

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79444-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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Authorized for release by:
8/30/2018 5:20:32 PM

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Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Definitions	7
Client Sample Results	8
QC Sample Results	53
Chronicle	67
Certification Summary	76
Sample Summary	77
Chain of Custody	78
Receipt Checklists	89
Field Data Sheets	92
Isotope Dilution Summary	95



Case Narrative

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

TestAmerica Job ID: 580-79444-2

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Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79444-2

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

Forty-four samples were received on 8/8/2018 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.4° C, 1.5° C, 1.6° C, 1.7° C, 3.9° C and 4.2° C.

The following sample was received at the laboratory without a sample collection time documented on the chain of custody: PDI-RB-SS-180806 (580-79444-44). Logged in per container labels.

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

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

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

DIOXIN/ FURAN

Samples PDI-SC-S226-6to8 (580-79444-1), PDI-SC-S226-10to12 (580-79444-2), PDI-SC-S226-8to10 (580-79444-3), PDI-SC-S226-0to2 (580-79444-4), PDI-SC-S226-2to4 (580-79444-5), PDI-SC-S226-12to14 (580-79444-6), PDI-SC-S226-4to6 (580-79444-7), PDI-SC-S226-14to15.8 (580-79444-8), PDI-SC-S222-0to2 (580-79444-9), PDI-SC-S222-2to4 (580-79444-10), PDI-SC-S222-4to5 (580-79444-11), PDI-SC-S222-5to7.2 (580-79444-12), PDI-SC-S222-5to7.2D (580-79444-13), PDI-SC-S222-7.2to9.2 (580-79444-14), PDI-SC-S222-9.2to11.2 (580-79444-15), PDI-SC-S222-11.2to13.2 (580-79444-16), PDI-SC-S222-13.2to15.2 (580-79444-17), PDI-SC-S248-0to2 (580-79444-18), PDI-SC-S248-2to4 (580-79444-19), PDI-SC-S248-4to6.2 (580-79444-20), PDI-SC-S139-0to2 (580-79444-21), PDI-SC-S139-2to4.1 (580-79444-22), PDI-SC-S139-4.1to5.9 (580-79444-23), PDI-SC-S139-4.1to5.9D (580-79444-24), PDI-SC-S117-0to2 (580-79444-25), PDI-SC-S117-2to4 (580-79444-26), PDI-SC-S117-4to6 (580-79444-27), PDI-SC-S219-0to2 (580-79444-28), PDI-SC-S219-2to4 (580-79444-29), PDI-SC-S219-4to5.2 (580-79444-30), PDI-SC-S105-0to2 (580-79444-31), PDI-SC-S105-2to4 (580-79444-32), PDI-SC-S105-4to5.6 (580-79444-33), PDI-SC-S105-5.6to6.6 (580-79444-34), PDI-SC-S191-0to2 (580-79444-35), PDI-SC-S191-2to4 (580-79444-36), PDI-SC-S191-4to6 (580-79444-37), PDI-SC-S191-6to8.1 (580-79444-38), PDI-SC-S192-0to1.5 (580-79444-39), PDI-SC-S192-1.5to3 (580-79444-40) and PDI-SC-S192-3to4.2 (580-79444-41) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/20/2018 and 08/21/2018 and analyzed on 08/25/2018, 08/26/2018, 08/28/2018 and 08/29/2018.

Several analytes were detected in method blank MB 320-240851/1-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

Case Narrative

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

TestAmerica Job ID: 580-79444-2

Job ID: 580-79444-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

MDL and/or RL, the result has been flagged.

1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8,9-HpCDF, 1,2,3,7,8,9-HxCDF, OCDD and OCDF were detected in method blank MB 320-240898/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Several analytes were detected in method blank MB 320-241175/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-SC-S226-6to8 (580-79444-1), PDI-SC-S226-10to12 (580-79444-2), PDI-SC-S226-8to10 (580-79444-3), PDI-SC-S226-0to2 (580-79444-4), PDI-SC-S226-2to4 (580-79444-5), PDI-SC-S226-12to14 (580-79444-6), PDI-SC-S226-4to6 (580-79444-7), PDI-SC-S226-14to15.8 (580-79444-8), PDI-SC-S222-0to2 (580-79444-9), PDI-SC-S222-4to5 (580-79444-11), PDI-SC-S222-5to7.2 (580-79444-12), PDI-SC-S222-5to7.2D (580-79444-13), PDI-SC-S222-7.2to9.2 (580-79444-14), PDI-SC-S222-9.2to11.2 (580-79444-15), PDI-SC-S222-11.2to13.2 (580-79444-16), PDI-SC-S222-13.2to15.2 (580-79444-17), PDI-SC-S248-0to2 (580-79444-18), PDI-SC-S248-2to4 (580-79444-19), PDI-SC-S248-4to6.2 (580-79444-20), PDI-SC-S219-4to5.2 (580-79444-30), PDI-SC-S105-0to2 (580-79444-31), PDI-SC-S105-2to4 (580-79444-32), PDI-SC-S105-4to5.6 (580-79444-33), PDI-SC-S105-5.6to6.6 (580-79444-34), PDI-SC-S191-0to2 (580-79444-35), PDI-SC-S191-2to4 (580-79444-36), PDI-SC-S191-4to6 (580-79444-37), PDI-SC-S191-6to8.1 (580-79444-38), PDI-SC-S192-0to1.5 (580-79444-39), PDI-SC-S192-1.5to3 (580-79444-40), PDI-SC-S192-3to4.2 (580-79444-41), (CCV 320-242219/30), (CCV 320-242218/16), (LCS 320-241175/2-A), (MB 320-241175/1-A), (CCV 320-242211/2), (CCV 320-242032/26), (CCV 320-242030/13), (LCS 320-240851/2-A), (LCSD 320-240851/3-A), (MB 320-240851/1-A), (CCV 320-242803/1), and (CCV 320-242805/14). 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 3D5 exceeded this criteria: PDI-SC-S139-0to2 (580-79444-21), PDI-SC-S139-2to4.1 (580-79444-22), PDI-SC-S139-4.1to5.9 (580-79444-23), PDI-SC-S139-4.1to5.9D (580-79444-24), PDI-SC-S117-0to2 (580-79444-25), PDI-SC-S117-2to4 (580-79444-26), PDI-SC-S219-0to2 (580-79444-28), PDI-SC-S219-2to4 (580-79444-29), PDI-SC-S105-4to5.6 (580-79444-33), PDI-SC-S105-5.6to6.6 (580-79444-34), PDI-SC-S191-0to2 (580-79444-35), PDI-SC-S191-2to4 (580-79444-36), (CCV 320-242614/2), (LCS 320-239721/2-A), (LCSD 320-239721/3-A), (LCSD 320-241175/3-A), (MB 320-239721/1-A), (CCV 320-242080/27), (LCS 320-240898/2-A), (LCSD 320-240898/3-A) and (MB 320-240898/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SC-S222-0to2 (580-79444-9), PDI-SC-S222-2to4 (580-79444-10), PDI-SC-S222-4to5 (580-79444-11), PDI-SC-S117-0to2 (580-79444-25), PDI-SC-S219-0to2 (580-79444-28), PDI-SC-S191-2to4 (580-79444-36), PDI-SC-S191-4to6 (580-79444-37), PDI-SC-S192-1.5to3 (580-79444-40) and PDI-SC-S192-3to4.2 (580-79444-41). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SC-S222-0to2 (580-79444-9), PDI-SC-S222-2to4 (580-79444-10), PDI-SC-S222-4to5 (580-79444-11), PDI-SC-S192-0to1.5 (580-79444-39) and PDI-SC-S192-1.5to3 (580-79444-40). The reporting limit (RL) for the affected analytes has been raised to be equal to the EDL, and a "G" qualifier applied.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: PDI-SC-S226-8to10 (580-79444-3), PDI-SC-S222-5to7.2 (580-79444-12), and PDI-SC-S117-4to6 (580-79444-27). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

Case Narrative

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

TestAmerica Job ID: 580-79444-2

Job ID: 580-79444-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: PDI-SC-S222-0to2 (580-79444-9) and PDI-SC-S222-4to5 (580-79444-11). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SC-S226-6to8 (580-79444-1), PDI-SC-S226-10to12 (580-79444-2), PDI-SC-S226-8to10 (580-79444-3), PDI-SC-S226-0to2 (580-79444-4), PDI-SC-S226-2to4 (580-79444-5), PDI-SC-S226-12to14 (580-79444-6), PDI-SC-S226-4to6 (580-79444-7), PDI-SC-S226-14to15.8 (580-79444-8), PDI-SC-S222-0to2 (580-79444-9), PDI-SC-S222-2to4 (580-79444-10), PDI-SC-S222-4to5 (580-79444-11), PDI-SC-S222-5to7.2 (580-79444-12), PDI-SC-S222-5to7.2D (580-79444-13), PDI-SC-S222-7.2to9.2 (580-79444-14), PDI-SC-S222-9.2to11.2 (580-79444-15), PDI-SC-S222-11.2to13.2 (580-79444-16), PDI-SC-S222-13.2to15.2 (580-79444-17), PDI-SC-S248-0to2 (580-79444-18), PDI-SC-S248-2to4 (580-79444-19), PDI-SC-S248-4to6.2 (580-79444-20), PDI-SC-S139-0to2 (580-79444-21), PDI-SC-S139-2to4.1 (580-79444-22), PDI-SC-S139-4.1to5.9 (580-79444-23), PDI-SC-S139-4.1to5.9D (580-79444-24), PDI-SC-S117-0to2 (580-79444-25), PDI-SC-S117-2to4 (580-79444-26), PDI-SC-S117-4to6 (580-79444-27), PDI-SC-S219-0to2 (580-79444-28), PDI-SC-S219-2to4 (580-79444-29), PDI-SC-S219-4to5.2 (580-79444-30), PDI-SC-S105-0to2 (580-79444-31), PDI-SC-S105-2to4 (580-79444-32), PDI-SC-S105-4to5.6 (580-79444-33), PDI-SC-S105-5.6to6.6 (580-79444-34), PDI-SC-S191-0to2 (580-79444-35), PDI-SC-S191-2to4 (580-79444-36), PDI-SC-S191-4to6 (580-79444-37), PDI-SC-S191-6to8.1 (580-79444-38), PDI-SC-S192-0to1.5 (580-79444-39), PDI-SC-S192-1.5to3 (580-79444-40) and PDI-SC-S192-3to4.2 (580-79444-41). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-240851.

The following sample was transferred to a new container since the original sample container was broken: PDI-SC-S191-0to2 (580-79444-35). The sample was not compromised in any way. Sample is associated with preparation batch 320-241175.

Samples PDI-SC-S222-0to2 (580-79444-9)[20X], PDI-SC-S117-2to4 (580-79444-26)[10X], PDI-SC-S117-4to6 (580-79444-27)[10X] and PDI-SC-S105-5.6to6.6 (580-79444-34)[10X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

DIOXIN/ FURAN

Samples PDI-RB-SS-180807 (580-79444-42), PDI-RB-SS-180808 (580-79444-43) and PDI-RB-SS-180806 (580-79444-44) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 08/13/2018 and 08/14/2018 and analyzed on 08/17/2018 and 08/28/2018.

1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDD, OCDD and OCDF were detected in method blank MB 320-239597/1-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.

1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF and 1,2,3,7,8,9-HxCDF were detected in method blank MB 320-239721/1-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.

1,2,3,4,6,7,8-HpCDF and 1,2,3,6,7,8-HxCDF failed the recovery criteria high for LCS 320-239597/2-A. These analytes were biased high in the LCS and were not detected in the associated samples above the reporting limit; therefore, the data have been reported.

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-RB-SS-180807 (580-79444-42), PDI-RB-SS-180806 (580-79444-44), (CCV 320-240347/14), (MB 320-239597/1-A). 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 3D5 exceeded this criteria: PDI-RB-SS-180808 (580-79444-43), (CCV 320-242614/2), (LCS 320-239721/2-A), (LCSD 320-239721/3-A), (LCSD 320-241175/3-A), (MB 320-239721/1-A). This retention time shift is due to normal and reasonable column

Case Narrative

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

TestAmerica Job ID: 580-79444-2

Job ID: 580-79444-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

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.

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

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Definitions/Glossary

Client: AECOM

TestAmerica Job ID: 580-79444-2

Project/Site: Portland Harbor Pre-Remedial Design

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.
E	Result exceeded calibration range.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-6to8

Date Collected: 08/06/18 15:05

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-1

Matrix: Solid

Percent Solids: 52.2

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	0.30	B	0.0048	0.0030	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,4,6,7,8-HpCDF	0.045	B	0.0048	0.00066	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,4,7,8,9-HpCDF	0.0026	J B	0.0048	0.00081	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,4,7,8-HxCDD	0.0022	J B	0.0048	0.00020	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,4,7,8-HxCDF	0.0035	J	0.0048	0.00040	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,6,7,8-HxCDD	0.010		0.0048	0.00019	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0048	0.00040	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,7,8,9-HxCDD	0.0051		0.0048	0.00018	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,7,8,9-HxCDF	0.00044	J B	0.0048	0.00021	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,7,8-PeCDD	0.0011	J	0.0048	0.00018	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
1,2,3,7,8-PeCDF	0.00093	J	0.0048	0.00022	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
2,3,4,6,7,8-HxCDF	0.0011	J	0.0048	0.00031	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
2,3,4,7,8-PeCDF	0.0012	J	0.0048	0.00025	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
2,3,7,8-TCDD	0.0014		0.00096	0.000067	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
OCDD	3.3	B	0.0096	0.0049	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
OCDF	0.22	B	0.0096	0.00012	ug/Kg	☼	08/20/18 12:39	08/25/18 02:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,7,8-PeCDD	60		25 - 181				08/20/18 12:39	08/25/18 02:26	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				08/20/18 12:39	08/25/18 02:26	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136				08/20/18 12:39	08/25/18 02:26	1
13C-2,3,4,7,8-PeCDF	59		21 - 178				08/20/18 12:39	08/25/18 02:26	1
13C-2,3,7,8-TCDD	64		25 - 164				08/20/18 12:39	08/25/18 02:26	1
13C-OCDD	43		17 - 157				08/20/18 12:39	08/25/18 02:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/20/18 12:39	08/25/18 02:26	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0026		0.00096	0.00045	ug/Kg	☼	08/20/18 12:39	08/26/18 00:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169				08/20/18 12:39	08/26/18 00:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197				08/20/18 12:39	08/26/18 00:56	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-10to12

Date Collected: 08/06/18 15:15

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-2

Matrix: Solid

Percent Solids: 57.2

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	0.21	B	0.0044	0.00095	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,4,6,7,8-HpCDF	0.032	B	0.0044	0.00031	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,4,7,8,9-HpCDF	0.0019	J B	0.0044	0.00041	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,4,7,8-HxCDD	0.0020	J B	0.0044	0.00040	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,4,7,8-HxCDF	0.0034	J	0.0044	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,6,7,8-HxCDD	0.017		0.0044	0.00037	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,6,7,8-HxCDF	0.0021	J	0.0044	0.00055	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,7,8,9-HxCDD	0.0060		0.0044	0.00035	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00029	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,7,8-PeCDD	0.0015	J	0.0044	0.00013	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
1,2,3,7,8-PeCDF	0.00089	J	0.0044	0.00032	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
2,3,4,6,7,8-HxCDF	0.0013	J	0.0044	0.00043	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
2,3,4,7,8-PeCDF	0.0015	J	0.0044	0.00035	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
2,3,7,8-TCDD	0.00056	J q	0.00089	0.000037	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
OCDD	2.1	B	0.0089	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
OCDF	0.11	B	0.0089	0.000072	ug/Kg	☼	08/20/18 12:39	08/25/18 10:36	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,4,7,8,9-HpCDF	31		26 - 138				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,7,8-PeCDD	53		25 - 181				08/20/18 12:39	08/25/18 10:36	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				08/20/18 12:39	08/25/18 10:36	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136				08/20/18 12:39	08/25/18 10:36	1
13C-2,3,4,7,8-PeCDF	53		21 - 178				08/20/18 12:39	08/25/18 10:36	1
13C-2,3,7,8-TCDD	62		25 - 164				08/20/18 12:39	08/25/18 10:36	1
13C-OCDD	31		17 - 157				08/20/18 12:39	08/25/18 10:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/20/18 12:39	08/25/18 10:36	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0034		0.00089	0.00039	ug/Kg	☼	08/20/18 12:39	08/26/18 01:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169				08/20/18 12:39	08/26/18 01:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197				08/20/18 12:39	08/26/18 01:34	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-8to10

Date Collected: 08/06/18 15:10

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-3

Matrix: Solid

Percent Solids: 52.7

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	0.18	B	0.0048	0.00068	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,4,6,7,8-HpCDF	0.031	B	0.0048	0.00029	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,4,7,8,9-HpCDF	0.0018	J B	0.0048	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,4,7,8-HxCDD	0.0018	J B	0.0048	0.00034	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,4,7,8-HxCDF	0.0024	J	0.0048	0.00068	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,6,7,8-HxCDD	0.015		0.0048	0.00032	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,6,7,8-HxCDF	0.0015	J	0.0048	0.00067	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,7,8,9-HxCDD	0.0056		0.0048	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,7,8,9-HxCDF	ND		0.0048	0.00036	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,7,8-PeCDD	0.0012	J	0.0048	0.00016	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
1,2,3,7,8-PeCDF	0.00064	J q	0.0048	0.00022	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
2,3,4,6,7,8-HxCDF	0.00076	J	0.0048	0.00052	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
2,3,4,7,8-PeCDF	0.0010	J	0.0048	0.00023	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
2,3,7,8-TCDD	0.00097		0.00096	0.000047	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
OCDD	1.9	B	0.0096	0.00045	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
OCDF	0.12	B	0.0096	0.00016	ug/Kg	☼	08/20/18 12:39	08/25/18 11:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	30		23 - 140				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,4,7,8,9-HpCDF	18 *		26 - 138				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				08/20/18 12:39	08/25/18 11:22	1
13C-1,2,3,7,8-PeCDF	44		24 - 185				08/20/18 12:39	08/25/18 11:22	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				08/20/18 12:39	08/25/18 11:22	1
13C-2,3,4,7,8-PeCDF	44		21 - 178				08/20/18 12:39	08/25/18 11:22	1
13C-2,3,7,8-TCDD	58		25 - 164				08/20/18 12:39	08/25/18 11:22	1
13C-OCDD	22		17 - 157				08/20/18 12:39	08/25/18 11:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/20/18 12:39	08/25/18 11:22	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	0.0097		0.00096	0.00040	ug/Kg	☼	08/20/18 12:39	08/26/18 02:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169				08/20/18 12:39	08/26/18 02:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197				08/20/18 12:39	08/26/18 02:12	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-0to2

