Collected: 05/23/18 12:36
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-9
Matrix: Solid
Percent Solids: 70.1

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	**0.014**		0.0036	0.00029	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,4,6,7,8-HpCDF	**0.0034**	**J**	0.0036	0.00019	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,4,7,8,9-HpCDF	ND		0.0036	0.00026	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,4,7,8-HxCDD	**0.00033**	**J q**	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,4,7,8-HxCDF	**0.00040**	**J q**	0.0036	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,6,7,8-HxCDD	**0.00073**	**J**	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,6,7,8-HxCDF	**0.00037**	**J**	0.0036	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,7,8,9-HxCDD	**0.00061**	**J**	0.0036	0.00010	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.000091	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,7,8-PeCDD	ND		0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
1,2,3,7,8-PeCDF	ND		0.0036	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
2,3,4,7,8-PeCDF	ND		0.0036	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
2,3,7,8-TCDD	**0.00033**	**J q**	0.00072	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
2,3,7,8-TCDF	**0.00035**	**J**	0.00072	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
OCDD	**0.12**	**B**	0.0072	0.00065	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1
OCDF	**0.0084**		0.0072	0.00031	ug/Kg	☼	06/21/18 15:50	06/27/18 06:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*53*		*23 - 140*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*48*		*28 - 143*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*48*		*26 - 138*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,4,7,8-HxCDD	*56*		*32 - 141*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,4,7,8-HxCDF	*55*		*26 - 152*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,7,8-PeCDD	*74*		*25 - 181*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-2,3,4,6,7,8-HxCDF	*56*		*28 - 136*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-2,3,7,8-TCDD	*60*		*25 - 164*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*06/21/18 15:50*	*06/27/18 06:27*	*1*
13C-OCDD	*50*		*17 - 157*	*06/21/18 15:50*	*06/27/18 06:27*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*100*		*35 - 197*	*06/21/18 15:50*	*06/27/18 06:27*	*1*

Client Sample ID: PDI-SG-B404-BL1

Date Collected: 05/23/18 10:40
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-10

Matrix: Solid
Percent Solids: 69.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.077		0.0036	0.00088	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,4,6,7,8-HpCDF	0.0090	q	0.0036	0.00028	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,4,7,8,9-HpCDF	0.00090	J B q	0.0036	0.00037	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,4,7,8-HxCDD	0.00058	J	0.0036	0.00014	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0036	0.00013	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,6,7,8-HxCDD	0.0041	q	0.0036	0.00013	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,6,7,8-HxCDF	0.00057	J q	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,7,8,9-HxCDD	0.0012	J	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,7,8-PeCDD	0.00027	J	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
1,2,3,7,8-PeCDF	0.00029	J q	0.0036	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
2,3,4,6,7,8-HxCDF	0.00059	J	0.0036	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
2,3,4,7,8-PeCDF	0.00030	J q	0.0036	0.00014	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
2,3,7,8-TCDD	0.00012	J q	0.00071	0.000099	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
2,3,7,8-TCDF	0.00062	J	0.00071	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
OCDD	0.50	B	0.0071	0.0025	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1
OCDF	0.020		0.0071	0.00026	ug/Kg	☼	06/21/18 15:50	06/27/18 07:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*52*		*23 - 140*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*48*		*28 - 143*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*47*		*26 - 138*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,4,7,8-HxCDD	*55*		*32 - 141*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,4,7,8-HxCDF	*54*		*26 - 152*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,6,7,8-HxCDF	*54*		*26 - 123*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,7,8,9-HxCDF	*56*		*29 - 147*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-1,2,3,7,8-PeCDF	*61*		*24 - 185*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-2,3,4,6,7,8-HxCDF	*55*		*28 - 136*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*06/21/18 15:50*	*06/27/18 07:10*	*1*
13C-OCDD	*50*		*17 - 157*	*06/21/18 15:50*	*06/27/18 07:10*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*99*		*35 - 197*	*06/21/18 15:50*	*06/27/18 07:10*	*1*

Client Sample ID: PDI-SG-B419-BL1
Date Collected: 05/23/18 16:20
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-11
Matrix: Solid
Percent Solids: 88.1

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	**0.0015**	**J**	0.0028	0.000076	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,4,6,7,8-HpCDF	**0.00041**	**J q**	0.0028	0.000095	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,4,7,8,9-HpCDF	**0.00018**	**J B q**	0.0028	0.00013	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,4,7,8-HxCDD	ND		0.0028	0.000064	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,4,7,8-HxCDF	ND		0.0028	0.000065	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,6,7,8-HxCDD	ND		0.0028	0.000061	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,6,7,8-HxCDF	ND		0.0028	0.000064	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,7,8,9-HxCDD	ND		0.0028	0.000053	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,7,8,9-HxCDF	**0.00024**	**J B q**	0.0028	0.000058	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,7,8-PeCDD	ND		0.0028	0.000065	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
1,2,3,7,8-PeCDF	ND		0.0028	0.000063	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
2,3,4,6,7,8-HxCDF	ND		0.0028	0.000058	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
2,3,4,7,8-PeCDF	ND		0.0028	0.000071	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
2,3,7,8-TCDD	ND		0.00056	0.000068	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
2,3,7,8-TCDF	ND		0.00056	0.000057	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
OCDD	**0.012**	**B**	0.0056	0.00014	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1
OCDF	**0.00079**	**J q**	0.0056	0.00010	ug/Kg	☼	06/21/18 15:50	06/27/18 07:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*59*		*23 - 140*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*56*		*28 - 143*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*55*		*26 - 138*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*62*		*32 - 141*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*60*		*26 - 152*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*60*		*26 - 123*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,7,8-PeCDD	*78*		*25 - 181*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*60*		*28 - 136*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-2,3,4,7,8-PeCDF	*63*		*21 - 178*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-2,3,7,8-TCDD	*61*		*25 - 164*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-2,3,7,8-TCDF	*62*		*24 - 169*	*06/21/18 15:50*	*06/27/18 07:53*	*1*
13C-OCDD	*58*		*17 - 157*	*06/21/18 15:50*	*06/27/18 07:53*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*06/21/18 15:50*	*06/27/18 07:53*	*1*