Date Collected: 08/06/18 14:50

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-4

Matrix: Solid

Percent Solids: 44.3

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	0.11	B	0.0056	0.00082	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,4,6,7,8-HpCDF	0.018	q B	0.0056	0.00028	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0056	0.00033	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,4,7,8-HxCDD	0.0010	J q B	0.0056	0.00025	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,4,7,8-HxCDF	ND		0.0056	0.00072	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,6,7,8-HxCDD	0.0043	J	0.0056	0.00023	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,6,7,8-HxCDF	ND		0.0056	0.00067	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,7,8,9-HxCDD	0.0029	J	0.0056	0.00022	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,7,8,9-HxCDF	ND		0.0056	0.00034	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,7,8-PeCDD	0.00065	J	0.0056	0.00027	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
1,2,3,7,8-PeCDF	0.00040	J	0.0056	0.00020	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
2,3,4,6,7,8-HxCDF	ND		0.0056	0.00054	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
2,3,4,7,8-PeCDF	0.00058	J	0.0056	0.00024	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
2,3,7,8-TCDD	0.00036	J q	0.0011	0.00019	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
OCDD	1.1	B	0.011	0.0014	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1
OCDF	0.079	B	0.011	0.00026	ug/Kg	☼	08/20/18 12:39	08/25/18 12:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	08/20/18 12:39	08/25/18 12:08	1
13C-1,2,3,7,8-PeCDF	55		24 - 185	08/20/18 12:39	08/25/18 12:08	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	08/20/18 12:39	08/25/18 12:08	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	08/20/18 12:39	08/25/18 12:08	1
13C-2,3,7,8-TCDD	65		25 - 164	08/20/18 12:39	08/25/18 12:08	1
13C-OCDD	43		17 - 157	08/20/18 12:39	08/25/18 12:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	140		35 - 197	08/20/18 12:39	08/25/18 12:08	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	0.00091	J	0.0011	0.00035	ug/Kg	☼	08/20/18 12:39	08/26/18 02:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	08/20/18 12:39	08/26/18 02:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	08/20/18 12:39	08/26/18 02:49	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-2to4

Date Collected: 08/06/18 14:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-5

Matrix: Solid

Percent Solids: 51.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.11	B	0.0049	0.00079	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,4,6,7,8-HpCDF	0.020	B	0.0049	0.00035	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,4,7,8,9-HpCDF	0.0012	J B	0.0049	0.00039	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0049	0.00023	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,4,7,8-HxCDF	0.0018	J	0.0049	0.00034	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,6,7,8-HxCDD	0.0039	J	0.0049	0.00021	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,6,7,8-HxCDF	0.00094	J	0.0049	0.00033	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,7,8,9-HxCDD	0.0027	J	0.0049	0.00020	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,7,8,9-HxCDF	ND		0.0049	0.00019	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,7,8-PeCDD	0.00055	J	0.0049	0.00014	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
1,2,3,7,8-PeCDF	0.00039	J	0.0049	0.00012	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
2,3,4,6,7,8-HxCDF	0.00045	J	0.0049	0.00025	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
2,3,4,7,8-PeCDF	0.00049	J q	0.0049	0.00013	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
2,3,7,8-TCDD	0.00070	J	0.00098	0.00012	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
OCDD	1.3	B	0.0098	0.00049	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1
OCDF	0.15	B	0.0098	0.00019	ug/Kg	☼	08/20/18 12:39	08/25/18 12:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	48		23 - 140	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,4,7,8-HxCDF	52		26 - 152	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,7,8-PeCDD	57		25 - 181	08/20/18 12:39	08/25/18 12:54	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/20/18 12:39	08/25/18 12:54	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	08/20/18 12:39	08/25/18 12:54	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	08/20/18 12:39	08/25/18 12:54	1
13C-2,3,7,8-TCDD	63		25 - 164	08/20/18 12:39	08/25/18 12:54	1
13C-OCDD	40		17 - 157	08/20/18 12:39	08/25/18 12:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197	08/20/18 12:39	08/25/18 12:54	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00083	J	0.00098	0.00025	ug/Kg	☼	08/20/18 12:39	08/26/18 03:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	08/20/18 12:39	08/26/18 03:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	08/20/18 12:39	08/26/18 03:27	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-12to14

Date Collected: 08/06/18 15:20

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-6

Matrix: Solid

Percent Solids: 56.6

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	0.16	B	0.0044	0.00076	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,4,6,7,8-HpCDF	0.022	B	0.0044	0.00029	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,4,7,8,9-HpCDF	0.0015	J B	0.0044	0.00035	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,4,7,8-HxCDD	0.0017	J B	0.0044	0.00034	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,4,7,8-HxCDF	0.0031	J	0.0044	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,6,7,8-HxCDD	0.012		0.0044	0.00032	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,6,7,8-HxCDF	0.0018	J	0.0044	0.00054	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,7,8,9-HxCDD	0.0045		0.0044	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,7,8-PeCDD	0.0012	J	0.0044	0.00017	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
1,2,3,7,8-PeCDF	0.00083	J	0.0044	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0044	0.00044	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
2,3,4,7,8-PeCDF	0.0013	J	0.0044	0.00033	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
2,3,7,8-TCDD	0.00068	J	0.00087	0.000090	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
OCDD	1.5	B	0.0087	0.00046	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
OCDF	0.071	B	0.0087	0.00012	ug/Kg	☼	08/20/18 12:39	08/25/18 13:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,7,8-PeCDD	55		25 - 181				08/20/18 12:39	08/25/18 13:40	1
13C-1,2,3,7,8-PeCDF	55		24 - 185				08/20/18 12:39	08/25/18 13:40	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/20/18 12:39	08/25/18 13:40	1
13C-2,3,4,7,8-PeCDF	56		21 - 178				08/20/18 12:39	08/25/18 13:40	1
13C-2,3,7,8-TCDD	58		25 - 164				08/20/18 12:39	08/25/18 13:40	1
13C-OCDD	39		17 - 157				08/20/18 12:39	08/25/18 13:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197				08/20/18 12:39	08/25/18 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	0.0021	q	0.00087	0.00023	ug/Kg	☼	08/20/18 12:39	08/26/18 04:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169				08/20/18 12:39	08/26/18 04:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197				08/20/18 12:39	08/26/18 04:05	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-4to6

Date Collected: 08/06/18 15:00

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-7

Matrix: Solid

Percent Solids: 57.4

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	0.068	B	0.0043	0.00048	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,4,6,7,8-HpCDF	0.012	B	0.0043	0.00022	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,4,7,8,9-HpCDF	0.00084	J B	0.0043	0.00026	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,4,7,8-HxCDD	0.00079	J B	0.0043	0.00019	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,4,7,8-HxCDF	ND		0.0043	0.00036	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,6,7,8-HxCDD	0.0030	J	0.0043	0.00017	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,6,7,8-HxCDF	ND		0.0043	0.00036	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,7,8,9-HxCDD	0.0019	J	0.0043	0.00016	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,7,8,9-HxCDF	ND		0.0043	0.00020	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,7,8-PeCDD	0.00044	J	0.0043	0.000092	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
1,2,3,7,8-PeCDF	ND		0.0043	0.00014	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
2,3,4,6,7,8-HxCDF	ND		0.0043	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
2,3,4,7,8-PeCDF	0.00029	J q	0.0043	0.00015	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
2,3,7,8-TCDD	0.00038	J q	0.00086	0.000083	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
OCDD	0.77	B	0.0086	0.00032	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
OCDF	0.059	B	0.0086	0.00011	ug/Kg	☼	08/20/18 12:39	08/25/18 14:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				08/20/18 12:39	08/25/18 14:26	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				08/20/18 12:39	08/25/18 14:26	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/20/18 12:39	08/25/18 14:26	1
13C-2,3,4,7,8-PeCDF	55		21 - 178				08/20/18 12:39	08/25/18 14:26	1
13C-2,3,7,8-TCDD	61		25 - 164				08/20/18 12:39	08/25/18 14:26	1
13C-OCDD	38		17 - 157				08/20/18 12:39	08/25/18 14:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/20/18 12:39	08/25/18 14:26	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	0.00065	J q	0.00086	0.00020	ug/Kg	☼	08/20/18 12:39	08/26/18 04:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	59		24 - 169				08/20/18 12:39	08/26/18 04:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/20/18 12:39	08/26/18 04:43	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-14to15.8

Lab Sample ID: 580-79444-8

Date Collected: 08/06/18 15:25

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.33	B	0.0045	0.0016	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,4,6,7,8-HpCDF	0.049	B	0.0045	0.00048	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,4,7,8,9-HpCDF	0.0029	J B	0.0045	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,4,7,8-HxCDD	0.0028	J B	0.0045	0.00045	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,4,7,8-HxCDF	0.0053		0.0045	0.00060	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,6,7,8-HxCDD	0.017		0.0045	0.00043	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,6,7,8-HxCDF	0.0033	J	0.0045	0.00056	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,7,8,9-HxCDD	0.0073		0.0045	0.00040	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,7,8,9-HxCDF	0.00032	J B q	0.0045	0.00032	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,7,8-PeCDD	0.0018	J	0.0045	0.00018	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
1,2,3,7,8-PeCDF	0.0021	J	0.0045	0.00043	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
2,3,4,6,7,8-HxCDF	0.0022	J	0.0045	0.00046	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
2,3,4,7,8-PeCDF	0.0039	J	0.0045	0.00046	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
2,3,7,8-TCDD	0.0010		0.00090	0.000079	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
OCDD	3.1	B	0.0090	0.0010	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
OCDF	0.18	B	0.0090	0.00012	ug/Kg	☼	08/20/18 12:39	08/25/18 15:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,7,8-PeCDD	66		25 - 181				08/20/18 12:39	08/25/18 15:12	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				08/20/18 12:39	08/25/18 15:12	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136				08/20/18 12:39	08/25/18 15:12	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				08/20/18 12:39	08/25/18 15:12	1
13C-2,3,7,8-TCDD	66		25 - 164				08/20/18 12:39	08/25/18 15:12	1
13C-OCDD	44		17 - 157				08/20/18 12:39	08/25/18 15:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197				08/20/18 12:39	08/25/18 15:12	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	0.0050		0.00090	0.00032	ug/Kg	☼	08/20/18 12:39	08/26/18 05:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169				08/20/18 12:39	08/26/18 05:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/20/18 12:39	08/26/18 05:21	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-0to2

Date Collected: 08/07/18 09:45

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-9

Matrix: Solid

Percent Solids: 39.8

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8,9-HpCDF	0.29	B G	0.032	0.032	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,4,7,8-HxCDD	0.045	B G	0.019	0.019	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,4,7,8-HxCDF	0.12	G	0.030	0.030	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,6,7,8-HxCDD	0.27	G	0.016	0.016	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,6,7,8-HxCDF	0.061	G	0.026	0.026	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,7,8,9-HxCDD	0.25	G	0.016	0.016	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,7,8,9-HxCDF	ND	G	0.029	0.029	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,7,8-PeCDD	0.090	G	0.0063	0.0063	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
1,2,3,7,8-PeCDF	0.064		0.0062	0.0047	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
2,3,4,6,7,8-HxCDF	ND	q G	0.027	0.027	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
2,3,4,7,8-PeCDF	0.021		0.0062	0.0051	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1
2,3,7,8-TCDD	0.39	G	0.0022	0.0022	ug/Kg	☼	08/20/18 12:39	08/25/18 15:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	42		23 - 140	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,4,7,8-HxCDF	132		26 - 152	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,6,7,8-HxCDD	145	*	28 - 130	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,6,7,8-HxCDF	141	*	26 - 123	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,7,8-PeCDD	84		25 - 181	08/20/18 12:39	08/25/18 15:58	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	08/20/18 12:39	08/25/18 15:58	1
13C-2,3,4,6,7,8-HxCDF	85		28 - 136	08/20/18 12:39	08/25/18 15:58	1
13C-2,3,4,7,8-PeCDF	84		21 - 178	08/20/18 12:39	08/25/18 15:58	1
13C-2,3,7,8-TCDD	69		25 - 164	08/20/18 12:39	08/25/18 15:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/20/18 12:39	08/25/18 15:58	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	28	B	0.12	0.076	ug/Kg	☼	08/20/18 12:39	08/29/18 14:20	20
1,2,3,4,6,7,8-HpCDF	5.7	B	0.12	0.039	ug/Kg	☼	08/20/18 12:39	08/29/18 14:20	20
OCDD	440	E B	0.25	0.14	ug/Kg	☼	08/20/18 12:39	08/29/18 14:20	20
OCDF	65	B	0.25	0.014	ug/Kg	☼	08/20/18 12:39	08/29/18 14:20	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	74		23 - 140	08/20/18 12:39	08/29/18 14:20	20
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143	08/20/18 12:39	08/29/18 14:20	20
13C-OCDD	85		17 - 157	08/20/18 12:39	08/29/18 14:20	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	08/20/18 12:39	08/29/18 14:20	20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.038	G	0.0050	0.0050	ug/Kg	☼	08/20/18 12:39	08/26/18 05:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	81		24 - 169	08/20/18 12:39	08/26/18 05:59	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-0to2

Date Collected: 08/07/18 09:45

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-9

Matrix: Solid

Percent Solids: 39.8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197	08/20/18 12:39	08/26/18 05:59	1

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-2to4

Lab Sample ID: 580-79444-10

Date Collected: 08/07/18 09:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 56.4

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	3.5	E B G	0.0060	0.0060	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,4,6,7,8-HpCDF	0.74	B G	0.0061	0.0061	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,4,7,8,9-HpCDF	0.044	B G	0.0068	0.0068	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,4,7,8-HxCDD	0.012	B	0.0045	0.00093	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,4,7,8-HxCDF	0.029		0.0045	0.0030	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,6,7,8-HxCDD	0.078		0.0045	0.00096	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,6,7,8-HxCDF	0.026		0.0045	0.0031	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,7,8,9-HxCDD	0.034		0.0045	0.00087	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,7,8,9-HxCDF	ND		0.0045	0.0024	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,7,8-PeCDD	0.0099		0.0045	0.00085	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
1,2,3,7,8-PeCDF	0.0049		0.0045	0.0023	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
2,3,4,6,7,8-HxCDF	0.0072		0.0045	0.0025	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
2,3,4,7,8-PeCDF	0.0058		0.0045	0.0024	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
2,3,7,8-TCDD	0.036		0.00090	0.00035	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
OCDD	53	E B G	0.10	0.10	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
OCDF	7.1	E B	0.0090	0.0021	ug/Kg	☼	08/20/18 12:39	08/25/18 16:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	31		23 - 140				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,4,7,8,9-HpCDF	31		26 - 138				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,4,7,8-HxCDF	106		26 - 152				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,6,7,8-HxCDF	103		26 - 123				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,7,8-PeCDD	67		25 - 181				08/20/18 12:39	08/25/18 16:44	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				08/20/18 12:39	08/25/18 16:44	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136				08/20/18 12:39	08/25/18 16:44	1
13C-2,3,4,7,8-PeCDF	67		21 - 178				08/20/18 12:39	08/25/18 16:44	1
13C-2,3,7,8-TCDD	59		25 - 164				08/20/18 12:39	08/25/18 16:44	1
13C-OCDD	32		17 - 157				08/20/18 12:39	08/25/18 16:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197				08/20/18 12:39	08/25/18 16:44	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	0.0077	q G	0.0018	0.0018	ug/Kg	☼	08/20/18 12:39	08/26/18 06:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				08/20/18 12:39	08/26/18 06:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	131		35 - 197				08/20/18 12:39	08/26/18 06:37	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-4to5

Date Collected: 08/07/18 09:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-11

Matrix: Solid

Percent Solids: 64.5

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	2.8	E B G	0.0087	0.0087	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,4,6,7,8-HpCDF	1.2	B G	0.012	0.012	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,4,7,8,9-HpCDF	0.069	B G	0.0067	0.0067	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,4,7,8-HxCDD	0.0065	B	0.0039	0.0036	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,4,7,8-HxCDF	0.033	G	0.015	0.015	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,6,7,8-HxCDD	0.082		0.0039	0.0037	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,6,7,8-HxCDF	0.048	G	0.013	0.013	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,7,8,9-HxCDD	0.023		0.0039	0.0033	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,7,8,9-HxCDF	ND	G	0.017	0.017	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,7,8-PeCDD	0.0081		0.0039	0.0023	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
1,2,3,7,8-PeCDF	ND	G	0.0040	0.0040	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
2,3,4,6,7,8-HxCDF	0.016	G	0.014	0.014	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
2,3,4,7,8-PeCDF	0.0094	G	0.0048	0.0048	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
2,3,7,8-TCDD	0.0067		0.00077	0.00055	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
OCDD	30	E B G	0.016	0.016	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
OCDF	5.1	E B	0.0077	0.0023	ug/Kg	☼	08/20/18 12:39	08/25/18 17:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35		23 - 140				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,4,6,7,8-HpCDF	31		28 - 143				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,4,7,8-HxCDF	124		26 - 152				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,6,7,8-HxCDF	135 *		26 - 123				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				08/20/18 12:39	08/25/18 17:30	1
13C-1,2,3,7,8-PeCDF	68		24 - 185				08/20/18 12:39	08/25/18 17:30	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136				08/20/18 12:39	08/25/18 17:30	1
13C-2,3,4,7,8-PeCDF	77		21 - 178				08/20/18 12:39	08/25/18 17:30	1
13C-2,3,7,8-TCDD	64		25 - 164				08/20/18 12:39	08/25/18 17:30	1
13C-OCDD	35		17 - 157				08/20/18 12:39	08/25/18 17:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	142		35 - 197				08/20/18 12:39	08/25/18 17:30	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	0.0082	G	0.0052	0.0052	ug/Kg	☼	08/20/18 12:39	08/26/18 07:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	80		24 - 169				08/20/18 12:39	08/26/18 07:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197				08/20/18 12:39	08/26/18 07:14	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-5to7.2

Lab Sample ID: 580-79444-12

Date Collected: 08/07/18 10:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 79.8