Client Sample ID: PDI-SG-B421-BL1
Date Collected: 05/24/18 12:00
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-12
Matrix: Solid
Percent Solids: 79.1

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	0.018		0.0031	0.00057	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,4,6,7,8-HpCDF	0.00071	J q	0.0031	0.00012	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,4,7,8,9-HpCDF	0.00035	J q B	0.0031	0.00016	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,4,7,8-HxCDD	0.00031	J q	0.0031	0.000086	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,4,7,8-HxCDF	0.00020	J q	0.0031	0.000071	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,6,7,8-HxCDD	0.00039	J q	0.0031	0.000081	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,6,7,8-HxCDF	0.00021	J	0.0031	0.000074	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,7,8,9-HxCDD	0.00046	J q	0.0031	0.000071	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,7,8,9-HxCDF	0.00019	J q B	0.0031	0.000070	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,7,8-PeCDD	ND		0.0031	0.00010	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
1,2,3,7,8-PeCDF	ND		0.0031	0.000087	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
2,3,4,6,7,8-HxCDF	ND		0.0031	0.000066	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
2,3,4,7,8-PeCDF	ND		0.0031	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
2,3,7,8-TCDD	ND		0.00063	0.000083	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
2,3,7,8-TCDF	0.00014	J q	0.00063	0.000066	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
OCDD	0.35	B	0.0063	0.0036	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1
OCDF	0.0014	J q	0.0063	0.00016	ug/Kg	☼	06/21/18 15:50	06/27/18 12:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*66*		*23 - 140*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*65*		*26 - 138*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,4,7,8-HxCDD	*49*		*32 - 141*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,4,7,8-HxCDF	*61*		*26 - 152*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,6,7,8-HxCDF	*63*		*26 - 123*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,7,8-PeCDD	*65*		*25 - 181*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-1,2,3,7,8-PeCDF	*57*		*24 - 185*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-2,3,4,7,8-PeCDF	*51*		*21 - 178*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*06/21/18 15:50*	*06/27/18 12:14*	*1*
13C-OCDD	*67*		*17 - 157*	*06/21/18 15:50*	*06/27/18 12:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/21/18 15:50*	*06/27/18 12:14*	*1*

Client Sample ID: PDI-SG-B422-BL1
Date Collected: 05/24/18 14:10
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-13
Matrix: Solid
Percent Solids: 82.1

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	**0.065**		0.0030	0.0013	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,4,6,7,8-HpCDF	**0.012**		0.0030	0.00042	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,4,7,8,9-HpCDF	**0.0010**	**J B**	0.0030	0.00056	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,4,7,8-HxCDD	**0.00020**	**J**	0.0030	0.000077	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,4,7,8-HxCDF	**0.00059**	**J q**	0.0030	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,6,7,8-HxCDD	**0.0028**	**J**	0.0030	0.000071	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,6,7,8-HxCDF	**0.00032**	**J q**	0.0030	0.00011	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,7,8,9-HxCDD	**0.00033**	**J**	0.0030	0.000063	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,7,8,9-HxCDF	**0.00033**	**J B**	0.0030	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,7,8-PeCDD	ND		0.0030	0.000098	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
1,2,3,7,8-PeCDF	ND		0.0030	0.000079	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
2,3,4,6,7,8-HxCDF	ND		0.0030	0.000095	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
2,3,4,7,8-PeCDF	ND		0.0030	0.000087	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
2,3,7,8-TCDD	ND		0.00061	0.000047	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
2,3,7,8-TCDF	**0.00023**	**J**	0.00061	0.000053	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
OCDD	**0.94**	**B**	0.0061	0.0053	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1
OCDF	**0.029**		0.0061	0.00022	ug/Kg	☼	06/21/18 15:50	06/27/18 12:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*54*		*23 - 140*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*54*		*28 - 143*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*52*		*26 - 138*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,6,7,8-HxCDD	*68*		*28 - 130*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,6,7,8-HxCDF	*62*		*26 - 123*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,7,8,9-HxCDF	*61*		*29 - 147*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,7,8-PeCDD	*71*		*25 - 181*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-2,3,4,7,8-PeCDF	*58*		*21 - 178*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*06/21/18 15:50*	*06/27/18 12:57*	*1*
13C-OCDD	*57*		*17 - 157*	*06/21/18 15:50*	*06/27/18 12:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/21/18 15:50*	*06/27/18 12:57*	*1*

Client Sample ID: PDI-SG-B192-BL1

Date Collected: 05/31/18 14:15
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-14