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	0.035	B	0.0031	0.00042	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,4,6,7,8-HpCDF	0.0089	B	0.0031	0.00053	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,4,7,8,9-HpCDF	ND		0.0031	0.00066	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,4,7,8-HxCDD	0.00027	J B	0.0031	0.00012	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,4,7,8-HxCDF	ND		0.0031	0.00021	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,6,7,8-HxCDD	0.00078	J q	0.0031	0.00012	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,6,7,8-HxCDF	0.00036	J	0.0031	0.00020	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,7,8,9-HxCDD	0.00054	J	0.0031	0.00011	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00016	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,7,8-PeCDD	ND		0.0031	0.000088	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
1,2,3,7,8-PeCDF	ND		0.0031	0.000075	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
2,3,4,6,7,8-HxCDF	ND		0.0031	0.00017	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
2,3,4,7,8-PeCDF	ND		0.0031	0.000077	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
2,3,7,8-TCDD	0.00030	J q	0.00062	0.000041	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
2,3,7,8-TCDF	0.00021	J	0.00062	0.000065	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
OCDD	0.63	B	0.0062	0.00074	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1
OCDF	0.087	B	0.0062	0.00058	ug/Kg	✱	08/20/18 12:39	08/25/18 18:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	21	*	23 - 140	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,4,6,7,8-HpCDF	21	*	28 - 143	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,4,7,8,9-HpCDF	21	*	26 - 138	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	08/20/18 12:39	08/25/18 18:16	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	08/20/18 12:39	08/25/18 18:16	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136	08/20/18 12:39	08/25/18 18:16	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	08/20/18 12:39	08/25/18 18:16	1
13C-2,3,7,8-TCDD	62		25 - 164	08/20/18 12:39	08/25/18 18:16	1
13C-2,3,7,8-TCDF	60		24 - 169	08/20/18 12:39	08/25/18 18:16	1
13C-OCDD	18		17 - 157	08/20/18 12:39	08/25/18 18:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	127		35 - 197	08/20/18 12:39	08/25/18 18:16	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-5to7.2D

Lab Sample ID: 580-79444-13

Date Collected: 08/07/18 10:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 79.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.033	B	0.0031	0.00026	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,4,6,7,8-HpCDF	0.0084	B	0.0031	0.00013	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,4,7,8,9-HpCDF	0.00050	J B	0.0031	0.00014	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,4,7,8-HxCDD	0.00024	J B	0.0031	0.000062	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,4,7,8-HxCDF	ND		0.0031	0.00011	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,6,7,8-HxCDD	0.00080	J	0.0031	0.000059	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,6,7,8-HxCDF	ND		0.0031	0.00011	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,7,8,9-HxCDD	0.00065	J	0.0031	0.000055	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,7,8,9-HxCDF	0.00016	J B	0.0031	0.000059	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,7,8-PeCDD	0.00014	J q	0.0031	0.000031	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
1,2,3,7,8-PeCDF	0.000061	J q	0.0031	0.000056	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
2,3,4,6,7,8-HxCDF	0.00012	J	0.0031	0.000087	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
2,3,4,7,8-PeCDF	ND		0.0031	0.000056	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
2,3,7,8-TCDD	0.00027	J q	0.00062	0.000020	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
2,3,7,8-TCDF	0.00020	J	0.00062	0.000040	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
OCDD	0.59	B	0.0062	0.00030	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1
OCDF	0.081	B	0.0062	0.000050	ug/Kg	☼	08/20/18 12:39	08/25/18 23:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	08/20/18 12:39	08/25/18 23:42	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	08/20/18 12:39	08/25/18 23:42	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	08/20/18 12:39	08/25/18 23:42	1
13C-2,3,4,7,8-PeCDF	51		21 - 178	08/20/18 12:39	08/25/18 23:42	1
13C-2,3,7,8-TCDD	60		25 - 164	08/20/18 12:39	08/25/18 23:42	1
13C-2,3,7,8-TCDF	59		24 - 169	08/20/18 12:39	08/25/18 23:42	1
13C-OCDD	36		17 - 157	08/20/18 12:39	08/25/18 23:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	124		35 - 197	08/20/18 12:39	08/25/18 23:42	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-7.2to9.2

Lab Sample ID: 580-79444-14

Date Collected: 08/07/18 10:05

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.3

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0031	J B	0.0043	0.000054	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,4,6,7,8-HpCDF	0.00051	J B	0.0043	0.000038	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,4,7,8,9-HpCDF	0.00018	J B q	0.0043	0.000040	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,4,7,8-HxCDD	0.00014	J B	0.0043	0.000051	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,4,7,8-HxCDF	ND		0.0043	0.000047	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,6,7,8-HxCDD	0.00013	J	0.0043	0.000047	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,6,7,8-HxCDF	ND		0.0043	0.000044	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,7,8,9-HxCDD	0.00022	J q	0.0043	0.000045	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,7,8,9-HxCDF	0.00023	J B	0.0043	0.000024	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,7,8-PeCDD	ND		0.0043	0.000037	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
1,2,3,7,8-PeCDF	ND		0.0043	0.000028	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
2,3,4,6,7,8-HxCDF	ND		0.0043	0.000037	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
2,3,4,7,8-PeCDF	ND		0.0043	0.000029	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
2,3,7,8-TCDD	ND		0.00087	0.000024	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
2,3,7,8-TCDF	0.000031	J	0.00087	0.000015	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
OCDD	0.040	B	0.0087	0.000060	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1
OCDF	0.0033	J B	0.0087	0.000031	ug/Kg	☼	08/20/18 12:39	08/26/18 00:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,4,7,8-HxCDF	45		26 - 152	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,7,8-PeCDD	53		25 - 181	08/20/18 12:39	08/26/18 00:28	1
13C-1,2,3,7,8-PeCDF	48		24 - 185	08/20/18 12:39	08/26/18 00:28	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	08/20/18 12:39	08/26/18 00:28	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	08/20/18 12:39	08/26/18 00:28	1
13C-2,3,7,8-TCDD	67		25 - 164	08/20/18 12:39	08/26/18 00:28	1
13C-2,3,7,8-TCDF	57		24 - 169	08/20/18 12:39	08/26/18 00:28	1
13C-OCDD	42		17 - 157	08/20/18 12:39	08/26/18 00:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197	08/20/18 12:39	08/26/18 00:28	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-9.2to11.2

Lab Sample ID: 580-79444-15

Date Collected: 08/07/18 10:10

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 64.3

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	0.0025	J B	0.0039	0.000053	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,4,6,7,8-HpCDF	0.00035	J B	0.0039	0.000042	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,4,7,8,9-HpCDF	0.00020	J B q	0.0039	0.000039	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,4,7,8-HxCDD	ND		0.0039	0.000058	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,4,7,8-HxCDF	ND		0.0039	0.000044	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,6,7,8-HxCDD	ND		0.0039	0.000054	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,6,7,8-HxCDF	ND		0.0039	0.000044	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,7,8,9-HxCDD	ND		0.0039	0.000051	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,7,8,9-HxCDF	0.00018	J B q	0.0039	0.000023	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,7,8-PeCDD	ND		0.0039	0.000041	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
1,2,3,7,8-PeCDF	ND		0.0039	0.000027	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
2,3,4,6,7,8-HxCDF	ND		0.0039	0.000036	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
2,3,4,7,8-PeCDF	ND		0.0039	0.000028	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
2,3,7,8-TCDD	ND		0.00077	0.000021	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
2,3,7,8-TCDF	ND		0.00077	0.000013	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
OCDD	0.030	B	0.0077	0.000069	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1
OCDF	0.0024	J B	0.0077	0.000036	ug/Kg	☼	08/20/18 12:39	08/26/18 01:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		23 - 140	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,4,7,8-HxCDD	41		32 - 141	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,4,7,8-HxCDF	41		26 - 152	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	08/20/18 12:39	08/26/18 01:14	1
13C-1,2,3,7,8-PeCDF	51		24 - 185	08/20/18 12:39	08/26/18 01:14	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136	08/20/18 12:39	08/26/18 01:14	1
13C-2,3,4,7,8-PeCDF	53		21 - 178	08/20/18 12:39	08/26/18 01:14	1
13C-2,3,7,8-TCDD	67		25 - 164	08/20/18 12:39	08/26/18 01:14	1
13C-2,3,7,8-TCDF	64		24 - 169	08/20/18 12:39	08/26/18 01:14	1
13C-OCDD	33		17 - 157	08/20/18 12:39	08/26/18 01:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	119		35 - 197	08/20/18 12:39	08/26/18 01:14	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-11.2to13.2

Lab Sample ID: 580-79444-16

Date Collected: 08/07/18 10:15

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 66.0

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	0.0014	J B	0.0038	0.000058	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,4,6,7,8-HpCDF	0.00031	J B q	0.0038	0.000077	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,4,7,8,9-HpCDF	0.00027	J B	0.0038	0.000073	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,4,7,8-HxCDD	0.000077	J B q	0.0038	0.000068	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,4,7,8-HxCDF	ND		0.0038	0.000053	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,6,7,8-HxCDD	ND		0.0038	0.000060	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,6,7,8-HxCDF	ND		0.0038	0.000054	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,7,8,9-HxCDD	0.00015	J q	0.0038	0.000058	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,7,8,9-HxCDF	0.00021	J B q	0.0038	0.000028	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,7,8-PeCDD	ND		0.0038	0.000045	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
1,2,3,7,8-PeCDF	ND		0.0038	0.000026	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
2,3,4,6,7,8-HxCDF	ND		0.0038	0.000045	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
2,3,4,7,8-PeCDF	ND		0.0038	0.000027	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
2,3,7,8-TCDD	ND		0.00077	0.000022	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
2,3,7,8-TCDF	0.000038	J q	0.00077	0.000013	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
OCDD	0.016	B	0.0077	0.000082	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1
OCDF	0.0010	J B	0.0077	0.000040	ug/Kg	✱	08/20/18 12:39	08/26/18 02:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	37		23 - 140	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,4,6,7,8-HpCDF	30		28 - 143	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,4,7,8-HxCDD	32		32 - 141	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,4,7,8-HxCDF	32		26 - 152	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,6,7,8-HxCDD	40		28 - 130	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,7,8,9-HxCDF	40		29 - 147	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,7,8-PeCDD	38		25 - 181	08/20/18 12:39	08/26/18 02:00	1
13C-1,2,3,7,8-PeCDF	44		24 - 185	08/20/18 12:39	08/26/18 02:00	1
13C-2,3,4,6,7,8-HxCDF	37		28 - 136	08/20/18 12:39	08/26/18 02:00	1
13C-2,3,4,7,8-PeCDF	45		21 - 178	08/20/18 12:39	08/26/18 02:00	1
13C-2,3,7,8-TCDD	63		25 - 164	08/20/18 12:39	08/26/18 02:00	1
13C-2,3,7,8-TCDF	50		24 - 169	08/20/18 12:39	08/26/18 02:00	1
13C-OCDD	25		17 - 157	08/20/18 12:39	08/26/18 02:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197	08/20/18 12:39	08/26/18 02:00	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-13.2to15.2

Date Collected: 08/07/18 10:20

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-17

Matrix: Solid

Percent Solids: 63.0

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	0.0017	J B	0.0039	0.000039	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,4,6,7,8-HpCDF	0.00031	J B	0.0039	0.000030	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,4,7,8,9-HpCDF	0.00017	J B	0.0039	0.000032	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,4,7,8-HxCDD	0.00013	J B q	0.0039	0.000042	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,4,7,8-HxCDF	ND		0.0039	0.000034	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,6,7,8-HxCDD	0.000091	J	0.0039	0.000039	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,6,7,8-HxCDF	ND		0.0039	0.000034	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,7,8,9-HxCDD	0.00018	J	0.0039	0.000037	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,7,8,9-HxCDF	0.00017	J B	0.0039	0.000019	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,7,8-PeCDD	ND		0.0039	0.000031	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
1,2,3,7,8-PeCDF	ND		0.0039	0.000020	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
2,3,4,6,7,8-HxCDF	ND		0.0039	0.000029	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
2,3,4,7,8-PeCDF	ND		0.0039	0.000022	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
2,3,7,8-TCDD	ND		0.00078	0.000016	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
2,3,7,8-TCDF	0.000026	J q	0.00078	0.0000096	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
OCDD	0.019	B	0.0078	0.000038	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1
OCDF	0.0014	J B	0.0078	0.000021	ug/Kg	☼	08/20/18 12:39	08/26/18 02:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,7,8-PeCDD	55		25 - 181	08/20/18 12:39	08/26/18 02:46	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	08/20/18 12:39	08/26/18 02:46	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/20/18 12:39	08/26/18 02:46	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	08/20/18 12:39	08/26/18 02:46	1
13C-2,3,7,8-TCDD	73		25 - 164	08/20/18 12:39	08/26/18 02:46	1
13C-2,3,7,8-TCDF	63		24 - 169	08/20/18 12:39	08/26/18 02:46	1
13C-OCDD	46		17 - 157	08/20/18 12:39	08/26/18 02:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/20/18 12:39	08/26/18 02:46	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S248-0to2

Lab Sample ID: 580-79444-18

Date Collected: 08/07/18 16:45

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 39.7

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	0.067	B	0.0062	0.00041	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,4,6,7,8-HpCDF	0.012	B q	0.0062	0.00020	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,4,7,8,9-HpCDF	0.00089	J B	0.0062	0.00021	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,4,7,8-HxCDD	0.00086	J B	0.0062	0.00011	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,4,7,8-HxCDF	0.0011	J	0.0062	0.00011	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,6,7,8-HxCDD	0.0026	J	0.0062	0.000099	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,6,7,8-HxCDF	0.00068	J	0.0062	0.00012	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,7,8,9-HxCDD	0.0020	J	0.0062	0.000095	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,7,8,9-HxCDF	0.00024	J B	0.0062	0.000063	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,7,8-PeCDD	0.00039	J	0.0062	0.000085	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
1,2,3,7,8-PeCDF	0.00029	J	0.0062	0.000070	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
2,3,4,6,7,8-HxCDF	0.00035	J	0.0062	0.000097	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
2,3,4,7,8-PeCDF	0.00034	J	0.0062	0.000075	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
2,3,7,8-TCDD	0.00028	J q	0.0012	0.000037	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
2,3,7,8-TCDF	0.00059	J	0.0012	0.000065	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
OCDD	0.64	B	0.012	0.00037	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1
OCDF	0.049	B	0.012	0.000040	ug/Kg	✱	08/20/18 12:39	08/26/18 03:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,6,7,8-HxCDD	51		28 - 130	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,6,7,8-HxCDF	52		26 - 123	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,7,8-PeCDD	52		25 - 181	08/20/18 12:39	08/26/18 03:32	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	08/20/18 12:39	08/26/18 03:32	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136	08/20/18 12:39	08/26/18 03:32	1
13C-2,3,4,7,8-PeCDF	51		21 - 178	08/20/18 12:39	08/26/18 03:32	1
13C-2,3,7,8-TCDD	58		25 - 164	08/20/18 12:39	08/26/18 03:32	1
13C-2,3,7,8-TCDF	59		24 - 169	08/20/18 12:39	08/26/18 03:32	1
13C-OCDD	48		17 - 157	08/20/18 12:39	08/26/18 03:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197	08/20/18 12:39	08/26/18 03:32	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S248-2to4

Lab Sample ID: 580-79444-19

Date Collected: 08/07/18 16:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.1

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	0.054	B	0.0044	0.00051	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,4,6,7,8-HpCDF	0.012	B	0.0044	0.00027	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,4,7,8,9-HpCDF	0.00077	J B	0.0044	0.00026	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,4,7,8-HxCDD	0.00059	J B q	0.0044	0.00024	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,4,7,8-HxCDF	0.00082	J	0.0044	0.00028	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,6,7,8-HxCDD	0.0020	J	0.0044	0.00022	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,6,7,8-HxCDF	0.00064	J	0.0044	0.00026	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,7,8,9-HxCDD	0.0013	J	0.0044	0.00021	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00014	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,7,8-PeCDD	ND		0.0044	0.000094	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
1,2,3,7,8-PeCDF	0.00019	J q	0.0044	0.00012	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
2,3,4,6,7,8-HxCDF	ND		0.0044	0.00022	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
2,3,4,7,8-PeCDF	ND		0.0044	0.00012	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
2,3,7,8-TCDD	0.00023	J q	0.00089	0.000036	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
2,3,7,8-TCDF	0.00066	J	0.00089	0.000088	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
OCDD	0.60	B	0.0089	0.00031	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1
OCDF	0.051	B	0.0089	0.000048	ug/Kg	☼	08/20/18 12:39	08/26/18 04:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,7,8-PeCDD	45		25 - 181	08/20/18 12:39	08/26/18 04:17	1
13C-1,2,3,7,8-PeCDF	43		24 - 185	08/20/18 12:39	08/26/18 04:17	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136	08/20/18 12:39	08/26/18 04:17	1
13C-2,3,4,7,8-PeCDF	46		21 - 178	08/20/18 12:39	08/26/18 04:17	1
13C-2,3,7,8-TCDD	74		25 - 164	08/20/18 12:39	08/26/18 04:17	1
13C-2,3,7,8-TCDF	55		24 - 169	08/20/18 12:39	08/26/18 04:17	1
13C-OCDD	43		17 - 157	08/20/18 12:39	08/26/18 04:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197	08/20/18 12:39	08/26/18 04:17	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S248-4to6.2

Lab Sample ID: 580-79444-20

Date Collected: 08/07/18 16:55

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 56.6

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	0.020	B	0.0044	0.00017	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,4,6,7,8-HpCDF	0.0033	J B q	0.0044	0.00011	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,4,7,8,9-HpCDF	0.00039	J B	0.0044	0.00012	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,4,7,8-HxCDD	ND		0.0044	0.000084	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,4,7,8-HxCDF	0.00039	J	0.0044	0.000080	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,6,7,8-HxCDD	0.00081	J	0.0044	0.000077	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,6,7,8-HxCDF	0.00025	J	0.0044	0.000080	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,7,8,9-HxCDD	0.00073	J	0.0044	0.000074	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,7,8,9-HxCDF	0.00015	J B	0.0044	0.000042	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,7,8-PeCDD	0.00014	J q	0.0044	0.000054	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
1,2,3,7,8-PeCDF	0.00011	J	0.0044	0.000048	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
2,3,4,6,7,8-HxCDF	0.00014	J	0.0044	0.000068	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
2,3,4,7,8-PeCDF	0.00012	J	0.0044	0.000053	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
2,3,7,8-TCDD	0.00031	J q	0.00088	0.000023	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
2,3,7,8-TCDF	0.00044	J	0.00088	0.000041	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
OCDD	0.27	B	0.0088	0.00012	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1
OCDF	0.017	B	0.0088	0.000036	ug/Kg	✱	08/20/18 12:39	08/26/18 05:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,4,7,8,9-HpCDF	41		26 - 138	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	08/20/18 12:39	08/26/18 05:03	1
13C-1,2,3,7,8-PeCDF	50		24 - 185	08/20/18 12:39	08/26/18 05:03	1
13C-2,3,4,6,7,8-HxCDF	46		28 - 136	08/20/18 12:39	08/26/18 05:03	1
13C-2,3,4,7,8-PeCDF	52		21 - 178	08/20/18 12:39	08/26/18 05:03	1
13C-2,3,7,8-TCDD	71		25 - 164	08/20/18 12:39	08/26/18 05:03	1
13C-2,3,7,8-TCDF	60		24 - 169	08/20/18 12:39	08/26/18 05:03	1
13C-OCDD	37		17 - 157	08/20/18 12:39	08/26/18 05:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197	08/20/18 12:39	08/26/18 05:03	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S139-0to2