Matrix: Solid
Percent Solids: 67.1

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	0.027		0.0037	0.00052	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,4,6,7,8-HpCDF	0.015		0.0037	0.00033	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,4,7,8,9-HpCDF	0.0056	B	0.0037	0.00039	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,4,7,8-HxCDD	0.00041	J q	0.0037	0.00010	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,4,7,8-HxCDF	0.025		0.0037	0.00019	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,6,7,8-HxCDD	0.0010	J	0.0037	0.000096	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,6,7,8-HxCDF	0.0068		0.0037	0.00018	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,7,8,9-HxCDD	0.00070	J q	0.0037	0.000084	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,7,8,9-HxCDF	0.00066	J B	0.0037	0.00015	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,7,8-PeCDD	ND		0.0037	0.00010	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
1,2,3,7,8-PeCDF	0.010		0.0037	0.00017	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
2,3,4,6,7,8-HxCDF	0.00098	J q	0.0037	0.00016	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
2,3,4,7,8-PeCDF	0.0038		0.0037	0.00018	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
2,3,7,8-TCDD	ND		0.00075	0.00013	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
OCDD	0.17	B	0.0075	0.0011	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1
OCDF	0.031		0.0075	0.00031	ug/Kg	☼	06/21/18 15:50	06/27/18 13:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*48*		*23 - 140*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*28 - 143*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*26 - 138*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,4,7,8-HxCDD	*54*		*32 - 141*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,4,7,8-HxCDF	*56*		*26 - 152*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,6,7,8-HxCDD	*60*		*28 - 130*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,6,7,8-HxCDF	*57*		*26 - 123*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,7,8-PeCDD	*73*		*25 - 181*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-1,2,3,7,8-PeCDF	*60*		*24 - 185*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-2,3,4,6,7,8-HxCDF	*58*		*28 - 136*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-2,3,4,7,8-PeCDF	*62*		*21 - 178*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-2,3,7,8-TCDD	*64*		*25 - 164*	*06/21/18 15:50*	*06/27/18 13:40*	*1*
13C-OCDD	*48*		*17 - 157*	*06/21/18 15:50*	*06/27/18 13:40*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/21/18 15:50*	*06/27/18 13:40*	*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	0.0051		0.00075	0.000082	ug/Kg	☼	06/21/18 15:50	06/25/18 20:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*63*		*24 - 169*	*06/21/18 15:50*	*06/25/18 20:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/21/18 15:50*	*06/25/18 20:55*	*1*

Client Sample ID: PDI-SG-B183-BL1

Date Collected: 05/31/18 14:04
Date Received: 06/15/18 12:20

Lab Sample ID: 580-78109-15

Matrix: Solid
Percent Solids: 66.7

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	0.14		0.0037	0.0030	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,4,6,7,8-HpCDF	0.043		0.0037	0.00087	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,4,7,8,9-HpCDF	0.0020	J B	0.0037	0.0011	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,4,7,8-HxCDD	0.0015	J	0.0037	0.00017	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,4,7,8-HxCDF	0.0027	J	0.0037	0.00027	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,6,7,8-HxCDD	0.0089		0.0037	0.00016	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,6,7,8-HxCDF	0.0035	J	0.0037	0.00025	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,7,8,9-HxCDD	0.0029	J q	0.0037	0.00014	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,7,8,9-HxCDF	0.00084	J B	0.0037	0.00023	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,7,8-PeCDD	0.00073	J q	0.0037	0.00018	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
1,2,3,7,8-PeCDF	0.00035	J q	0.0037	0.00028	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
2,3,4,6,7,8-HxCDF	0.0014	J	0.0037	0.00024	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
2,3,4,7,8-PeCDF	0.00082	J	0.0037	0.00027	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
2,3,7,8-TCDD	ND		0.00074	0.00014	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
OCDD	2.8	G B	0.015	0.015	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1
OCDF	0.043		0.0074	0.00037	ug/Kg	☼	06/21/18 15:50	06/27/18 14:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*62*		*23 - 140*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*60*		*26 - 138*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,4,7,8-HxCDD	*60*		*32 - 141*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,4,7,8-HxCDF	*59*		*26 - 152*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,6,7,8-HxCDD	*65*		*28 - 130*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,6,7,8-HxCDF	*61*		*26 - 123*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,7,8,9-HxCDF	*63*		*29 - 147*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-2,3,4,7,8-PeCDF	*60*		*21 - 178*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*06/21/18 15:50*	*06/27/18 14:23*	*1*
13C-OCDD	*68*		*17 - 157*	*06/21/18 15:50*	*06/27/18 14:23*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*108*		*35 - 197*	*06/21/18 15:50*	*06/27/18 14:23*	*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	0.00036	J	0.00074	0.00015	ug/Kg	☼	06/21/18 15:50	06/25/18 21:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDF	*61*		*24 - 169*	*06/21/18 15:50*	*06/25/18 21:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*06/21/18 15:50*	*06/25/18 21:33*	*1*

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

Lab Sample ID: MB 320-230281/1-A
Matrix: Solid
Analysis Batch: 231866

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 230281

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000300	J	0.0050	0.000021	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,4,6,7,8-HpCDF	0.000182	J	0.0050	0.000021	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,4,7,8,9-HpCDF	0.000358	J	0.0050	0.000028	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,4,7,8-HxCDD	0.000187	J	0.0050	0.000028	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000059	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,6,7,8-HxCDD	0.0000713	J q	0.0050	0.000028	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000054	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,7,8,9-HxCDD	0.000142	J	0.0050	0.000025	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,7,8,9-HxCDF	0.000277	J q	0.0050	0.000036	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000055	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
1,2,3,7,8-PeCDF	0.000129	J	0.0050	0.000036	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
2,3,4,6,7,8-HxCDF	0.0000839	J q	0.0050	0.000038	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
2,3,4,7,8-PeCDF	0.000121	J	0.0050	0.000041	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
2,3,7,8-TCDD	ND		0.0010	0.000028	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
2,3,7,8-TCDF	0.0000845	J	0.0010	0.000021	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
OCDD	0.00118	J	0.010	0.000021	ug/Kg		06/21/18 13:34	06/30/18 12:22	1
OCDF	0.000408	J	0.010	0.000037	ug/Kg		06/21/18 13:34	06/30/18 12:22	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*79*		*23 - 140*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*79*		*28 - 143*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*78*		*26 - 138*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,4,7,8-HxCDD	*78*		*32 - 141*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,4,7,8-HxCDF	*80*		*26 - 152*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,6,7,8-HxCDD	*72*		*28 - 130*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,6,7,8-HxCDF	*73*		*26 - 123*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,7,8,9-HxCDF	*82*		*29 - 147*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,7,8-PeCDD	*70*		*25 - 181*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-1,2,3,7,8-PeCDF	*77*		*24 - 185*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-2,3,4,6,7,8-HxCDF	*84*		*28 - 136*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-2,3,7,8-TCDF	*86*		*24 - 169*	*06/21/18 13:34*	*06/30/18 12:22*	*1*
13C-OCDD	*83*		*17 - 157*	*06/21/18 13:34*	*06/30/18 12:22*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*122*		*35 - 197*	*06/21/18 13:34*	*06/30/18 12:22*	*1*