Lab Sample ID: 580-79444-21

Date Collected: 08/07/18 14:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 43.1

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	0.14	B	0.0057	0.0021	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,4,6,7,8-HpCDF	0.11		0.0057	0.0015	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,4,7,8,9-HpCDF	0.035	B	0.0057	0.0020	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,4,7,8-HxCDD	0.0016	J	0.0057	0.00030	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,4,7,8-HxCDF	0.20		0.0057	0.0014	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,6,7,8-HxCDD	0.0076		0.0057	0.00029	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,6,7,8-HxCDF	0.055		0.0057	0.0014	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,7,8,9-HxCDD	0.0049	J	0.0057	0.00027	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,7,8,9-HxCDF	0.0029	J B	0.0057	0.0015	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,7,8-PeCDD	0.0011	J	0.0057	0.00048	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
1,2,3,7,8-PeCDF	0.085		0.0057	0.00091	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
2,3,4,6,7,8-HxCDF	0.0071		0.0057	0.0013	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
2,3,4,7,8-PeCDF	0.028		0.0057	0.00096	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
2,3,7,8-TCDD	ND		0.0011	0.00030	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
OCDD	1.5	B	0.011	0.0016	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
OCDF	0.24	B	0.011	0.00061	ug/Kg	☼	08/20/18 14:09	08/25/18 17:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		23 - 140				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,4,7,8-HxCDF	41		26 - 152				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,6,7,8-HxCDD	41		28 - 130				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,7,8,9-HxCDF	43		29 - 147				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,7,8-PeCDD	42		25 - 181				08/20/18 14:09	08/25/18 17:55	1
13C-1,2,3,7,8-PeCDF	43		24 - 185				08/20/18 14:09	08/25/18 17:55	1
13C-2,3,4,6,7,8-HxCDF	42		28 - 136				08/20/18 14:09	08/25/18 17:55	1
13C-2,3,4,7,8-PeCDF	43		21 - 178				08/20/18 14:09	08/25/18 17:55	1
13C-2,3,7,8-TCDD	44		25 - 164				08/20/18 14:09	08/25/18 17:55	1
13C-OCDD	44		17 - 157				08/20/18 14:09	08/25/18 17:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197				08/20/18 14:09	08/25/18 17:55	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.051		0.0011	0.00052	ug/Kg	☼	08/20/18 14:09	08/28/18 06:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	42		24 - 169				08/20/18 14:09	08/28/18 06:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/20/18 14:09	08/28/18 06:39	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S139-2to4.1

Lab Sample ID: 580-79444-22

Date Collected: 08/07/18 14:25

Matrix: Solid

Date Received: 08/08/18 15:30

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	0.022	B	0.0035	0.00049	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,4,6,7,8-HpCDF	0.031		0.0035	0.00061	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,4,7,8,9-HpCDF	0.013	B	0.0035	0.00079	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,4,7,8-HxCDD	0.00036	J q	0.0035	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,4,7,8-HxCDF	0.060		0.0035	0.00053	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,6,7,8-HxCDD	0.0010	J	0.0035	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,6,7,8-HxCDF	0.016		0.0035	0.00049	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,7,8,9-HxCDD	0.00068	J q	0.0035	0.00010	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,7,8,9-HxCDF	0.00065	J B q	0.0035	0.00050	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00015	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
1,2,3,7,8-PeCDF	0.026		0.0035	0.00029	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
2,3,4,6,7,8-HxCDF	0.0028	J	0.0035	0.00045	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
2,3,4,7,8-PeCDF	0.0097		0.0035	0.00029	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
2,3,7,8-TCDD	ND		0.00070	0.00015	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
OCDD	0.25	B	0.0070	0.00042	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
OCDF	0.066	B	0.0070	0.00026	ug/Kg	☼	08/20/18 14:09	08/26/18 00:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,4,7,8-HxCDF	44		26 - 152				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				08/20/18 14:09	08/26/18 00:52	1
13C-1,2,3,7,8-PeCDF	48		24 - 185				08/20/18 14:09	08/26/18 00:52	1
13C-2,3,4,6,7,8-HxCDF	48		28 - 136				08/20/18 14:09	08/26/18 00:52	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				08/20/18 14:09	08/26/18 00:52	1
13C-2,3,7,8-TCDD	50		25 - 164				08/20/18 14:09	08/26/18 00:52	1
13C-OCDD	66		17 - 157				08/20/18 14:09	08/26/18 00:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/20/18 14:09	08/26/18 00:52	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	0.018		0.00070	0.00024	ug/Kg	☼	08/20/18 14:09	08/28/18 07:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	44		24 - 169				08/20/18 14:09	08/28/18 07:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/20/18 14:09	08/28/18 07:16	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S139-4.1to5.9

Lab Sample ID: 580-79444-23

Date Collected: 08/07/18 14:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 72.1

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	0.0020	J B q	0.0035	0.00016	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,4,6,7,8-HpCDF	0.00081	J	0.0035	0.000091	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,4,7,8,9-HpCDF	0.00045	J B	0.0035	0.00010	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,4,7,8-HxCDD	0.00014	J q	0.0035	0.000092	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0035	0.00016	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,6,7,8-HxCDD	0.00014	J q	0.0035	0.000086	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,6,7,8-HxCDF	0.00043	J q	0.0035	0.00015	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,7,8,9-HxCDD	0.00022	J q	0.0035	0.000082	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,7,8,9-HxCDF	0.00031	J B q	0.0035	0.00014	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00014	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
1,2,3,7,8-PeCDF	0.00071	J	0.0035	0.000082	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.00013	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
2,3,4,7,8-PeCDF	0.00027	J q	0.0035	0.000087	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
2,3,7,8-TCDD	ND		0.00070	0.00012	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
2,3,7,8-TCDF	0.00049	J	0.00070	0.000078	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
OCDD	0.027	B	0.0070	0.00023	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1
OCDF	0.0020	J B	0.0070	0.00020	ug/Kg	✱	08/20/18 14:09	08/26/18 01:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,4,7,8-HxCDD	41		32 - 141	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,4,7,8-HxCDF	39		26 - 152	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,7,8,9-HxCDF	44		29 - 147	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,7,8-PeCDD	46		25 - 181	08/20/18 14:09	08/26/18 01:40	1
13C-1,2,3,7,8-PeCDF	45		24 - 185	08/20/18 14:09	08/26/18 01:40	1
13C-2,3,4,6,7,8-HxCDF	42		28 - 136	08/20/18 14:09	08/26/18 01:40	1
13C-2,3,4,7,8-PeCDF	45		21 - 178	08/20/18 14:09	08/26/18 01:40	1
13C-2,3,7,8-TCDD	48		25 - 164	08/20/18 14:09	08/26/18 01:40	1
13C-2,3,7,8-TCDF	45		24 - 169	08/20/18 14:09	08/26/18 01:40	1
13C-OCDD	49		17 - 157	08/20/18 14:09	08/26/18 01:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197	08/20/18 14:09	08/26/18 01:40	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S139-4.1to5.9D

Lab Sample ID: 580-79444-24

Date Collected: 08/07/18 14:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 77.0

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	0.0023	J B q	0.0032	0.00015	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,4,6,7,8-HpCDF	0.0012	J	0.0032	0.000086	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,4,7,8,9-HpCDF	0.00061	J B q	0.0032	0.00010	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,4,7,8-HxCDD	ND		0.0032	0.000071	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,4,7,8-HxCDF	0.0029	J	0.0032	0.00018	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,6,7,8-HxCDD	ND		0.0032	0.000066	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,6,7,8-HxCDF	0.00097	J	0.0032	0.00017	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,7,8,9-HxCDD	0.00017	J	0.0032	0.000063	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,7,8,9-HxCDF	0.00025	J B	0.0032	0.00015	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,7,8-PeCDD	ND		0.0032	0.00013	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
1,2,3,7,8-PeCDF	0.0013	J	0.0032	0.000093	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
2,3,4,6,7,8-HxCDF	ND		0.0032	0.00015	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
2,3,4,7,8-PeCDF	0.00037	J	0.0032	0.000097	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
2,3,7,8-TCDD	ND		0.00064	0.00010	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
2,3,7,8-TCDF	0.00058	J	0.00064	0.000067	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
OCDD	0.029	B	0.0064	0.00020	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1
OCDF	0.0026	J B	0.0064	0.00019	ug/Kg	✱	08/20/18 14:09	08/26/18 02:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,4,7,8-HxCDD	38		32 - 141	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,4,7,8-HxCDF	36		26 - 152	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,6,7,8-HxCDD	43		28 - 130	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,6,7,8-HxCDF	39		26 - 123	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,7,8,9-HxCDF	42		29 - 147	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,7,8-PeCDD	44		25 - 181	08/20/18 14:09	08/26/18 02:28	1
13C-1,2,3,7,8-PeCDF	40		24 - 185	08/20/18 14:09	08/26/18 02:28	1
13C-2,3,4,6,7,8-HxCDF	39		28 - 136	08/20/18 14:09	08/26/18 02:28	1
13C-2,3,4,7,8-PeCDF	41		21 - 178	08/20/18 14:09	08/26/18 02:28	1
13C-2,3,7,8-TCDD	44		25 - 164	08/20/18 14:09	08/26/18 02:28	1
13C-2,3,7,8-TCDF	41		24 - 169	08/20/18 14:09	08/26/18 02:28	1
13C-OCDD	43		17 - 157	08/20/18 14:09	08/26/18 02:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197	08/20/18 14:09	08/26/18 02:28	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S117-0to2

Lab Sample ID: 580-79444-25

Date Collected: 08/07/18 16:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 61.0

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	0.30	B	0.0041	0.0034	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,4,6,7,8-HpCDF	0.21		0.0041	0.0021	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,4,7,8,9-HpCDF	0.080	B	0.0041	0.0031	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,4,7,8-HxCDD	0.0020	J	0.0041	0.00020	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,4,7,8-HxCDF	0.52		0.0041	0.0017	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,6,7,8-HxCDD	0.0092		0.0041	0.00019	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,6,7,8-HxCDF	0.14		0.0041	0.0018	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,7,8,9-HxCDD	0.0050		0.0041	0.00018	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,7,8,9-HxCDF	0.0058	B	0.0041	0.0017	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,7,8-PeCDD	0.0022	J	0.0041	0.00050	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
1,2,3,7,8-PeCDF	0.25		0.0041	0.0016	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
2,3,4,6,7,8-HxCDF	0.015		0.0041	0.0015	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
2,3,4,7,8-PeCDF	0.087		0.0041	0.0014	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
2,3,7,8-TCDD	0.0019		0.00082	0.00016	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
OCDD	3.4	E B	0.0082	0.0026	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1
OCDF	0.38	B	0.0082	0.00031	ug/Kg	☼	08/20/18 14:09	08/26/18 03:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	86		23 - 140	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,4,6,7,8-HpCDF	74		28 - 143	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,7,8-PeCDD	81		25 - 181	08/20/18 14:09	08/26/18 03:17	1
13C-1,2,3,7,8-PeCDF	76		24 - 185	08/20/18 14:09	08/26/18 03:17	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	08/20/18 14:09	08/26/18 03:17	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	08/20/18 14:09	08/26/18 03:17	1
13C-2,3,7,8-TCDD	73		25 - 164	08/20/18 14:09	08/26/18 03:17	1
13C-OCDD	93		17 - 157	08/20/18 14:09	08/26/18 03:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	131		35 - 197	08/20/18 14:09	08/26/18 03:17	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	0.20		0.00082	0.00054	ug/Kg	☼	08/20/18 14:09	08/28/18 07:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169	08/20/18 14:09	08/28/18 07:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197	08/20/18 14:09	08/28/18 07:54	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S117-2to4

Lab Sample ID: 580-79444-26

Date Collected: 08/07/18 16:05

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.7

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	0.67	B	0.043	0.0072	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,4,6,7,8-HpCDF	0.49		0.043	0.0047	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,4,7,8,9-HpCDF	0.18	B	0.043	0.0052	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,4,7,8-HxCDD	0.0056	J	0.043	0.00079	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,4,7,8-HxCDF	1.1		0.043	0.0053	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,6,7,8-HxCDD	0.024	J	0.043	0.00078	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,6,7,8-HxCDF	0.26		0.043	0.0057	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,7,8,9-HxCDD	0.014	J	0.043	0.00072	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,7,8,9-HxCDF	0.017	J B	0.043	0.0031	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,7,8-PeCDD	0.0056	J	0.043	0.00055	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
1,2,3,7,8-PeCDF	0.73		0.043	0.0048	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
2,3,4,6,7,8-HxCDF	0.037	J	0.043	0.0045	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
2,3,4,7,8-PeCDF	0.33		0.043	0.0050	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
2,3,7,8-TCDD	0.0047	J	0.0086	0.00046	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
OCDD	8.7	B	0.086	0.0030	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10
OCDF	1.4	B	0.086	0.0012	ug/Kg	☼	08/20/18 14:09	08/29/18 00:16	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,4,7,8,9-HpCDF	36		26 - 138	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,4,7,8-HxCDD	39		32 - 141	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,4,7,8-HxCDF	47		26 - 152	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,6,7,8-HxCDD	39		28 - 130	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,7,8,9-HxCDF	46		29 - 147	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,7,8-PeCDD	44		25 - 181	08/20/18 14:09	08/29/18 00:16	10
13C-1,2,3,7,8-PeCDF	38		24 - 185	08/20/18 14:09	08/29/18 00:16	10
13C-2,3,4,6,7,8-HxCDF	48		28 - 136	08/20/18 14:09	08/29/18 00:16	10
13C-2,3,4,7,8-PeCDF	38		21 - 178	08/20/18 14:09	08/29/18 00:16	10
13C-2,3,7,8-TCDD	44		25 - 164	08/20/18 14:09	08/29/18 00:16	10
13C-OCDD	27		17 - 157	08/20/18 14:09	08/29/18 00:16	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	134		35 - 197	08/20/18 14:09	08/29/18 00:16	10

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.52	G E	0.0015	0.0015	ug/Kg	☼	08/20/18 14:09	08/28/18 08:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	53		24 - 169	08/20/18 14:09	08/28/18 08:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	141		35 - 197	08/20/18 14:09	08/28/18 08:32	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S117-4to6

Lab Sample ID: 580-79444-27

Date Collected: 08/07/18 16:10

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.7

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	0.75	B	0.043	0.0078	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,4,6,7,8-HpCDF	0.44		0.043	0.0021	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,4,7,8,9-HpCDF	0.17	B	0.043	0.0027	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,4,7,8-HxCDD	0.0036	J	0.043	0.00095	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,4,7,8-HxCDF	1.0		0.043	0.0058	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,6,7,8-HxCDD	0.022	J	0.043	0.00085	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,6,7,8-HxCDF	0.25		0.043	0.0054	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,7,8,9-HxCDD	0.012	J	0.043	0.00082	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,7,8,9-HxCDF	0.015	J B	0.043	0.0028	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,7,8-PeCDD	0.0032	J	0.043	0.00045	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
1,2,3,7,8-PeCDF	0.69		0.043	0.0033	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
2,3,4,6,7,8-HxCDF	0.037	J	0.043	0.0047	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
2,3,4,7,8-PeCDF	0.27		0.043	0.0036	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
2,3,7,8-TCDD	0.0016	J q	0.0086	0.00028	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
OCDD	12	B	0.086	0.0046	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
OCDF	1.3	B	0.086	0.0013	ug/Kg	☼	08/20/18 14:09	08/29/18 01:02	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	31		23 - 140				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,4,7,8,9-HpCDF	34		26 - 138				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,4,7,8-HxCDD	36		32 - 141				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,4,7,8-HxCDF	45		26 - 152				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,6,7,8-HxCDD	37		28 - 130				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,7,8-PeCDD	47		25 - 181				08/20/18 14:09	08/29/18 01:02	10
13C-1,2,3,7,8-PeCDF	42		24 - 185				08/20/18 14:09	08/29/18 01:02	10
13C-2,3,4,6,7,8-HxCDF	47		28 - 136				08/20/18 14:09	08/29/18 01:02	10
13C-2,3,4,7,8-PeCDF	36		21 - 178				08/20/18 14:09	08/29/18 01:02	10
13C-2,3,7,8-TCDD	56		25 - 164				08/20/18 14:09	08/29/18 01:02	10
13C-OCDD	14	*	17 - 157				08/20/18 14:09	08/29/18 01:02	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	153		35 - 197				08/20/18 14:09	08/29/18 01:02	10

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.42		0.0086	0.0016	ug/Kg	☼	08/20/18 14:09	08/28/18 17:16	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169				08/20/18 14:09	08/28/18 17:16	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/20/18 14:09	08/28/18 17:16	10

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S219-0to2

Lab Sample ID: 580-79444-28

Date Collected: 08/07/18 11:40

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 60.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.33	B	0.0040	0.0020	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,4,6,7,8-HpCDF	0.091		0.0040	0.0012	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,4,7,8,9-HpCDF	0.0062	B	0.0040	0.0016	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,4,7,8-HxCDD	0.0024	J	0.0040	0.00027	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,4,7,8-HxCDF	0.017		0.0040	0.00057	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,6,7,8-HxCDD	0.012		0.0040	0.00027	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,6,7,8-HxCDF	0.0054		0.0040	0.00058	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,7,8,9-HxCDD	0.0042		0.0040	0.00025	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,7,8,9-HxCDF	0.00062	J B	0.0040	0.00052	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,7,8-PeCDD	0.0015	J	0.0040	0.00037	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
1,2,3,7,8-PeCDF	0.0013	J	0.0040	0.00085	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
2,3,4,6,7,8-HxCDF	0.0021	J	0.0040	0.00053	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
2,3,4,7,8-PeCDF	0.0028	J	0.0040	0.00094	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
2,3,7,8-TCDD	0.00050	J q	0.00080	0.00029	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
OCDD	3.8	E B	0.0080	0.0014	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
OCDF	0.29	B	0.0080	0.00036	ug/Kg	☼	08/20/18 14:09	08/26/18 05:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,4,7,8-HxCDD	40		32 - 141				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,4,7,8-HxCDF	40		26 - 152				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,6,7,8-HxCDD	37		28 - 130				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,6,7,8-HxCDF	40		26 - 123				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,7,8,9-HxCDF	43		29 - 147				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,7,8-PeCDD	38		25 - 181				08/20/18 14:09	08/26/18 05:42	1
13C-1,2,3,7,8-PeCDF	41		24 - 185				08/20/18 14:09	08/26/18 05:42	1
13C-2,3,4,6,7,8-HxCDF	39		28 - 136				08/20/18 14:09	08/26/18 05:42	1
13C-2,3,4,7,8-PeCDF	40		21 - 178				08/20/18 14:09	08/26/18 05:42	1
13C-2,3,7,8-TCDD	44		25 - 164				08/20/18 14:09	08/26/18 05:42	1
13C-OCDD	51		17 - 157				08/20/18 14:09	08/26/18 05:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	130		35 - 197				08/20/18 14:09	08/26/18 05:42	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	0.0029		0.00080	0.00026	ug/Kg	☼	08/20/18 14:09	08/28/18 06:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	43		24 - 169				08/20/18 14:09	08/28/18 06:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	127		35 - 197				08/20/18 14:09	08/28/18 06:01	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S219-2to4