Lab Sample ID: LCS 320-230281/2-A
Matrix: Solid
Analysis Batch: 231866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 230281

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.103		ug/Kg		103	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.103		ug/Kg		103	72 - 134

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

Lab Sample ID: LCS 320-230281/2-A
Matrix: Solid
Analysis Batch: 231866

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 230281

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.104		ug/Kg		104	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.106		ug/Kg		106	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.108		ug/Kg		108	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.105		ug/Kg		105	78 - 130
1,2,3,7,8-PeCDD	0.100	0.106		ug/Kg		106	70 - 142
1,2,3,7,8-PeCDF	0.100	0.104		ug/Kg		104	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.102		ug/Kg		102	70 - 156
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160
2,3,7,8-TCDD	0.0200	0.0215		ug/Kg		108	67 - 158
2,3,7,8-TCDF	0.0200	0.0206		ug/Kg		103	75 - 158
OCDD	0.200	0.202		ug/Kg		101	78 - 144
OCDF	0.200	0.194		ug/Kg		97	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*79*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*79*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*80*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*83*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*85*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*72*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*75*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*82*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*76*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*81*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*85*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*81*		*13 - 328*
13C-2,3,7,8-TCDD	*74*		*20 - 175*
13C-2,3,7,8-TCDF	*84*		*22 - 152*
13C-OCDD	*84*		*13 - 199*

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*126*		*31 - 191*

Lab Sample ID: LCSD 320-230281/3-A
Matrix: Solid
Analysis Batch: 231866

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 230281

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.105		ug/Kg		105	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.100		ug/Kg		100	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.106		ug/Kg		106	70 - 164	2	50
1,2,3,4,7,8-HxCDF	0.100	0.104		ug/Kg		104	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.102		ug/Kg		102	76 - 134	3	50
1,2,3,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	84 - 130	3	50
1,2,3,7,8,9-HxCDD	0.100	0.107		ug/Kg		107	64 - 162	1	50
1,2,3,7,8,9-HxCDF	0.100	0.103		ug/Kg		103	78 - 130	2	50
1,2,3,7,8-PeCDD	0.100	0.104		ug/Kg		104	70 - 142	2	50

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

Lab Sample ID: LCSD 320-230281/3-A
Matrix: Solid
Analysis Batch: 231866

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 230281

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF			0.100	0.104		ug/Kg		104	80 - 134	1	50
2,3,4,6,7,8-HxCDF			0.100	0.102		ug/Kg		102	70 - 156	0	50
2,3,4,7,8-PeCDF			0.100	0.103		ug/Kg		103	68 - 160	1	50
2,3,7,8-TCDD			0.0200	0.0213		ug/Kg		107	67 - 158	1	50
2,3,7,8-TCDF			0.0200	0.0202		ug/Kg		101	75 - 158	2	50
OCDD			0.200	0.202		ug/Kg		101	78 - 144	0	50
OCDF			0.200	0.193		ug/Kg		96	63 - 170	0	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*82*		*26 - 166*
13C-1,2,3,4,6,7,8-HpCDF	*82*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*83*		*20 - 186*
13C-1,2,3,4,7,8-HxCDD	*83*		*21 - 193*
13C-1,2,3,4,7,8-HxCDF	*88*		*19 - 202*
13C-1,2,3,6,7,8-HxCDD	*76*		*25 - 163*
13C-1,2,3,6,7,8-HxCDF	*79*		*21 - 159*
13C-1,2,3,7,8,9-HxCDF	*85*		*17 - 205*
13C-1,2,3,7,8-PeCDD	*77*		*21 - 227*
13C-1,2,3,7,8-PeCDF	*83*		*21 - 192*
13C-2,3,4,6,7,8-HxCDF	*87*		*22 - 176*
13C-2,3,4,7,8-PeCDF	*82*		*13 - 328*
13C-2,3,7,8-TCDD	*75*		*20 - 175*
13C-2,3,7,8-TCDF	*85*		*22 - 152*
13C-OCDD	*86*		*13 - 199*

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*122*		*31 - 191*

Lab Sample ID: MB 320-230306/1-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 230306

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.000085	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.00010	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,4,7,8,9-HpCDF	0.000314	J q	0.0050	0.00014	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.00012	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000089	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.00011	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000085	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.00010	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,7,8,9-HxCDF	0.000241	J q	0.0050	0.000081	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00013	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
1,2,3,7,8-PeCDF	ND		0.0050	0.00012	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000081	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00013	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
2,3,7,8-TCDD	ND		0.0010	0.00014	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
2,3,7,8-TCDF	ND		0.0010	0.00011	ug/Kg		06/21/18 15:50	06/27/18 02:53	1

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

Lab Sample ID: MB 320-230306/1-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 230306