Lab Sample ID: 580-79444-29

Date Collected: 08/07/18 11:45

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 74.3

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	0.0020	J B	0.0033	0.00017	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,4,6,7,8-HpCDF	ND		0.0033	0.00017	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,4,7,8,9-HpCDF	ND		0.0033	0.00019	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,4,7,8-HxCDD	ND		0.0033	0.00012	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,4,7,8-HxCDF	ND		0.0033	0.00017	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,6,7,8-HxCDD	ND		0.0033	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,6,7,8-HxCDF	ND		0.0033	0.00016	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,7,8,9-HxCDD	ND		0.0033	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,7,8,9-HxCDF	0.00052	J B q	0.0033	0.00014	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,7,8-PeCDD	ND		0.0033	0.00017	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
1,2,3,7,8-PeCDF	ND		0.0033	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
2,3,4,6,7,8-HxCDF	ND		0.0033	0.00014	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
2,3,4,7,8-PeCDF	ND		0.0033	0.00011	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
2,3,7,8-TCDD	ND		0.00066	0.000094	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
2,3,7,8-TCDF	ND		0.00066	0.000062	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
OCDD	0.021	B	0.0066	0.00022	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1
OCDF	0.0011	J B	0.0066	0.00027	ug/Kg	☼	08/20/18 14:09	08/26/18 06:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38		23 - 140	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,4,7,8-HxCDD	38		32 - 141	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,4,7,8-HxCDF	34		26 - 152	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,6,7,8-HxCDD	35		28 - 130	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,6,7,8-HxCDF	35		26 - 123	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,7,8,9-HxCDF	40		29 - 147	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,7,8-PeCDD	37		25 - 181	08/20/18 14:09	08/26/18 06:30	1
13C-1,2,3,7,8-PeCDF	36		24 - 185	08/20/18 14:09	08/26/18 06:30	1
13C-2,3,4,6,7,8-HxCDF	36		28 - 136	08/20/18 14:09	08/26/18 06:30	1
13C-2,3,4,7,8-PeCDF	38		21 - 178	08/20/18 14:09	08/26/18 06:30	1
13C-2,3,7,8-TCDD	42		25 - 164	08/20/18 14:09	08/26/18 06:30	1
13C-2,3,7,8-TCDF	43		24 - 169	08/20/18 14:09	08/26/18 06:30	1
13C-OCDD	31		17 - 157	08/20/18 14:09	08/26/18 06:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/20/18 14:09	08/26/18 06:30	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S219-4to5.2

Lab Sample ID: 580-79444-30

Date Collected: 08/07/18 11:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 71.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0014	J B	0.0035	0.000033	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,4,6,7,8-HpCDF	0.00033	J B	0.0035	0.000032	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,4,7,8,9-HpCDF	0.00015	J B	0.0035	0.000035	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,4,7,8-HxCDD	0.000099	J q B	0.0035	0.000028	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,4,7,8-HxCDF	ND		0.0035	0.000024	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,6,7,8-HxCDD	0.000063	J q B	0.0035	0.000026	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,6,7,8-HxCDF	ND		0.0035	0.000025	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,7,8,9-HxCDD	0.00013	J B	0.0035	0.000024	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,7,8,9-HxCDF	0.00018	J B	0.0035	0.000014	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,7,8-PeCDD	ND		0.0035	0.000020	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
1,2,3,7,8-PeCDF	0.000037	J B	0.0035	0.000013	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.000021	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
2,3,4,7,8-PeCDF	ND		0.0035	0.000014	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
2,3,7,8-TCDD	0.000038	J q	0.00069	0.0000093	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
2,3,7,8-TCDF	0.000036	J B	0.00069	0.0000063	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
OCDD	0.020	B	0.0069	0.000038	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1
OCDF	0.0020	J B	0.0069	0.000022	ug/Kg	☼	08/21/18 13:53	08/26/18 05:49	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,4,6,7,8-HpCDF	52		28 - 143	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,4,7,8-HxCDD	52		32 - 141	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,4,7,8-HxCDF	53		26 - 152	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	08/21/18 13:53	08/26/18 05:49	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	08/21/18 13:53	08/26/18 05:49	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/21/18 13:53	08/26/18 05:49	1
13C-2,3,4,7,8-PeCDF	51		21 - 178	08/21/18 13:53	08/26/18 05:49	1
13C-2,3,7,8-TCDD	61		25 - 164	08/21/18 13:53	08/26/18 05:49	1
13C-2,3,7,8-TCDF	60		24 - 169	08/21/18 13:53	08/26/18 05:49	1
13C-OCDD	47		17 - 157	08/21/18 13:53	08/26/18 05:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197	08/21/18 13:53	08/26/18 05:49	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S105-0to2

Date Collected: 08/08/18 08:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-31

Matrix: Solid

Percent Solids: 63.6

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	0.13	B	0.0039	0.00086	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,4,6,7,8-HpCDF	0.021	B	0.0039	0.00014	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,4,7,8,9-HpCDF	0.0041	B	0.0039	0.00016	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,4,7,8-HxCDD	0.00062	J B	0.0039	0.00011	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,4,7,8-HxCDF	0.018		0.0039	0.00020	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,6,7,8-HxCDD	0.0030	J B	0.0039	0.00010	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,6,7,8-HxCDF	0.0045		0.0039	0.00021	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,7,8,9-HxCDD	0.0012	J B	0.0039	0.000095	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,7,8,9-HxCDF	0.00052	J B	0.0039	0.00011	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,7,8-PeCDD	0.00059	J	0.0039	0.000054	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
1,2,3,7,8-PeCDF	0.010	B	0.0039	0.00021	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
2,3,4,6,7,8-HxCDF	0.00098	J	0.0039	0.00017	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
2,3,4,7,8-PeCDF	0.0045		0.0039	0.00022	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
2,3,7,8-TCDD	0.00079		0.00077	0.000036	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
OCDD	1.2	B	0.0077	0.00046	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1
OCDF	0.047	B	0.0077	0.000031	ug/Kg	☼	08/21/18 13:53	08/26/18 06:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,4,7,8-HxCDD	48		32 - 141	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	08/21/18 13:53	08/26/18 06:35	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	08/21/18 13:53	08/26/18 06:35	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136	08/21/18 13:53	08/26/18 06:35	1
13C-2,3,4,7,8-PeCDF	51		21 - 178	08/21/18 13:53	08/26/18 06:35	1
13C-2,3,7,8-TCDD	59		25 - 164	08/21/18 13:53	08/26/18 06:35	1
13C-OCDD	41		17 - 157	08/21/18 13:53	08/26/18 06:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197	08/21/18 13:53	08/26/18 06:35	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	0.012	B	0.00077	0.00024	ug/Kg	☼	08/21/18 13:53	08/28/18 23:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	08/21/18 13:53	08/28/18 23:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197	08/21/18 13:53	08/28/18 23:35	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S105-2to4

Lab Sample ID: 580-79444-32

Date Collected: 08/08/18 09:00

Matrix: Solid

Date Received: 08/08/18 15:30

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	0.0099	B	0.0036	0.000069	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,4,6,7,8-HpCDF	0.0017	J B	0.0036	0.000041	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,4,7,8,9-HpCDF	0.00047	J B	0.0036	0.000040	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,4,7,8-HxCDD	0.00019	J B	0.0036	0.000030	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,4,7,8-HxCDF	0.0012	J	0.0036	0.000031	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,6,7,8-HxCDD	0.00037	J B	0.0036	0.000029	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,6,7,8-HxCDF	0.00034	J	0.0036	0.000032	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,7,8,9-HxCDD	0.00047	J B	0.0036	0.000027	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,7,8,9-HxCDF	0.00015	J B	0.0036	0.000017	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,7,8-PeCDD	ND		0.0036	0.000022	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
1,2,3,7,8-PeCDF	0.00070	J B	0.0036	0.000027	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.000028	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
2,3,4,7,8-PeCDF	0.00033	J	0.0036	0.000030	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
2,3,7,8-TCDD	ND		0.00072	0.000013	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
OCDD	0.094	B	0.0072	0.000055	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
OCDF	0.0049	J B	0.0072	0.000018	ug/Kg	☼	08/21/18 13:53	08/26/18 07:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	63		23 - 140				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				08/21/18 13:53	08/26/18 07:21	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				08/21/18 13:53	08/26/18 07:21	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136				08/21/18 13:53	08/26/18 07:21	1
13C-2,3,4,7,8-PeCDF	52		21 - 178				08/21/18 13:53	08/26/18 07:21	1
13C-2,3,7,8-TCDD	61		25 - 164				08/21/18 13:53	08/26/18 07:21	1
13C-OCDD	50		17 - 157				08/21/18 13:53	08/26/18 07:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/21/18 13:53	08/26/18 07:21	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00074	B	0.00072	0.00015	ug/Kg	☼	08/21/18 13:53	08/29/18 00:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169				08/21/18 13:53	08/29/18 00:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/21/18 13:53	08/29/18 00:13	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S105-4to5.6

Lab Sample ID: 580-79444-33

Date Collected: 08/08/18 09:05

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 70.7

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	0.0021	B	0.0035	0.00058	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,4,6,7,8-HpCDF	0.0051	B	0.0035	0.00022	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,4,7,8,9-HpCDF	0.00070	J B	0.0035	0.00028	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,4,7,8-HxCDD	0.00042	J B	0.0035	0.00018	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0035	0.00021	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,6,7,8-HxCDD	0.0012	J B	0.0035	0.00017	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,6,7,8-HxCDF	0.00070	J	0.0035	0.00020	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,7,8,9-HxCDD	0.00099	J B	0.0035	0.00016	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,7,8,9-HxCDF	0.00027	J B	0.0035	0.00019	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00016	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
1,2,3,7,8-PeCDF	0.0014	J B	0.0035	0.00013	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
2,3,4,6,7,8-HxCDF	0.00039	J	0.0035	0.00018	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
2,3,4,7,8-PeCDF	0.00071	J	0.0035	0.00011	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
2,3,7,8-TCDD	ND		0.00070	0.00017	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
OCDD	0.21	B	0.0070	0.00047	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
OCDF	0.0078	B	0.0070	0.00021	ug/Kg	☼	08/21/18 13:53	08/28/18 05:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,4,6,7,8-HpCDF	43		28 - 143				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,4,7,8-HxCDD	46		32 - 141				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,4,7,8-HxCDF	45		26 - 152				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,7,8-PeCDD	58		25 - 181				08/21/18 13:53	08/28/18 05:33	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				08/21/18 13:53	08/28/18 05:33	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				08/21/18 13:53	08/28/18 05:33	1
13C-2,3,4,7,8-PeCDF	56		21 - 178				08/21/18 13:53	08/28/18 05:33	1
13C-2,3,7,8-TCDD	54		25 - 164				08/21/18 13:53	08/28/18 05:33	1
13C-OCDD	54		17 - 157				08/21/18 13:53	08/28/18 05:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/21/18 13:53	08/28/18 05:33	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	0.0010	B	0.00070	0.00013	ug/Kg	☼	08/21/18 13:53	08/29/18 00:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	74		24 - 169				08/21/18 13:53	08/29/18 00:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197				08/21/18 13:53	08/29/18 00:51	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S105-5.6to6.6

Lab Sample ID: 580-79444-34

Date Collected: 08/08/18 09:10

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 61.0

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	0.48	B	0.041	0.0051	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,4,6,7,8-HpCDF	0.077	B	0.041	0.0012	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,4,7,8,9-HpCDF	0.0071	J B	0.041	0.0016	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,4,7,8-HxCDD	0.0028	J B	0.041	0.00060	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,4,7,8-HxCDF	0.036	J	0.041	0.00076	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,6,7,8-HxCDD	0.012	J B	0.041	0.00060	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,6,7,8-HxCDF	0.010	J	0.041	0.00075	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,7,8,9-HxCDD	0.0092	J B	0.041	0.00055	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,7,8,9-HxCDF	0.00087	J B q	0.041	0.00040	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,7,8-PeCDD	0.0017	J q	0.041	0.00027	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
1,2,3,7,8-PeCDF	0.017	J B	0.041	0.00053	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
2,3,4,6,7,8-HxCDF	0.0034	J	0.041	0.00058	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
2,3,4,7,8-PeCDF	0.010	J	0.041	0.00056	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
2,3,7,8-TCDD	0.0012	J	0.0081	0.00022	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
OCDD	5.4	B	0.081	0.0047	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10
OCDF	0.17	B	0.081	0.00039	ug/Kg	☼	08/21/18 13:53	08/29/18 01:48	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,4,6,7,8-HpCDF	51		28 - 143	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,4,7,8,9-HpCDF	50		26 - 138	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,6,7,8-HxCDD	49		28 - 130	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,7,8-PeCDD	78		25 - 181	08/21/18 13:53	08/29/18 01:48	10
13C-1,2,3,7,8-PeCDF	62		24 - 185	08/21/18 13:53	08/29/18 01:48	10
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	08/21/18 13:53	08/29/18 01:48	10
13C-2,3,4,7,8-PeCDF	70		21 - 178	08/21/18 13:53	08/29/18 01:48	10
13C-2,3,7,8-TCDD	82		25 - 164	08/21/18 13:53	08/29/18 01:48	10
13C-OCDD	33		17 - 157	08/21/18 13:53	08/29/18 01:48	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	166		35 - 197	08/21/18 13:53	08/29/18 01:48	10

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.016	B	0.0081	0.0017	ug/Kg	☼	08/21/18 13:53	08/29/18 18:44	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	85		24 - 169	08/21/18 13:53	08/29/18 18:44	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197	08/21/18 13:53	08/29/18 18:44	10

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S191-0to2

Lab Sample ID: 580-79444-35

Date Collected: 08/08/18 10:15

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 40.7

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	0.35	B	0.0061	0.0021	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,4,6,7,8-HpCDF	0.059	B	0.0061	0.0017	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,4,7,8,9-HpCDF	0.0063	B	0.0061	0.0022	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,4,7,8-HxCDD	0.0028	J B	0.0061	0.00064	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,4,7,8-HxCDF	0.0065		0.0061	0.00084	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,6,7,8-HxCDD	0.016	B	0.0061	0.00073	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,6,7,8-HxCDF	0.0028	J q	0.0061	0.00082	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,7,8,9-HxCDD	0.0063	B	0.0061	0.00063	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,7,8,9-HxCDF	ND		0.0061	0.00079	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,7,8-PeCDD	0.0014	J q	0.0061	0.00080	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
1,2,3,7,8-PeCDF	ND		0.0061	0.00050	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
2,3,4,6,7,8-HxCDF	0.0016	J	0.0061	0.00069	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
2,3,4,7,8-PeCDF	0.0014	J	0.0061	0.00058	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
2,3,7,8-TCDD	0.00077	J q	0.0012	0.00040	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
OCDD	3.5	B	0.012	0.0017	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
OCDF	0.19	B	0.012	0.00063	ug/Kg	☼	08/21/18 13:53	08/28/18 07:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,4,6,7,8-HpCDF	44		28 - 143				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,6,7,8-HxCDD	45		28 - 130				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,7,8-PeCDD	63		25 - 181				08/21/18 13:53	08/28/18 07:09	1
13C-1,2,3,7,8-PeCDF	57		24 - 185				08/21/18 13:53	08/28/18 07:09	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				08/21/18 13:53	08/28/18 07:09	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				08/21/18 13:53	08/28/18 07:09	1
13C-2,3,7,8-TCDD	59		25 - 164				08/21/18 13:53	08/28/18 07:09	1
13C-OCDD	54		17 - 157				08/21/18 13:53	08/28/18 07:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	123		35 - 197				08/21/18 13:53	08/28/18 07:09	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	0.0073	B	0.0012	0.00081	ug/Kg	☼	08/21/18 13:53	08/29/18 01:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/21/18 13:53	08/29/18 01:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	118		35 - 197				08/21/18 13:53	08/29/18 01:29	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S191-2to4

Lab Sample ID: 580-79444-36

Date Collected: 08/08/18 10:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.4

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	0.63	B	0.0046	0.0031	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,4,6,7,8-HpCDF	0.094	B	0.0046	0.0022	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,4,7,8,9-HpCDF	0.0092	B	0.0046	0.0029	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,4,7,8-HxCDD	0.0048	B	0.0046	0.00070	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,4,7,8-HxCDF	0.0092		0.0046	0.0012	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,6,7,8-HxCDD	0.022	B	0.0046	0.00077	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,6,7,8-HxCDF	0.0049		0.0046	0.0013	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,7,8,9-HxCDD	0.0082	B	0.0046	0.00068	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,7,8,9-HxCDF	ND		0.0046	0.0012	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,7,8-PeCDD	0.0016	J q	0.0046	0.0012	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
1,2,3,7,8-PeCDF	0.0028	J B	0.0046	0.00077	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
2,3,4,6,7,8-HxCDF	0.0021	J	0.0046	0.00099	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
2,3,4,7,8-PeCDF	0.0033	J	0.0046	0.00089	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
2,3,7,8-TCDD	0.0013		0.00091	0.00028	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
OCDD	7.5	E B	0.0091	0.0030	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
OCDF	0.40	B	0.0091	0.00049	ug/Kg	☼	08/21/18 13:53	08/28/18 07:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,6,7,8-HxCDD	44		28 - 130				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,7,8-PeCDD	61		25 - 181				08/21/18 13:53	08/28/18 07:58	1
13C-1,2,3,7,8-PeCDF	56		24 - 185				08/21/18 13:53	08/28/18 07:58	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				08/21/18 13:53	08/28/18 07:58	1
13C-2,3,4,7,8-PeCDF	57		21 - 178				08/21/18 13:53	08/28/18 07:58	1
13C-2,3,7,8-TCDD	55		25 - 164				08/21/18 13:53	08/28/18 07:58	1
13C-OCDD	63		17 - 157				08/21/18 13:53	08/28/18 07:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197				08/21/18 13:53	08/28/18 07:58	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	0.0067	B	0.00091	0.00025	ug/Kg	☼	08/21/18 13:53	08/29/18 02:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	72		24 - 169				08/21/18 13:53	08/29/18 02:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/21/18 13:53	08/29/18 02:07	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S191-4to6