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000423	J	0.010	0.00014	ug/Kg		06/21/18 15:50	06/27/18 02:53	1
OCDF	ND		0.010	0.00021	ug/Kg		06/21/18 15:50	06/27/18 02:53	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,4,6,7,8-HpCDD	*63*		*23 - 140*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*59*		*26 - 138*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*63*		*32 - 141*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*68*		*26 - 152*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,6,7,8-HxCDD	*77*		*28 - 130*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*68*		*26 - 123*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*64*		*29 - 147*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,7,8-PeCDD	*84*		*25 - 181*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-1,2,3,7,8-PeCDF	*67*		*24 - 185*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*66*		*28 - 136*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-2,3,4,7,8-PeCDF	*65*		*21 - 178*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-2,3,7,8-TCDD	*66*		*25 - 164*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-2,3,7,8-TCDF	*65*		*24 - 169*	*06/21/18 15:50*	*06/27/18 02:53*	*1*
13C-OCDD	*61*		*17 - 157*	*06/21/18 15:50*	*06/27/18 02:53*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*103*		*35 - 197*	*06/21/18 15:50*	*06/27/18 02:53*	*1*

Lab Sample ID: LCS 320-230306/2-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 230306

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0992		ug/Kg		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.107		ug/Kg		107	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.105		ug/Kg		105	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.0998		ug/Kg		100	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.102		ug/Kg		102	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.0929		ug/Kg		93	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.0930		ug/Kg		93	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.101		ug/Kg		101	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0856		ug/Kg		86	70 - 142
1,2,3,7,8-PeCDF	0.100	0.102		ug/Kg		102	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.107		ug/Kg		107	70 - 156
2,3,4,7,8-PeCDF	0.100	0.104		ug/Kg		104	68 - 160
2,3,7,8-TCDD	0.0200	0.0220		ug/Kg		110	67 - 158
2,3,7,8-TCDF	0.0200	0.0215		ug/Kg		107	75 - 158
OCDD	0.200	0.176		ug/Kg		88	78 - 144
OCDF	0.200	0.171		ug/Kg		85	63 - 170

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-1,2,3,4,6,7,8-HpCDD	*65*		*26 - 166*

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

Lab Sample ID: LCS 320-230306/2-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 230306

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	62		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	76		25 - 163
13C-1,2,3,6,7,8-HxCDF	70		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		17 - 205
13C-1,2,3,7,8-PeCDD	91		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-2,3,4,7,8-PeCDF	70		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	70		22 - 152
13C-OCDD	64		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	109		31 - 191

Lab Sample ID: LCSD 320-230306/3-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 230306

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	0.0974		ug/Kg		97	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF			0.100	0.103		ug/Kg		103	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF			0.100	0.103		ug/Kg		103	78 - 138	2	50
1,2,3,4,7,8-HxCDD			0.100	0.0947		ug/Kg		95	70 - 164	5	50
1,2,3,4,7,8-HxCDF			0.100	0.101		ug/Kg		101	72 - 134	2	50
1,2,3,6,7,8-HxCDD			0.100	0.0882		ug/Kg		88	76 - 134	5	50
1,2,3,6,7,8-HxCDF			0.100	0.100		ug/Kg		100	84 - 130	5	50
1,2,3,7,8,9-HxCDD			0.100	0.0904		ug/Kg		90	64 - 162	3	50
1,2,3,7,8,9-HxCDF			0.100	0.0989		ug/Kg		99	78 - 130	2	50
1,2,3,7,8-PeCDD			0.100	0.0848		ug/Kg		85	70 - 142	1	50
1,2,3,7,8-PeCDF			0.100	0.0975		ug/Kg		97	80 - 134	5	50
2,3,4,6,7,8-HxCDF			0.100	0.103		ug/Kg		103	70 - 156	4	50
2,3,4,7,8-PeCDF			0.100	0.103		ug/Kg		103	68 - 160	1	50
2,3,7,8-TCDD			0.0200	0.0214		ug/Kg		107	67 - 158	3	50
2,3,7,8-TCDF			0.0200	0.0218		ug/Kg		109	75 - 158	2	50
OCDD			0.200	0.177		ug/Kg		89	78 - 144	0	50
OCDF			0.200	0.168		ug/Kg		84	63 - 170	1	50

Isotope Dilution	LCSD %Recovery	LCSD 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	57		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163

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

Lab Sample ID: LCSD 320-230306/3-A
Matrix: Solid
Analysis Batch: 231207

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 230306

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-1,2,3,7,8-PeCDD	81		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,6,7,8-HxCDF	65		22 - 176
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	64		22 - 152
13C-OCDD	58		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	104		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-78109-2

Client Sample ID: PDI-SG-B208-BL1

Lab Sample ID: 580-78109-1
Date Collected: 05/20/18 10:00
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 70.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 05:30	AS	TAL SAC

Client Sample ID: PDI-SG-B389-BL1

Lab Sample ID: 580-78109-2
Date Collected: 05/20/18 14:28
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 51.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 06:16	AS	TAL SAC

Client Sample ID: PDI-SG-B391-BL1

Lab Sample ID: 580-78109-3
Date Collected: 05/20/18 16:11
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 86.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 07:02	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	232635	07/04/18 03:41	ALM	TAL SAC

Client Sample ID: PDI-SG-B392-BL1

Lab Sample ID: 580-78109-4
Date Collected: 05/20/18 17:31
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 66.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 07:48	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	232635	07/04/18 04:19	ALM	TAL SAC

Client Sample ID: PDI-SG-B428-BL1

Lab Sample ID: 580-78109-5
Date Collected: 05/21/18 10:35
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 78.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 08:34	AS	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-78109-2

Client Sample ID: PDI-SG-B427-BL1

Lab Sample ID: 580-78109-6
Date Collected: 05/21/18 11:40
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 86.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230281	06/21/18 13:34	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231886	06/30/18 09:20	AS	TAL SAC

Client Sample ID: PDI-SG-B426-BL1

Lab Sample ID: 580-78109-7
Date Collected: 05/21/18 13:30
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231207	06/27/18 05:01	SMA	TAL SAC