Lab Sample ID: 580-79444-37

Date Collected: 08/08/18 10:25

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.6

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	0.60	B	0.0044	0.0011	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,4,6,7,8-HpCDF	0.13	B	0.0044	0.0013	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,4,7,8,9-HpCDF	0.013	B	0.0044	0.0015	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,4,7,8-HxCDD	0.0068	B	0.0044	0.00054	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,4,7,8-HxCDF	0.012		0.0044	0.0016	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,6,7,8-HxCDD	0.023	B	0.0044	0.00055	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,6,7,8-HxCDF	0.0082		0.0044	0.0017	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,7,8,9-HxCDD	0.0092	B	0.0044	0.00050	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,7,8,9-HxCDF	ND		0.0044	0.00084	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,7,8-PeCDD	0.0032	J	0.0044	0.00073	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
1,2,3,7,8-PeCDF	0.0028	J B q	0.0044	0.00075	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
2,3,4,6,7,8-HxCDF	0.0032	J	0.0044	0.0011	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
2,3,4,7,8-PeCDF	0.0032	J	0.0044	0.00082	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
2,3,7,8-TCDD	0.0026		0.00089	0.00022	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
OCDD	6.3	E B	0.0089	0.00093	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1
OCDF	0.53	B	0.0089	0.00032	ug/Kg	☼	08/21/18 13:53	08/26/18 17:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,7,8-PeCDD	58		25 - 181	08/21/18 13:53	08/26/18 17:03	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	08/21/18 13:53	08/26/18 17:03	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	08/21/18 13:53	08/26/18 17:03	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	08/21/18 13:53	08/26/18 17:03	1
13C-2,3,7,8-TCDD	57		25 - 164	08/21/18 13:53	08/26/18 17:03	1
13C-OCDD	43		17 - 157	08/21/18 13:53	08/26/18 17:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197	08/21/18 13:53	08/26/18 17:03	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	0.0050	B	0.00089	0.00026	ug/Kg	☼	08/21/18 13:53	08/29/18 02:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	83		24 - 169	08/21/18 13:53	08/29/18 02:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/21/18 13:53	08/29/18 02:44	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S191-6to8.1

Lab Sample ID: 580-79444-38

Date Collected: 08/08/18 10:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 67.4

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	0.22	B	0.0036	0.00058	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,4,6,7,8-HpCDF	0.062	B	0.0036	0.00070	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,4,7,8,9-HpCDF	0.0045	B	0.0036	0.00078	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,4,7,8-HxCDD	0.0015	J B q	0.0036	0.00032	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,4,7,8-HxCDF	0.0038		0.0036	0.00059	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,6,7,8-HxCDD	0.0074	B	0.0036	0.00040	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,6,7,8-HxCDF	0.0024	J q	0.0036	0.00057	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,7,8,9-HxCDD	0.0046	B	0.0036	0.00032	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,7,8,9-HxCDF	ND		0.0036	0.00032	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,7,8-PeCDD	0.00080	J q	0.0036	0.00028	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
1,2,3,7,8-PeCDF	0.00050	J B q	0.0036	0.00022	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
2,3,4,6,7,8-HxCDF	ND		0.0036	0.00061	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
2,3,4,7,8-PeCDF	0.00094	J	0.0036	0.00022	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
2,3,7,8-TCDD	0.0011		0.00073	0.00010	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
OCDD	2.4	B	0.0073	0.00050	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
OCDF	0.34	B	0.0073	0.00022	ug/Kg	☼	08/21/18 13:53	08/26/18 17:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	35		23 - 140				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,4,7,8,9-HpCDF	33		26 - 138				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,4,7,8-HxCDD	43		32 - 141				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,6,7,8-HxCDD	33		28 - 130				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,7,8-PeCDD	38		25 - 181				08/21/18 13:53	08/26/18 17:49	1
13C-1,2,3,7,8-PeCDF	44		24 - 185				08/21/18 13:53	08/26/18 17:49	1
13C-2,3,4,6,7,8-HxCDF	41		28 - 136				08/21/18 13:53	08/26/18 17:49	1
13C-2,3,4,7,8-PeCDF	46		21 - 178				08/21/18 13:53	08/26/18 17:49	1
13C-2,3,7,8-TCDD	57		25 - 164				08/21/18 13:53	08/26/18 17:49	1
13C-OCDD	28		17 - 157				08/21/18 13:53	08/26/18 17:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	125		35 - 197				08/21/18 13:53	08/26/18 17:49	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	0.00076	B	0.00073	0.00025	ug/Kg	☼	08/21/18 13:53	08/29/18 03:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				08/21/18 13:53	08/29/18 03:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/21/18 13:53	08/29/18 03:22	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S192-0to1.5

Lab Sample ID: 580-79444-39

Date Collected: 08/08/18 11:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 27.6

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	10	E G B	0.024	0.024	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,4,6,7,8-HpCDF	2.1	G B	0.017	0.017	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,4,7,8,9-HpCDF	0.26	G B	0.029	0.029	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,4,7,8-HxCDD	0.066	G B	0.010	0.010	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,4,7,8-HxCDF	0.17	G	0.019	0.019	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,6,7,8-HxCDD	0.33	G B	0.011	0.011	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,6,7,8-HxCDF	0.079	G	0.021	0.021	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,7,8,9-HxCDD	0.12	G B	0.0094	0.0094	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,7,8,9-HxCDF	ND	G	0.011	0.011	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,7,8-PeCDD	0.030		0.0089	0.0049	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
1,2,3,7,8-PeCDF	0.016	B	0.0089	0.0024	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
2,3,4,6,7,8-HxCDF	0.043	G	0.015	0.015	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
2,3,4,7,8-PeCDF	0.019		0.0089	0.0024	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
2,3,7,8-TCDD	0.0057		0.0018	0.00041	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
OCDD	110	E G B	0.027	0.027	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
OCDF	7.6	E B	0.018	0.0016	ug/Kg	☼	08/21/18 13:53	08/26/18 18:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,4,7,8-HxCDF	94		26 - 152				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,6,7,8-HxCDF	83		26 - 123				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				08/21/18 13:53	08/26/18 18:35	1
13C-1,2,3,7,8-PeCDF	64		24 - 185				08/21/18 13:53	08/26/18 18:35	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136				08/21/18 13:53	08/26/18 18:35	1
13C-2,3,4,7,8-PeCDF	75		21 - 178				08/21/18 13:53	08/26/18 18:35	1
13C-2,3,7,8-TCDD	66		25 - 164				08/21/18 13:53	08/26/18 18:35	1
13C-OCDD	49		17 - 157				08/21/18 13:53	08/26/18 18:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	135		35 - 197				08/21/18 13:53	08/26/18 18:35	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	0.032	B	0.0018	0.0013	ug/Kg	☼	08/21/18 13:53	08/29/18 04:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	82		24 - 169				08/21/18 13:53	08/29/18 04:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197				08/21/18 13:53	08/29/18 04:00	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S192-1.5to3

Lab Sample ID: 580-79444-40

Date Collected: 08/08/18 11:25

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 37.8

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	6.3	G E B	0.016	0.016	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,4,6,7,8-HpCDF	1.5	G B	0.013	0.013	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,4,7,8,9-HpCDF	0.17	G B	0.021	0.021	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,4,7,8-HxCDD	0.049	G B	0.0069	0.0069	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,4,7,8-HxCDF	0.12	G	0.012	0.012	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,6,7,8-HxCDD	0.20	G B	0.0072	0.0072	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,6,7,8-HxCDF	0.053	G	0.011	0.011	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,7,8,9-HxCDD	0.089	B	0.0065	0.0064	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,7,8,9-HxCDF	ND	G	0.0080	0.0080	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,7,8-PeCDD	0.019		0.0065	0.0022	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
1,2,3,7,8-PeCDF	0.0097	B	0.0065	0.0015	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
2,3,4,6,7,8-HxCDF	0.026	G	0.0090	0.0090	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
2,3,4,7,8-PeCDF	0.011		0.0065	0.0017	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
2,3,7,8-TCDD	0.0036		0.0013	0.00024	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
OCDD	69	E B	0.013	0.013	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
OCDF	5.0	B	0.013	0.0010	ug/Kg	☼	08/21/18 13:53	08/26/18 22:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,4,7,8-HxCDF	114		26 - 152				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,6,7,8-HxCDF	111		26 - 123				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,7,8-PeCDD	95		25 - 181				08/21/18 13:53	08/26/18 22:55	1
13C-1,2,3,7,8-PeCDF	73		24 - 185				08/21/18 13:53	08/26/18 22:55	1
13C-2,3,4,6,7,8-HxCDF	87		28 - 136				08/21/18 13:53	08/26/18 22:55	1
13C-2,3,4,7,8-PeCDF	84		21 - 178				08/21/18 13:53	08/26/18 22:55	1
13C-2,3,7,8-TCDD	73		25 - 164				08/21/18 13:53	08/26/18 22:55	1
13C-OCDD	47		17 - 157				08/21/18 13:53	08/26/18 22:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	148		35 - 197				08/21/18 13:53	08/26/18 22:55	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.018	B	0.0013	0.00083	ug/Kg	☼	08/21/18 13:53	08/29/18 04:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	81		24 - 169				08/21/18 13:53	08/29/18 04:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197				08/21/18 13:53	08/29/18 04:38	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S192-3to4.2

Lab Sample ID: 580-79444-41

Date Collected: 08/08/18 11:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 80.1

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	0.51	B	0.0031	0.0016	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,4,6,7,8-HpCDF	0.11	B	0.0031	0.0010	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,4,7,8,9-HpCDF	0.012	B	0.0031	0.0012	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,4,7,8-HxCDD	0.0027	J B	0.0031	0.00060	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,4,7,8-HxCDF	0.0080		0.0031	0.00098	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,6,7,8-HxCDD	0.013	B	0.0031	0.00058	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,6,7,8-HxCDF	0.0038		0.0031	0.00096	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,7,8,9-HxCDD	0.0065	B	0.0031	0.00054	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,7,8,9-HxCDF	ND		0.0031	0.00061	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,7,8-PeCDD	0.0012	J	0.0031	0.00034	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
1,2,3,7,8-PeCDF	0.0011	J B	0.0031	0.00017	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
2,3,4,6,7,8-HxCDF	0.0019	J	0.0031	0.00081	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
2,3,4,7,8-PeCDF	0.00088	J	0.0031	0.00018	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
2,3,7,8-TCDD	0.00030	J q	0.00061	0.000042	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
OCDD	5.8	E B	0.0061	0.0013	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
OCDF	0.42	B	0.0061	0.00016	ug/Kg	☼	08/21/18 13:53	08/26/18 23:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39		23 - 140				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,7,8-PeCDD	63		25 - 181				08/21/18 13:53	08/26/18 23:41	1
13C-1,2,3,7,8-PeCDF	62		24 - 185				08/21/18 13:53	08/26/18 23:41	1
13C-2,3,4,6,7,8-HxCDF	71		28 - 136				08/21/18 13:53	08/26/18 23:41	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				08/21/18 13:53	08/26/18 23:41	1
13C-2,3,7,8-TCDD	66		25 - 164				08/21/18 13:53	08/26/18 23:41	1
13C-OCDD	36		17 - 157				08/21/18 13:53	08/26/18 23:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	126		35 - 197				08/21/18 13:53	08/26/18 23:41	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0015	B	0.00061	0.00026	ug/Kg	☼	08/21/18 13:53	08/29/18 05:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				08/21/18 13:53	08/29/18 05:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197				08/21/18 13:53	08/29/18 05:16	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-RB-SS-180807

Lab Sample ID: 580-79444-42

Date Collected: 08/07/18 13:00

Matrix: Water

Date Received: 08/08/18 15:30

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.1	J B	51	0.15	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,4,6,7,8-HpCDF	0.42	J B * q	51	0.32	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,4,7,8,9-HpCDF	ND		51	0.38	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,4,7,8-HxCDD	1.0	J B q	51	0.24	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,4,7,8-HxCDF	ND		51	0.24	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,6,7,8-HxCDD	ND		51	0.23	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,6,7,8-HxCDF	ND *		51	0.24	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,7,8,9-HxCDD	ND		51	0.22	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,7,8,9-HxCDF	0.31	J q	51	0.13	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,7,8-PeCDD	ND		51	0.28	pg/L		08/13/18 12:46	08/17/18 06:47	1
1,2,3,7,8-PeCDF	ND		51	0.21	pg/L		08/13/18 12:46	08/17/18 06:47	1
2,3,4,6,7,8-HxCDF	ND		51	0.17	pg/L		08/13/18 12:46	08/17/18 06:47	1
2,3,4,7,8-PeCDF	ND		51	0.22	pg/L		08/13/18 12:46	08/17/18 06:47	1
2,3,7,8-TCDD	ND		10	0.11	pg/L		08/13/18 12:46	08/17/18 06:47	1
2,3,7,8-TCDF	ND		10	0.061	pg/L		08/13/18 12:46	08/17/18 06:47	1
OCDD	7.2	J B	100	0.18	pg/L		08/13/18 12:46	08/17/18 06:47	1
OCDF	1.2	J B	100	0.13	pg/L		08/13/18 12:46	08/17/18 06:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,4,6,7,8-HpCDF	83		28 - 143	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,4,7,8,9-HpCDF	83		26 - 138	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,4,7,8-HxCDF	83		26 - 152	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,6,7,8-HxCDF	86		26 - 123	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,7,8,9-HxCDF	85		29 - 147	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,7,8-PeCDD	55		25 - 181	08/13/18 12:46	08/17/18 06:47	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	08/13/18 12:46	08/17/18 06:47	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136	08/13/18 12:46	08/17/18 06:47	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	08/13/18 12:46	08/17/18 06:47	1
13C-2,3,7,8-TCDD	83		25 - 164	08/13/18 12:46	08/17/18 06:47	1
13C-2,3,7,8-TCDF	85		24 - 169	08/13/18 12:46	08/17/18 06:47	1
13C-OCDD	68		17 - 157	08/13/18 12:46	08/17/18 06:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	08/13/18 12:46	08/17/18 06:47	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-RB-SS-180808

Lab Sample ID: 580-79444-43

Date Collected: 08/08/18 10:55

Matrix: Water

Date Received: 08/08/18 15:30

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	ND		49	0.87	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,4,6,7,8-HpCDF	ND		49	0.88	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,4,7,8,9-HpCDF	ND		49	1.3	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,4,7,8-HxCDD	ND		49	1.2	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,4,7,8-HxCDF	ND		49	1.2	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,6,7,8-HxCDD	ND		49	1.1	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,6,7,8-HxCDF	ND		49	1.0	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,7,8,9-HxCDD	ND		49	1.0	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,7,8,9-HxCDF	1.4	J B q	49	1.1	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,7,8-PeCDD	ND		49	1.6	pg/L		08/14/18 08:10	08/28/18 03:08	1
1,2,3,7,8-PeCDF	ND		49	1.0	pg/L		08/14/18 08:10	08/28/18 03:08	1
2,3,4,6,7,8-HxCDF	ND		49	0.95	pg/L		08/14/18 08:10	08/28/18 03:08	1
2,3,4,7,8-PeCDF	ND		49	1.1	pg/L		08/14/18 08:10	08/28/18 03:08	1
2,3,7,8-TCDD	ND		9.8	1.1	pg/L		08/14/18 08:10	08/28/18 03:08	1
2,3,7,8-TCDF	ND		9.8	0.83	pg/L		08/14/18 08:10	08/28/18 03:08	1
OCDD	4.9	J	98	1.9	pg/L		08/14/18 08:10	08/28/18 03:08	1
OCDF	ND		98	1.7	pg/L		08/14/18 08:10	08/28/18 03:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,4,7,8-HxCDD	79		32 - 141	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,4,7,8-HxCDF	78		26 - 152	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,6,7,8-HxCDD	83		28 - 130	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,6,7,8-HxCDF	84		26 - 123	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,7,8,9-HxCDF	82		29 - 147	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,7,8-PeCDD	92		25 - 181	08/14/18 08:10	08/28/18 03:08	1
13C-1,2,3,7,8-PeCDF	79		24 - 185	08/14/18 08:10	08/28/18 03:08	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136	08/14/18 08:10	08/28/18 03:08	1
13C-2,3,4,7,8-PeCDF	79		21 - 178	08/14/18 08:10	08/28/18 03:08	1
13C-2,3,7,8-TCDD	83		25 - 164	08/14/18 08:10	08/28/18 03:08	1
13C-2,3,7,8-TCDF	78		24 - 169	08/14/18 08:10	08/28/18 03:08	1
13C-OCDD	100		17 - 157	08/14/18 08:10	08/28/18 03:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	129		35 - 197	08/14/18 08:10	08/28/18 03:08	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-RB-SS-180806

Lab Sample ID: 580-79444-44

Date Collected: 08/06/18 16:00

Matrix: Water

Date Received: 08/08/18 15:30

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.0	J B	52	0.29	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,4,6,7,8-HpCDF	ND	*	52	0.35	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,4,7,8,9-HpCDF	ND		52	0.40	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,4,7,8-HxCDD	1.4	J B q	52	0.50	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,4,7,8-HxCDF	ND		52	0.88	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,6,7,8-HxCDD	ND		52	0.46	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,6,7,8-HxCDF	ND	*	52	0.88	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,7,8,9-HxCDD	ND		52	0.44	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,7,8,9-HxCDF	ND		52	0.47	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,7,8-PeCDD	ND		52	0.72	pg/L		08/13/18 12:46	08/17/18 07:33	1
1,2,3,7,8-PeCDF	ND		52	0.29	pg/L		08/13/18 12:46	08/17/18 07:33	1
2,3,4,6,7,8-HxCDF	ND		52	0.66	pg/L		08/13/18 12:46	08/17/18 07:33	1
2,3,4,7,8-PeCDF	ND		52	0.33	pg/L		08/13/18 12:46	08/17/18 07:33	1
2,3,7,8-TCDD	ND		10	0.54	pg/L		08/13/18 12:46	08/17/18 07:33	1
2,3,7,8-TCDF	ND		10	0.32	pg/L		08/13/18 12:46	08/17/18 07:33	1
OCDD	6.7	J B	100	0.31	pg/L		08/13/18 12:46	08/17/18 07:33	1
OCDF	ND		100	0.58	pg/L		08/13/18 12:46	08/17/18 07:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,4,6,7,8-HpCDF	81		28 - 143	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,4,7,8,9-HpCDF	82		26 - 138	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,4,7,8-HxCDF	78		26 - 152	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,6,7,8-HxCDD	77		28 - 130	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	08/13/18 12:46	08/17/18 07:33	1
13C-1,2,3,7,8-PeCDF	75		24 - 185	08/13/18 12:46	08/17/18 07:33	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136	08/13/18 12:46	08/17/18 07:33	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	08/13/18 12:46	08/17/18 07:33	1
13C-2,3,7,8-TCDD	78		25 - 164	08/13/18 12:46	08/17/18 07:33	1
13C-2,3,7,8-TCDF	84		24 - 169	08/13/18 12:46	08/17/18 07:33	1
13C-OCDD	66		17 - 157	08/13/18 12:46	08/17/18 07:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	08/13/18 12:46	08/17/18 07:33	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: MB 320-239597/1-A
Matrix: Water
Analysis Batch: 240347

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239597

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.25	J	50	0.28	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,4,6,7,8-HpCDF	0.710	J q	50	0.35	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,4,7,8,9-HpCDF	ND		50	0.44	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,4,7,8-HxCDD	1.24	J q	50	0.39	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,4,7,8-HxCDF	ND		50	0.55	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,6,7,8-HxCDD	ND		50	0.36	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,6,7,8-HxCDF	ND		50	0.56	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,7,8,9-HxCDD	ND		50	0.34	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,7,8,9-HxCDF	ND		50	0.29	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,7,8-PeCDD	ND		50	0.33	pg/L		08/13/18 12:46	08/17/18 01:24	1
1,2,3,7,8-PeCDF	ND		50	0.31	pg/L		08/13/18 12:46	08/17/18 01:24	1
2,3,4,6,7,8-HxCDF	ND		50	0.39	pg/L		08/13/18 12:46	08/17/18 01:24	1
2,3,4,7,8-PeCDF	ND		50	0.33	pg/L		08/13/18 12:46	08/17/18 01:24	1
2,3,7,8-TCDD	ND		10	0.29	pg/L		08/13/18 12:46	08/17/18 01:24	1
2,3,7,8-TCDF	ND		10	0.11	pg/L		08/13/18 12:46	08/17/18 01:24	1
OCDD	7.75	J	100	0.25	pg/L		08/13/18 12:46	08/17/18 01:24	1
OCDF	1.59	J q	100	0.21	pg/L		08/13/18 12:46	08/17/18 01:24	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,6,7,8-HxCDD	56		28 - 130	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,7,8-PeCDD	55		25 - 181	08/13/18 12:46	08/17/18 01:24	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	08/13/18 12:46	08/17/18 01:24	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	08/13/18 12:46	08/17/18 01:24	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	08/13/18 12:46	08/17/18 01:24	1
13C-2,3,7,8-TCDD	66		25 - 164	08/13/18 12:46	08/17/18 01:24	1
13C-2,3,7,8-TCDF	68		24 - 169	08/13/18 12:46	08/17/18 01:24	1
13C-OCDD	44		17 - 157	08/13/18 12:46	08/17/18 01:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197	08/13/18 12:46	08/17/18 01:24	1

Lab Sample ID: LCS 320-239597/2-A
Matrix: Water
Analysis Batch: 240993

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239597

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	1260		pg/L		126	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	1280	*	pg/L		128	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1300		pg/L		130	78 - 138
1,2,3,4,7,8-HxCDD	1000	1280		pg/L		128	70 - 164
1,2,3,4,7,8-HxCDF	1000	1340		pg/L		134	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCS 320-239597/2-A

Matrix: Water

Analysis Batch: 240993

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239597

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	1000	1290		pg/L		129	76 - 134
1,2,3,6,7,8-HxCDF	1000	1310	*	pg/L		131	84 - 130
1,2,3,7,8,9-HxCDD	1000	1370		pg/L		137	64 - 162
1,2,3,7,8,9-HxCDF	1000	1290		pg/L		129	78 - 130
1,2,3,7,8-PeCDD	1000	1170		pg/L		117	70 - 142
1,2,3,7,8-PeCDF	1000	1270		pg/L		127	80 - 134
2,3,4,6,7,8-HxCDF	1000	1280		pg/L		128	70 - 156
2,3,4,7,8-PeCDF	1000	1270		pg/L		127	68 - 160
2,3,7,8-TCDD	200	231		pg/L		115	67 - 158
2,3,7,8-TCDF	200	244		pg/L		122	75 - 158
OCDD	2000	2480		pg/L		124	78 - 144
OCDF	2000	2510		pg/L		125	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	68		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	72		20 - 186
13C-1,2,3,4,7,8-HxCDD	60		21 - 193
13C-1,2,3,4,7,8-HxCDF	52		19 - 202
13C-1,2,3,6,7,8-HxCDD	64		25 - 163
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-1,2,3,7,8-PeCDD	89		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	59		22 - 176
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	67		22 - 152
13C-OCDD	92		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	100		31 - 191

Lab Sample ID: LCSD 320-239597/3-A

Matrix: Water

Analysis Batch: 240993

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239597

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	1000	1130		pg/L		113	70 - 140	11	50
1,2,3,4,6,7,8-HpCDF	1000	1160		pg/L		116	82 - 122	10	50
1,2,3,4,7,8,9-HpCDF	1000	1200		pg/L		120	78 - 138	8	50
1,2,3,4,7,8-HxCDD	1000	1230		pg/L		123	70 - 164	4	50
1,2,3,4,7,8-HxCDF	1000	1140		pg/L		114	72 - 134	16	50
1,2,3,6,7,8-HxCDD	1000	1110		pg/L		111	76 - 134	15	50
1,2,3,6,7,8-HxCDF	1000	1190		pg/L		119	84 - 130	10	50
1,2,3,7,8,9-HxCDD	1000	1180		pg/L		118	64 - 162	15	50
1,2,3,7,8,9-HxCDF	1000	1160		pg/L		116	78 - 130	10	50
1,2,3,7,8-PeCDD	1000	1040		pg/L		104	70 - 142	12	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCSD 320-239597/3-A

Matrix: Water

Analysis Batch: 240993

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239597

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	1140		pg/L		114	80 - 134	11	50
2,3,4,6,7,8-HxCDF	1000	1190		pg/L		119	70 - 156	8	50
2,3,4,7,8-PeCDF	1000	1180		pg/L		118	68 - 160	8	50
2,3,7,8-TCDD	200	210		pg/L		105	67 - 158	9	50
2,3,7,8-TCDF	200	221		pg/L		111	75 - 158	10	50
OCDD	2000	2230		pg/L		112	78 - 144	11	50
OCDF	2000	2300		pg/L		115	63 - 170	9	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	79		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	82		20 - 186
13C-1,2,3,4,7,8-HxCDD	73		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDD	77		25 - 163
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	78		17 - 205
13C-1,2,3,7,8-PeCDD	95		21 - 227
13C-1,2,3,7,8-PeCDF	78		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	77		22 - 152
13C-OCDD	99		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl/4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: MB 320-239721/1-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239721

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		50	1.1	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,4,6,7,8-HpCDF	2.18	J	50	0.90	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,4,7,8,9-HpCDF	4.94	J q	50	1.3	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,4,7,8-HxCDD	ND		50	1.2	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,4,7,8-HxCDF	ND		50	1.3	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,6,7,8-HxCDD	ND		50	1.2	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,6,7,8-HxCDF	ND		50	1.2	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,7,8,9-HxCDD	ND		50	1.1	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,7,8,9-HxCDF	7.84	J	50	1.3	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,7,8-PeCDD	ND		50	1.8	pg/L		08/14/18 08:10	08/28/18 00:43	1
1,2,3,7,8-PeCDF	ND		50	1.2	pg/L		08/14/18 08:10	08/28/18 00:43	1
2,3,4,6,7,8-HxCDF	ND		50	1.0	pg/L		08/14/18 08:10	08/28/18 00:43	1
2,3,4,7,8-PeCDF	ND		50	1.3	pg/L		08/14/18 08:10	08/28/18 00:43	1
2,3,7,8-TCDD	ND		10	1.5	pg/L		08/14/18 08:10	08/28/18 00:43	1
2,3,7,8-TCDF	ND		10	0.82	pg/L		08/14/18 08:10	08/28/18 00:43	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: MB 320-239721/1-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 239721

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	ND		100	1.7	pg/L		08/14/18 08:10	08/28/18 00:43	1
OCDF	ND		100	1.8	pg/L		08/14/18 08:10	08/28/18 00:43	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,4,6,7,8-HpCDF	67		28 - 143	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,4,7,8,9-HpCDF	68		26 - 138	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,7,8,9-HxCDF	70		29 - 147	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,7,8-PeCDD	76		25 - 181	08/14/18 08:10	08/28/18 00:43	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	08/14/18 08:10	08/28/18 00:43	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	08/14/18 08:10	08/28/18 00:43	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	08/14/18 08:10	08/28/18 00:43	1
13C-2,3,7,8-TCDD	70		25 - 164	08/14/18 08:10	08/28/18 00:43	1
13C-2,3,7,8-TCDF	67		24 - 169	08/14/18 08:10	08/28/18 00:43	1
13C-OCDD	76		17 - 157	08/14/18 08:10	08/28/18 00:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/14/18 08:10	08/28/18 00:43	1

Lab Sample ID: LCS 320-239721/2-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239721

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	1070		pg/L		107	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	1120		pg/L		112	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1140		pg/L		114	78 - 138
1,2,3,4,7,8-HxCDD	1000	1120		pg/L		112	70 - 164
1,2,3,4,7,8-HxCDF	1000	1150		pg/L		115	72 - 134
1,2,3,6,7,8-HxCDD	1000	1150		pg/L		115	76 - 134
1,2,3,6,7,8-HxCDF	1000	1180		pg/L		118	84 - 130
1,2,3,7,8,9-HxCDD	1000	1120		pg/L		112	64 - 162
1,2,3,7,8,9-HxCDF	1000	1180		pg/L		118	78 - 130
1,2,3,7,8-PeCDD	1000	1040		pg/L		104	70 - 142
1,2,3,7,8-PeCDF	1000	1150		pg/L		115	80 - 134
2,3,4,6,7,8-HxCDF	1000	1160		pg/L		116	70 - 156
2,3,4,7,8-PeCDF	1000	1120		pg/L		112	68 - 160
2,3,7,8-TCDD	200	218		pg/L		109	67 - 158
2,3,7,8-TCDF	200	227		pg/L		113	75 - 158
OCDD	2000	2100		pg/L		105	78 - 144
OCDF	2000	2080		pg/L		104	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCS 320-239721/2-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 239721

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	69		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,6,7,8-HxCDF	74		21 - 159
13C-1,2,3,7,8,9-HxCDF	70		17 - 205
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-OCDD	80		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	128		31 - 191

Lab Sample ID: LCSD 320-239721/3-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239721

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,6,7,8-HpCDD	1000	1000		pg/L		100	70 - 140	7	50
1,2,3,4,6,7,8-HpCDF	1000	1070		pg/L		107	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	1000	1090		pg/L		109	78 - 138	5	50
1,2,3,4,7,8-HxCDD	1000	1030		pg/L		103	70 - 164	8	50
1,2,3,4,7,8-HxCDF	1000	1090		pg/L		109	72 - 134	5	50
1,2,3,6,7,8-HxCDD	1000	1080		pg/L		108	76 - 134	6	50
1,2,3,6,7,8-HxCDF	1000	1120		pg/L		112	84 - 130	6	50
1,2,3,7,8,9-HxCDD	1000	1100		pg/L		110	64 - 162	2	50
1,2,3,7,8,9-HxCDF	1000	1100		pg/L		110	78 - 130	7	50
1,2,3,7,8-PeCDD	1000	1030		pg/L		103	70 - 142	0	50
1,2,3,7,8-PeCDF	1000	1100		pg/L		110	80 - 134	4	50
2,3,4,6,7,8-HxCDF	1000	1130		pg/L		113	70 - 156	3	50
2,3,4,7,8-PeCDF	1000	1090		pg/L		109	68 - 160	2	50
2,3,7,8-TCDD	200	210		pg/L		105	67 - 158	4	50
2,3,7,8-TCDF	200	217		pg/L		108	75 - 158	5	50
OCDD	2000	2070		pg/L		104	78 - 144	1	50
OCDF	2000	2020		pg/L		101	63 - 170	3	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	76		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	69		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	72		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	65		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCSD 320-239721/3-A

Matrix: Water

Analysis Batch: 242614

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 239721

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	70		21 - 159
13C-1,2,3,7,8,9-HxCDF	70		17 - 205
13C-1,2,3,7,8-PeCDD	81		21 - 227
13C-1,2,3,7,8-PeCDF	71		21 - 192
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-2,3,7,8-TCDD	79		20 - 175
13C-2,3,7,8-TCDF	76		22 - 152
13C-OCDD	84		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	130		31 - 191

Lab Sample ID: MB 320-240851/1-A

Matrix: Solid

Analysis Batch: 242030

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240851

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000344	J	0.0050	0.000033	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,4,6,7,8-HpCDF	0.0000738	J q	0.0050	0.000028	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,4,7,8,9-HpCDF	0.000152	J	0.0050	0.000033	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,4,7,8-HxCDD	0.000115	J q	0.0050	0.000042	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000044	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000040	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000045	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000038	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,7,8,9-HxCDF	0.000172	J	0.0050	0.000027	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000032	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000025	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000038	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000028	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
2,3,7,8-TCDD	ND		0.0010	0.000026	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
2,3,7,8-TCDF	ND		0.0010	0.000019	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
OCDD	0.00409	J	0.010	0.000038	ug/Kg		08/20/18 12:39	08/25/18 00:08	1
OCDF	0.000180	J q	0.010	0.000031	ug/Kg		08/20/18 12:39	08/25/18 00:08	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	78		23 - 140	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,7,8-PeCDD	67		25 - 181	08/20/18 12:39	08/25/18 00:08	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	08/20/18 12:39	08/25/18 00:08	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	08/20/18 12:39	08/25/18 00:08	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: MB 320-240851/1-A

Matrix: Solid

Analysis Batch: 242030

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240851

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	63		21 - 178	08/20/18 12:39	08/25/18 00:08	1
13C-2,3,7,8-TCDD	75		25 - 164	08/20/18 12:39	08/25/18 00:08	1
13C-2,3,7,8-TCDF	67		24 - 169	08/20/18 12:39	08/25/18 00:08	1
13C-OCDD	63		17 - 157	08/20/18 12:39	08/25/18 00:08	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	121		35 - 197	08/20/18 12:39	08/25/18 00:08	1

Lab Sample ID: LCS 320-240851/2-A

Matrix: Solid

Analysis Batch: 242030

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240851

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.105		ug/Kg		105	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.112		ug/Kg		112	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.111		ug/Kg		111	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.111		ug/Kg		111	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.109		ug/Kg		109	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.112		ug/Kg		112	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.113		ug/Kg		113	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	0.113		ug/Kg		113	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	70 - 156
2,3,4,7,8-PeCDF	0.100	0.111		ug/Kg		111	68 - 160
2,3,7,8-TCDD	0.0200	0.0196		ug/Kg		98	67 - 158
2,3,7,8-TCDF	0.0200	0.0224		ug/Kg		112	75 - 158
OCDD	0.200	0.248		ug/Kg		124	78 - 144
OCDF	0.200	0.229		ug/Kg		114	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,6,7,8-HxCDF	72		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,6,7,8-HxCDF	70		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-OCDD	61		13 - 199

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCS 320-240851/2-A
Matrix: Solid
Analysis Batch: 242030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240851

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	119		31 - 191

Lab Sample ID: LCSD 320-240851/3-A
Matrix: Solid
Analysis Batch: 242030

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 240851

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	0.102		ug/Kg		102	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.100	0.110		ug/Kg		110	82 - 122	2	50
1,2,3,4,7,8,9-HpCDF	0.100	0.111		ug/Kg		111	78 - 138	0	50
1,2,3,4,7,8-HxCDD	0.100	0.107		ug/Kg		107	70 - 164	4	50
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134	0	50
1,2,3,6,7,8-HxCDD	0.100	0.111		ug/Kg		111	76 - 134	2	50
1,2,3,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	84 - 130	0	50
1,2,3,7,8,9-HxCDD	0.100	0.112		ug/Kg		112	64 - 162	0	50
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.107		ug/Kg		107	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.112		ug/Kg		112	80 - 134	1	50
2,3,4,6,7,8-HxCDF	0.100	0.112		ug/Kg		112	70 - 156	0	50
2,3,4,7,8-PeCDF	0.100	0.113		ug/Kg		113	68 - 160	2	50
2,3,7,8-TCDD	0.0200	0.0193		ug/Kg		97	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0221		ug/Kg		110	75 - 158	1	50
OCDD	0.200	0.213		ug/Kg		106	78 - 144	15	50
OCDF	0.200	0.229		ug/Kg		115	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	79		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	74		20 - 186
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	76		25 - 163
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	74		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	64		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	120		31 - 191

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: MB 320-240898/1-A

Matrix: Solid

Analysis Batch: 242080

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240898

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000138	J q	0.0050	0.000087	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.000065	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,4,7,8,9-HpCDF	0.000322	J	0.0050	0.000091	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,4,7,8-HxCDD	ND		0.0050	0.000085	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00011	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000078	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.00011	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000075	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,7,8,9-HxCDF	0.000466	J	0.0050	0.00011	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00019	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000092	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000095	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00010	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
2,3,7,8-TCDD	ND		0.0010	0.00014	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
2,3,7,8-TCDF	ND		0.0010	0.000084	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
OCDD	0.00302	J q	0.010	0.00012	ug/Kg		08/20/18 14:09	08/25/18 22:27	1
OCDF	0.000417	J	0.010	0.00018	ug/Kg		08/20/18 14:09	08/25/18 22:27	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,7,8-PeCDD	58		25 - 181	08/20/18 14:09	08/25/18 22:27	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	08/20/18 14:09	08/25/18 22:27	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	08/20/18 14:09	08/25/18 22:27	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	08/20/18 14:09	08/25/18 22:27	1
13C-2,3,7,8-TCDD	56		25 - 164	08/20/18 14:09	08/25/18 22:27	1
13C-2,3,7,8-TCDF	51		24 - 169	08/20/18 14:09	08/25/18 22:27	1
13C-OCDD	68		17 - 157	08/20/18 14:09	08/25/18 22:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	132		35 - 197	08/20/18 14:09	08/25/18 22:27	1

Lab Sample ID: LCS 320-240898/2-A

Matrix: Solid

Analysis Batch: 242080

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240898

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.102		ug/Kg		102	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	0.113		ug/Kg		113	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.110		ug/Kg		110	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.113		ug/Kg		113	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCS 320-240898/2-A