Client Sample ID: PDI-SG-B415-BL1

Lab Sample ID: 580-78109-8
Date Collected: 05/22/18 16:24
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 85.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231207	06/27/18 05:44	SMA	TAL SAC

Client Sample ID: PDI-SG-B320-BL1

Lab Sample ID: 580-78109-9
Date Collected: 05/23/18 12:36
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 70.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231207	06/27/18 06:27	SMA	TAL SAC

Client Sample ID: PDI-SG-B404-BL1

Lab Sample ID: 580-78109-10
Date Collected: 05/23/18 10:40
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 69.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231207	06/27/18 07:10	SMA	TAL SAC

Client Sample ID: PDI-SG-B419-BL1

Lab Sample ID: 580-78109-11
Date Collected: 05/23/18 16:20
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 88.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231207	06/27/18 07:53	SMA	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 580-78109-2

Client Sample ID: PDI-SG-B421-BL1

Lab Sample ID: 580-78109-12
Date Collected: 05/24/18 12:00
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231356	06/27/18 12:14	ALM	TAL SAC

Client Sample ID: PDI-SG-B422-BL1

Lab Sample ID: 580-78109-13
Date Collected: 05/24/18 14:10
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 82.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231356	06/27/18 12:57	ALM	TAL SAC

Client Sample ID: PDI-SG-B192-BL1

Lab Sample ID: 580-78109-14
Date Collected: 05/31/18 14:15
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 67.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230936	06/25/18 20:55	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231356	06/27/18 13:40	ALM	TAL SAC

Client Sample ID: PDI-SG-B183-BL1

Lab Sample ID: 580-78109-15
Date Collected: 05/31/18 14:04
Matrix: Solid
Date Received: 06/15/18 12:20
Percent Solids: 66.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	230936	06/25/18 21:33	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox			230306	06/21/18 15:50	SR1	TAL SAC
Total/NA	Analysis	1613B		1	231356	06/27/18 14:23	ALM	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: 580-78109-2
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	07-31-18
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
ANAB	DoD ELAP		L2468	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	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-18
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: 580-78109-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-78109-1	PDI-SG-B208-BL1	Solid	05/20/18 10:00	06/15/18 12:20
580-78109-2	PDI-SG-B389-BL1	Solid	05/20/18 14:28	06/15/18 12:20
580-78109-3	PDI-SG-B391-BL1	Solid	05/20/18 16:11	06/15/18 12:20
580-78109-4	PDI-SG-B392-BL1	Solid	05/20/18 17:31	06/15/18 12:20
580-78109-5	PDI-SG-B428-BL1	Solid	05/21/18 10:35	06/15/18 12:20
580-78109-6	PDI-SG-B427-BL1	Solid	05/21/18 11:40	06/15/18 12:20
580-78109-7	PDI-SG-B426-BL1	Solid	05/21/18 13:30	06/15/18 12:20
580-78109-8	PDI-SG-B415-BL1	Solid	05/22/18 16:24	06/15/18 12:20
580-78109-9	PDI-SG-B320-BL1	Solid	05/23/18 12:36	06/15/18 12:20
580-78109-10	PDI-SG-B404-BL1	Solid	05/23/18 10:40	06/15/18 12:20
580-78109-11	PDI-SG-B419-BL1	Solid	05/23/18 16:20	06/15/18 12:20
580-78109-12	PDI-SG-B421-BL1	Solid	05/24/18 12:00	06/15/18 12:20
580-78109-13	PDI-SG-B422-BL1	Solid	05/24/18 14:10	06/15/18 12:20
580-78109-14	PDI-SG-B192-BL1	Solid	05/31/18 14:15	06/15/18 12:20
580-78109-15	PDI-SG-B183-BL1	Solid	05/31/18 14:04	06/15/18 12:20

SURFACE SEDIMENT CHAIN OF CUSTODY

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

Site Contact: Jennifer Ray / Michaela McCoog
Laboratory Contact: Elaine-Walker
6/15/2018 **Carrier:** courier
COC No: 4
1 of 2 pages

580-78109 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Archive Archive -20 C	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Sample Specific Notes:
PDI-SG-B208-BL1	5/20/2018	10:00	SS		AC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B389-BL1	5/20/2018	14:28	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B391-BL1	5/20/2018	16:11	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B392-BL1	5/20/2018	17:31	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B428-BL1	5/21/2018	10:35	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B427-BL1	5/21/2018	11:40	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B426-BL1	5/21/2018	13:30	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B415-BL1	5/22/2018	16:24	SS		MM	6		x	x	x	x	x	x	Frozen 5/22/18 17:00
PDI-SG-B320-BL1	5/23/2018	12:36	SS		MM	6		x	x	x	x	x	x	Frozen 5/23/18 13:50
PDI-SG-B404-BL1	5/23/2018	10:40	SS		MT	6		x	x	x	x	x	x	Frozen 5/23/18 18:40
PDI-SG-B419-BL1	5/23/2018	16:20	SS		MT	6		x	x	x	x	x	x	Frozen 5/23/18 18:40
PDI-SG-B421-BL1	5/24/2018	12:00	SS		MT	6		x	x	x	x	x	x	Frozen 5/24/18 18:15

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:

FREEZE SAMPLES UPON RECEIPT

Separate reports for each lab

-0.2, -1.3, -3.4

Relinquished by:	Company: AECOM	Date/Time: 6/15/18/1150	Received by:	Company: M.E	Date/Time: 6-15-18 1150
Relinquished by:	Company: M.E	Date/Time: 6-15-18 / 1220	Received by:	Company: CARGO	Date/Time: 6/15/18 1220
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☐ Other _____	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker**	**6/15/2018** COC No: 4 **Carrier: courier** 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			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Archive Archive -20 C	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Sample Specific Notes:
PDI-SG-B422-BL1	5/24/2018	14:10	SS		MT	6		x	x	x	x	x	x	Frozen 5/24/18 18:15
PDI-SG-B192-BL1	5/31/2018	14:15	SS		CS	6		x	x	x	x	x	x	Frozen 5/31/18 17:50
PDI-SG-B183-BL1	5/31/2018	14:04	SS		AM	6		x	x	x	x	x	x	Frozen 5/31/18 17:50

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 *isposal By Lab* X *rchive For 12 Months*

Special Instructions/QC Requirements & Comments:

FREEZE SAMPLES UPON RECEIPT

-0.2

Separate reports for each lab

Relinquished by:	Company: AECOM	Date/Time: 6/15/18/1150	Received by:	Company: UE	Date/Time: 6-15-18/1150
Relinquished by:	Company: UE	Date/Time: 6-15-18/1220	Received by:	Company: TA Pool	Date/Time: 6/15/18 1220
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W)	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker**	**6/15/2018** **Carrier: courier**	**COC No: 4** 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	☐ 21 days ☐ Other _____			

580-78109 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Archive Archive -20 C	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Sample Specific Notes:
PDI-SG-B208-BL1	5/20/2018	10:00	SS		AC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B389-BL1	5/20/2018	14:28	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B391-BL1	5/20/2018	16:11	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B392-BL1	5/20/2018	17:31	SS		BC	6		x	x	x	x	x	x	Frozen 5/20/18 18:30
PDI-SG-B428-BL1	5/21/2018	10:35	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B427-BL1	5/21/2018	11:40	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B426-BL1	5/21/2018	13:30	SS		AM	6		x	x	x	x	x	x	Frozen 5/21/18 18:40
PDI-SG-B415-BL1	5/22/2018	16:24	SS		MM	6		x	x	x	x	x	x	Frozen 5/22/18 17:00
PDI-SG-B320-BL1	5/23/2018	12:36	SS		MM	6		x	x	x	x	x	x	Frozen 5/23/18 13:50
PDI-SG-B404-BL1	5/23/2018	10:40	SS		MT	6		x	x	x	x	x	x	Frozen 5/23/18 18:40
PDI-SG-B419-BL1	5/23/2018	16:20	SS		MT	6		x	x	x	x	x	x	Frozen 5/23/18 18:40
PDI-SG-B421-BL1	5/24/2018	12:00	SS		MT	6		x	x	x	x	x	x	Frozen 5/24/18 18:15

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:

FREEZE SAMPLES UPON RECEIPT

Separate reports for each lab

-0.2, -1.3, -3.4

Relinquished by:	Company: AECOM	Date/Time: 6/15/18 1150	Received by:	Company: M.E	Date/Time: 6-15-18 1150
Relinquished by:	Company: M.E	Date/Time: 6-15-18 1222	Received by:	Company: TARGET	Date/Time: 6/15/18 1270
Relinquished by:	Company: TARGET	Date/Time: 6/15/18 1700	Received by: B. Gall B. Gall	Company: SEA TAC	Date/Time: 6/16/18 1000

IRS = -37/-37 w/c.s.

SURFACE SEDIMENT
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☐ Other _____	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Elaine-Walker**	**6/15/2018** **Carrier: courier**	COC No: 4 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				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Archive Archive -20 C	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Sample Specific Notes:
PDI-SG-B422-BL1	5/24/2018	14:10	SS		MT	6		x	x	x	x	x	x	Frozen 5/24/18 18:15
PDI-SG-B192-BL1	5/31/2018	14:15	SS		CS	6		x	x	x	x	x	x	Frozen 5/31/18 17:50
PDI-SG-B183-BL1	5/31/2018	14:04	SS		AM	6		x	x	x	x	x	x	Frozen 5/31/18 17:50

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

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

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

Sample Disposal

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

Special Instructions/QC Requirements & Comments:

FREEZE SAMPLES UPON RECEIPT

-0.2

Separate reports for each lab

Relinquished by:	Company: AECOM	Date/Time: 6/15/18 1150	Received by:	Company: UE	Date/Time: 6-15-18 1150
Relinquished by:	Company: UE	Date/Time: 6-15-18 1220	Received by:	Company: TA Rok	Date/Time: 6/15/18 1220
Relinquished by:	Company: TA Rok	Date/Time: 6/15/18 1700	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: 580-56350.1
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 #: 580-78109-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/3/2018			
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, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, 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 (MOD) Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PDI-SG-B208-BL1 (580-78109-1)	5/20/18	10:00 Pacific		Solid			X	X	2	
PDI-SG-B389-BL1 (580-78109-2)	5/20/18	14:28 Pacific		Solid			X	X	2	
PDI-SG-B391-BL1 (580-78109-3)	5/20/18	16:11 Pacific		Solid			X	X	2	
PDI-SG-B392-BL1 (580-78109-4)	5/20/18	17:31 Pacific		Solid			X	X	2	
PDI-SG-B428-BL1 (580-78109-5)	5/21/18	10:35 Pacific		Solid			X	X	2	
PDI-SG-B427-BL1 (580-78109-6)	5/21/18	11:40 Pacific		Solid			X	X	2	
PDI-SG-B426-BL1 (580-78109-7)	5/21/18	13:30 Pacific		Solid			X	X	2	
PDI-SG-B415-BL1 (580-78109-8)	5/22/18	16:24 Pacific		Solid			X	X	2	
PDI-SG-B320-BL1 (580-78109-9)	5/23/18	12:36 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
1		6/17/14 1700	TAPOR		6-16-18 930	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: -36

* recd 1 jar broken on 6-16-18

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: 580-56350.2
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 #: 580-78109-1
Address: 880 Riverside Parkway, .	Due Date Requested: 7/3/2018			
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 (MOD) Full List w/o Totals	AutoOP/ PH Frozen Archive Container billed @ $0.	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
PDI-SG-B404-BL1 (580-78109-10)	5/23/18	10:40 Pacific		Solid			X	X	2	
PDI-SG-B419-BL1 (580-78109-11)	5/23/18	16:20 Pacific		Solid			X	X	2	
PDI-SG-B421-BL1 (580-78109-12)	5/24/18	12:00 Pacific		Solid			X	X	2	
PDI-SG-B422-BL1 (580-78109-13)	5/24/18	14:10 Pacific		Solid			X	X	2	
PDI-SG-B192-BL1 (580-78109-14)	5/31/18	14:15 Pacific		Solid			X	X	2	
PDI-SG-B183-BL1 (580-78109-15)	5/31/18	14:04 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. 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:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	6/15/18 1700			6-16-18 930	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: -36

Ver: 09/20/2016

7/6/2018

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78109-2

Login Number: 78109
List Number: 1
Creator: O'Connell, Jason I

List Source: TestAmerica Seattle

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

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78109-2

Login Number: 78109
List Number: 2
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	dry ice
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	-36
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. Transferred to new containers with minimal or no sample loss.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

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

TestAmerica Job ID: 580-78109-2

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)
580-78109-1	PDI-SG-B208-BL1	60	64	72	59	58	60	56	63
580-78109-2	PDI-SG-B389-BL1	50	52	59	54	51	52	49	57
580-78109-3	PDI-SG-B391-BL1	59	64	69	57	55	57	53	61
580-78109-3 - RA	PDI-SG-B391-BL1								
580-78109-4	PDI-SG-B392-BL1	43	40	46	61	68	51	60	59
580-78109-4 - RA	PDI-SG-B392-BL1								
580-78109-5	PDI-SG-B428-BL1	44	49	53	56	52	56	52	56
580-78109-6	PDI-SG-B427-BL1	56	61	67	65	61	64	60	68
580-78109-7	PDI-SG-B426-BL1	57	55	55	65	61	69	61	59
580-78109-8	PDI-SG-B415-BL1	62	59	60	63	66	77	66	66
580-78109-9	PDI-SG-B320-BL1	53	48	48	56	55	65	57	56
580-78109-10	PDI-SG-B404-BL1	52	48	47	55	54	65	54	56
580-78109-11	PDI-SG-B419-BL1	59	56	55	62	60	67	60	60
580-78109-12	PDI-SG-B421-BL1	66	64	65	49	61	65	63	61
580-78109-13	PDI-SG-B422-BL1	54	54	52	60	64	68	62	61
580-78109-14 - RA	PDI-SG-B192-BL1								
580-78109-14	PDI-SG-B192-BL1	48	46	50	54	56	60	57	60
580-78109-15 - RA	PDI-SG-B183-BL1								
580-78109-15	PDI-SG-B183-BL1	62	57	60	60	59	65	61	63
MB 320-230281/1-A	Method Blank	79	79	78	78	80	72	73	82
MB 320-230306/1-A	Method Blank	63	64	59	63	68	77	68	64

		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)	
580-78109-1	PDI-SG-B208-BL1	64	72	58	73	65	76	61	
580-78109-2	PDI-SG-B389-BL1	58	67	52	70	62	74	48	
580-78109-3	PDI-SG-B391-BL1	59	68	56	67	60		63	
580-78109-3 - RA	PDI-SG-B391-BL1						55		
580-78109-4	PDI-SG-B392-BL1	71	69	61	84	69		39	
580-78109-4 - RA	PDI-SG-B392-BL1						73		
580-78109-5	PDI-SG-B428-BL1	59	69	54	69	61	69	44	
580-78109-6	PDI-SG-B427-BL1	71	81	62	83	72	82	54	
580-78109-7	PDI-SG-B426-BL1	78	64	63	63	64	65	54	
580-78109-8	PDI-SG-B415-BL1	89	70	64	71	67	71	60	
580-78109-9	PDI-SG-B320-BL1	74	61	56	60	60	61	50	
580-78109-10	PDI-SG-B404-BL1	75	61	55	60	59	61	50	
580-78109-11	PDI-SG-B419-BL1	78	63	60	63	61	62	58	
580-78109-12	PDI-SG-B421-BL1	65	57	61	51	64	65	67	
580-78109-13	PDI-SG-B422-BL1	71	58	62	58	64	63	57	
580-78109-14 - RA	PDI-SG-B192-BL1						63		
580-78109-14	PDI-SG-B192-BL1	73	60	58	62	64		48	
580-78109-15 - RA	PDI-SG-B183-BL1						61		
580-78109-15	PDI-SG-B183-BL1	75	63	62	60	63		68	
MB 320-230281/1-A	Method Blank	70	77	84	71	71	86	83	
MB 320-230306/1-A	Method Blank	84	67	66	65	66	65	61	

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 320-230281/2-A	Lab Control Sample	79	79	80	83	85	72	75	82
LCS 320-230306/2-A	Lab Control Sample	65	63	62	68	68	76	70	68
LCSD 320-230281/3-A	Lab Control Sample Dup	82	82	83	83	88	76	79	85
LCSD 320-230306/3-A	Lab Control Sample Dup	61	61	57	67	66	71	68	64

		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 320-230281/2-A	Lab Control Sample	76	81	85	81	74	84	84
LCS 320-230306/2-A	Lab Control Sample	91	72	67	70	70	70	64
LCSD 320-230281/3-A	Lab Control Sample Dup	77	83	87	82	75	85	86
LCSD 320-230306/3-A	Lab Control Sample Dup	81	67	65	65	65	64	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