Matrix: Solid

Analysis Batch: 242080

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240898

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.106		ug/Kg		106	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.113		ug/Kg		113	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.114		ug/Kg		114	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.112		ug/Kg		112	78 - 130
1,2,3,7,8-PeCDD	0.100	0.109		ug/Kg		109	70 - 142
1,2,3,7,8-PeCDF	0.100	0.109		ug/Kg		109	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156
2,3,4,7,8-PeCDF	0.100	0.110		ug/Kg		110	68 - 160
2,3,7,8-TCDD	0.0200	0.0208		ug/Kg		104	67 - 158
2,3,7,8-TCDF	0.0200	0.0211		ug/Kg		106	75 - 158
OCDD	0.200	0.215		ug/Kg		108	78 - 144
OCDF	0.200	0.213		ug/Kg		106	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	51		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	50		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	47		20 - 186
13C-1,2,3,4,7,8-HxCDD	42		21 - 193
13C-1,2,3,4,7,8-HxCDF	41		19 - 202
13C-1,2,3,6,7,8-HxCDD	48		25 - 163
13C-1,2,3,6,7,8-HxCDF	47		21 - 159
13C-1,2,3,7,8,9-HxCDF	45		17 - 205
13C-1,2,3,7,8-PeCDD	44		21 - 227
13C-1,2,3,7,8-PeCDF	42		21 - 192
13C-2,3,4,6,7,8-HxCDF	44		22 - 176
13C-2,3,4,7,8-PeCDF	41		13 - 328
13C-2,3,7,8-TCDD	46		20 - 175
13C-2,3,7,8-TCDF	43		22 - 152
13C-OCDD	56		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	124		31 - 191

Lab Sample ID: LCSD 320-240898/3-A

Matrix: Solid

Analysis Batch: 242080

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 240898

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.104		ug/Kg		104	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.100	0.104		ug/Kg		104	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.100	0.111		ug/Kg		111	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164	6	50
1,2,3,4,7,8-HxCDF	0.100	0.111		ug/Kg		111	72 - 134	2	50
1,2,3,6,7,8-HxCDD	0.100	0.107		ug/Kg		107	76 - 134	1	50
1,2,3,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	84 - 130	2	50
1,2,3,7,8,9-HxCDD	0.100	0.111		ug/Kg		111	64 - 162	3	50
1,2,3,7,8,9-HxCDF	0.100	0.111		ug/Kg		111	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.107		ug/Kg		107	70 - 142	2	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCSD 320-240898/3-A

Matrix: Solid

Analysis Batch: 242080

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 240898

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.111		ug/Kg		111	80 - 134	2	50
2,3,4,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	70 - 156	0	50
2,3,4,7,8-PeCDF	0.100	0.110		ug/Kg		110	68 - 160	0	50
2,3,7,8-TCDD	0.0200	0.0213		ug/Kg		107	67 - 158	3	50
2,3,7,8-TCDF	0.0200	0.0208		ug/Kg		104	75 - 158	1	50
OCDD	0.200	0.217		ug/Kg		108	78 - 144	1	50
OCDF	0.200	0.209		ug/Kg		104	63 - 170	2	50

LCSD		LCSD	Limits
Isotope Dilution	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	51		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	51		20 - 186
13C-1,2,3,4,7,8-HxCDD	45		21 - 193
13C-1,2,3,4,7,8-HxCDF	43		19 - 202
13C-1,2,3,6,7,8-HxCDD	49		25 - 163
13C-1,2,3,6,7,8-HxCDF	48		21 - 159
13C-1,2,3,7,8,9-HxCDF	45		17 - 205
13C-1,2,3,7,8-PeCDD	46		21 - 227
13C-1,2,3,7,8-PeCDF	43		21 - 192
13C-2,3,4,6,7,8-HxCDF	47		22 - 176
13C-2,3,4,7,8-PeCDF	42		13 - 328
13C-2,3,7,8-TCDD	48		20 - 175
13C-2,3,7,8-TCDF	43		22 - 152
13C-OCDD	54		13 - 199

LCSD		LCSD	Limits
Surrogate	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	127		31 - 191

Lab Sample ID: MB 320-241175/1-A

Matrix: Solid

Analysis Batch: 242218

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 241175

MB		MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte	Result	Qualifier							
1,2,3,4,6,7,8-HpCDD	0.000123	J q	0.0050	0.000017	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,4,6,7,8-HpCDF	0.0000688	J q	0.0050	0.000019	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,4,7,8,9-HpCDF	0.000161	J q	0.0050	0.000022	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,4,7,8-HxCDD	0.000117	J q	0.0050	0.000022	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000020	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,6,7,8-HxCDD	0.0000305	J q	0.0050	0.000020	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000020	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,7,8,9-HxCDD	0.0000451	J	0.0050	0.000019	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,7,8,9-HxCDF	0.000214	J q	0.0050	0.000012	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000018	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
1,2,3,7,8-PeCDF	0.0000340	J q	0.0050	0.000015	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000018	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000018	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
2,3,7,8-TCDD	ND		0.0010	0.0000073	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
2,3,7,8-TCDF	0.0000426	J	0.0010	0.0000052	ug/Kg		08/21/18 13:53	08/26/18 11:41	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: MB 320-241175/1-A

Matrix: Solid

Analysis Batch: 242218

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 241175

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.000941	J	0.010	0.000023	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
OCDF	0.000163	J	0.010	0.0000086	ug/Kg		08/21/18 13:53	08/26/18 11:41	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,4,6,7,8-HpCDF	81		28 - 143				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,4,7,8,9-HpCDF	84		26 - 138				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,6,7,8-HxCDD	74		28 - 130				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,6,7,8-HxCDF	78		26 - 123				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,7,8-PeCDD	45		25 - 181				08/21/18 13:53	08/26/18 11:41	1
13C-1,2,3,7,8-PeCDF	50		24 - 185				08/21/18 13:53	08/26/18 11:41	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136				08/21/18 13:53	08/26/18 11:41	1
13C-2,3,4,7,8-PeCDF	45		21 - 178				08/21/18 13:53	08/26/18 11:41	1
13C-2,3,7,8-TCDD	74		25 - 164				08/21/18 13:53	08/26/18 11:41	1
13C-2,3,7,8-TCDF	68		24 - 169				08/21/18 13:53	08/26/18 11:41	1
13C-OCDD	78		17 - 157				08/21/18 13:53	08/26/18 11:41	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	122		35 - 197				08/21/18 13:53	08/26/18 11:41	1

Lab Sample ID: LCS 320-241175/2-A

Matrix: Solid

Analysis Batch: 242218

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 241175

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.101		ug/Kg		101	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.106		ug/Kg		106	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.108		ug/Kg		108	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.104		ug/Kg		104	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.106		ug/Kg		106	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.107		ug/Kg		107	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	0.109		ug/Kg		109	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.107		ug/Kg		107	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0932		ug/Kg		93	70 - 142
1,2,3,7,8-PeCDF	0.100	0.109		ug/Kg		109	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	0.112		ug/Kg		112	68 - 160
2,3,7,8-TCDD	0.0200	0.0186		ug/Kg		93	67 - 158
2,3,7,8-TCDF	0.0200	0.0211		ug/Kg		105	75 - 158
OCDD	0.200	0.215		ug/Kg		107	78 - 144
OCDF	0.200	0.221		ug/Kg		111	63 - 170
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
13C-1,2,3,4,6,7,8-HpCDD	85		26 - 166				

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCS 320-241175/2-A

Matrix: Solid

Analysis Batch: 242218

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 241175

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	79		20 - 186
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	68		25 - 163
13C-1,2,3,6,7,8-HxCDF	72		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-1,2,3,7,8-PeCDD	33		21 - 227
13C-1,2,3,7,8-PeCDF	23		21 - 192
13C-2,3,4,6,7,8-HxCDF	70		22 - 176
13C-2,3,4,7,8-PeCDF	31		13 - 328
13C-2,3,7,8-TCDD	70		20 - 175
13C-2,3,7,8-TCDF	64		22 - 152
13C-OCDD	75		13 - 199

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

Lab Sample ID: LCSD 320-241175/3-A

Matrix: Solid

Analysis Batch: 242614

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 241175

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	0.0935		ug/Kg		94	70 - 140	7	50
1,2,3,4,6,7,8-HpCDF	0.100	0.0998		ug/Kg		100	82 - 122	6	50
1,2,3,4,7,8,9-HpCDF	0.100	0.103		ug/Kg		103	78 - 138	5	50
1,2,3,4,7,8-HxCDD	0.100	0.0943		ug/Kg		94	70 - 164	9	50
1,2,3,4,7,8-HxCDF	0.100	0.102		ug/Kg		102	72 - 134	4	50
1,2,3,6,7,8-HxCDD	0.100	0.103		ug/Kg		103	76 - 134	4	50
1,2,3,6,7,8-HxCDF	0.100	0.105		ug/Kg		105	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.104		ug/Kg		104	64 - 162	5	50
1,2,3,7,8,9-HxCDF	0.100	0.102		ug/Kg		102	78 - 130	5	50
1,2,3,7,8-PeCDD	0.100	0.0919		ug/Kg		92	70 - 142	1	50
1,2,3,7,8-PeCDF	0.100	0.101		ug/Kg		101	80 - 134	8	50
2,3,4,6,7,8-HxCDF	0.100	0.104		ug/Kg		104	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.0998		ug/Kg		100	68 - 160	11	50
2,3,7,8-TCDD	0.0200	0.0187		ug/Kg		93	67 - 158	0	50
2,3,7,8-TCDF	0.0200	0.0190		ug/Kg		95	75 - 158	10	50
OCDD	0.200	0.199		ug/Kg		99	78 - 144	8	50
OCDF	0.200	0.189		ug/Kg		94	63 - 170	16	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	90		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	83		20 - 186
13C-1,2,3,4,7,8-HxCDD	73		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDD	72		25 - 163

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79444-2

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

Lab Sample ID: LCSD 320-241175/3-A

Matrix: Solid

Analysis Batch: 242614

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 241175

<i>Isotope Dilution</i>	<i>LCSD %Recovery</i>	<i>LCSD Qualifier</i>	<i>Limits</i>
13C-1,2,3,6,7,8-HxCDF	73		21 - 159
13C-1,2,3,7,8,9-HxCDF	74		17 - 205
13C-1,2,3,7,8-PeCDD	80		21 - 227
13C-1,2,3,7,8-PeCDF	69		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	67		22 - 152
13C-OCDD	102		13 - 199

<i>Surrogate</i>	<i>LCSD %Recovery</i>	<i>LCSD Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	126		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-6to8

Date Collected: 08/06/18 15:05

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-1

Matrix: Solid

Percent Solids: 52.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242030	08/25/18 02:26	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 00:56	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-10to12

Date Collected: 08/06/18 15:15

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-2

Matrix: Solid

Percent Solids: 57.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 10:36	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 01:34	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-8to10

Date Collected: 08/06/18 15:10

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-3

Matrix: Solid

Percent Solids: 52.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 11:22	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 02:12	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-0to2

Date Collected: 08/06/18 14:50

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-4

Matrix: Solid

Percent Solids: 44.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 12:08	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 02:49	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-2to4

Date Collected: 08/06/18 14:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-5

Matrix: Solid

Percent Solids: 51.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 12:54	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S226-2to4

Date Collected: 08/06/18 14:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-5

Matrix: Solid

Percent Solids: 51.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 03:27	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-12to14

Date Collected: 08/06/18 15:20

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-6

Matrix: Solid

Percent Solids: 56.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 13:40	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 04:05	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-4to6

Date Collected: 08/06/18 15:00

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-7

Matrix: Solid

Percent Solids: 57.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 14:26	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 04:43	SMA	TAL SAC

Client Sample ID: PDI-SC-S226-14to15.8

Date Collected: 08/06/18 15:25

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-8

Matrix: Solid

Percent Solids: 55.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 15:12	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 05:21	SMA	TAL SAC

Client Sample ID: PDI-SC-S222-0to2

Date Collected: 08/07/18 09:45

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-9

Matrix: Solid

Percent Solids: 39.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 15:58	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	DL		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	DL	20	242805	08/29/18 14:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 05:59	SMA	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-2to4

Lab Sample ID: 580-79444-10

Date Collected: 08/07/18 09:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 16:44	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 06:37	SMA	TAL SAC

Client Sample ID: PDI-SC-S222-4to5

Lab Sample ID: 580-79444-11

Date Collected: 08/07/18 09:55

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 64.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 17:30	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242365	08/26/18 07:14	SMA	TAL SAC

Client Sample ID: PDI-SC-S222-5to7.2

Lab Sample ID: 580-79444-12

Date Collected: 08/07/18 10:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 79.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242032	08/25/18 18:16	ALM	TAL SAC

Client Sample ID: PDI-SC-S222-5to7.2D

Lab Sample ID: 580-79444-13

Date Collected: 08/07/18 10:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 79.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/25/18 23:42	AS	TAL SAC

Client Sample ID: PDI-SC-S222-7.2to9.2

Lab Sample ID: 580-79444-14

Date Collected: 08/07/18 10:05

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 00:28	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S222-9.2to11.2

Lab Sample ID: 580-79444-15

Date Collected: 08/07/18 10:10

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 64.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 01:14	AS	TAL SAC

Client Sample ID: PDI-SC-S222-11.2to13.2

Lab Sample ID: 580-79444-16

Date Collected: 08/07/18 10:15

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 66.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 02:00	AS	TAL SAC

Client Sample ID: PDI-SC-S222-13.2to15.2

Lab Sample ID: 580-79444-17

Date Collected: 08/07/18 10:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 63.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 02:46	AS	TAL SAC

Client Sample ID: PDI-SC-S248-0to2

Lab Sample ID: 580-79444-18

Date Collected: 08/07/18 16:45

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 39.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 03:32	AS	TAL SAC

Client Sample ID: PDI-SC-S248-2to4

Lab Sample ID: 580-79444-19

Date Collected: 08/07/18 16:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 04:17	AS	TAL SAC

Client Sample ID: PDI-SC-S248-4to6.2

Lab Sample ID: 580-79444-20

Date Collected: 08/07/18 16:55

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 56.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240851	08/20/18 12:39	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 05:03	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S139-0to2

Lab Sample ID: 580-79444-21

Date Collected: 08/07/18 14:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 43.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242633	08/28/18 06:39	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242069	08/25/18 17:55	ALM	TAL SAC

Client Sample ID: PDI-SC-S139-2to4.1

Lab Sample ID: 580-79444-22

Date Collected: 08/07/18 14:25

Matrix: Solid

Date Received: 08/08/18 15:30

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	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242633	08/28/18 07:16	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 00:52	AS	TAL SAC

Client Sample ID: PDI-SC-S139-4.1to5.9

Lab Sample ID: 580-79444-23

Date Collected: 08/07/18 14:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 72.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 01:40	AS	TAL SAC

Client Sample ID: PDI-SC-S139-4.1to5.9D

Lab Sample ID: 580-79444-24

Date Collected: 08/07/18 14:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 77.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 02:28	AS	TAL SAC

Client Sample ID: PDI-SC-S117-0to2

Lab Sample ID: 580-79444-25

Date Collected: 08/07/18 16:00

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 61.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242633	08/28/18 07:54	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 03:17	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S117-2to4

Lab Sample ID: 580-79444-26

Date Collected: 08/07/18 16:05

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		10	242803	08/29/18 00:16	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242633	08/28/18 08:32	AS	TAL SAC

Client Sample ID: PDI-SC-S117-4to6

Lab Sample ID: 580-79444-27

Date Collected: 08/07/18 16:10

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 58.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		10	242803	08/29/18 01:02	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	10	242734	08/28/18 17:16	ALM	TAL SAC

Client Sample ID: PDI-SC-S219-0to2

Lab Sample ID: 580-79444-28

Date Collected: 08/07/18 11:40

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 60.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242633	08/28/18 06:01	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 05:42	AS	TAL SAC

Client Sample ID: PDI-SC-S219-2to4

Lab Sample ID: 580-79444-29

Date Collected: 08/07/18 11:45

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 74.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			240898	08/20/18 14:09	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242080	08/26/18 06:30	AS	TAL SAC

Client Sample ID: PDI-SC-S219-4to5.2

Lab Sample ID: 580-79444-30

Date Collected: 08/07/18 11:50

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 71.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 05:49	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S105-0to2

Date Collected: 08/08/18 08:55

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-31

Matrix: Solid

Percent Solids: 63.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 06:35	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/28/18 23:35	AS	TAL SAC

Client Sample ID: PDI-SC-S105-2to4

Date Collected: 08/08/18 09:00

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-32

Matrix: Solid

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			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242211	08/26/18 07:21	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 00:13	AS	TAL SAC

Client Sample ID: PDI-SC-S105-4to5.6

Date Collected: 08/08/18 09:05

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-33

Matrix: Solid

Percent Solids: 70.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 00:51	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242614	08/28/18 05:33	AS	TAL SAC

Client Sample ID: PDI-SC-S105-5.6to6.6

Date Collected: 08/08/18 09:10

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-34

Matrix: Solid

Percent Solids: 61.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		10	242803	08/29/18 01:48	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	10	242929	08/29/18 18:44	ALM	TAL SAC

Client Sample ID: PDI-SC-S191-0to2

Date Collected: 08/08/18 10:15

Date Received: 08/08/18 15:30

Lab Sample ID: 580-79444-35

Matrix: Solid

Percent Solids: 40.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 01:29	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S191-0to2

Lab Sample ID: 580-79444-35

Date Collected: 08/08/18 10:15

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 40.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	242614	08/28/18 07:09	AS	TAL SAC

Client Sample ID: PDI-SC-S191-2to4

Lab Sample ID: 580-79444-36

Date Collected: 08/08/18 10:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 02:07	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242614	08/28/18 07:58	AS	TAL SAC

Client Sample ID: PDI-SC-S191-4to6

Lab Sample ID: 580-79444-37

Date Collected: 08/08/18 10:25

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 55.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242218	08/26/18 17:03	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 02:44	AS	TAL SAC

Client Sample ID: PDI-SC-S191-6to8.1

Lab Sample ID: 580-79444-38

Date Collected: 08/08/18 10:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 67.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242218	08/26/18 17:49	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 03:22	AS	TAL SAC

Client Sample ID: PDI-SC-S192-0to1.5

Lab Sample ID: 580-79444-39

Date Collected: 08/08/18 11:20

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 27.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242218	08/26/18 18:35	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 04:00	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79444-2

Client Sample ID: PDI-SC-S192-1.5to3

Lab Sample ID: 580-79444-40

Date Collected: 08/08/18 11:25

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 37.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242219	08/26/18 22:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 04:38	AS	TAL SAC

Client Sample ID: PDI-SC-S192-3to4.2

Lab Sample ID: 580-79444-41

Date Collected: 08/08/18 11:30

Matrix: Solid

Date Received: 08/08/18 15:30

Percent Solids: 80.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B		1	242219	08/26/18 23:41	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		241175	08/21/18 13:53	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	242739	08/29/18 05:16	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180807

Lab Sample ID: 580-79444-42

Date Collected: 08/07/18 13:00

Matrix: Water

Date Received: 08/08/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			239597	08/13/18 12:46	A1A	TAL SAC
Total/NA	Analysis	1613B		1	240347	08/17/18 06:47	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180808

Lab Sample ID: 580-79444-43

Date Collected: 08/08/18 10:55

Matrix: Water

Date Received: 08/08/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			239721	08/14/18 08:10	ITH	TAL SAC
Total/NA	Analysis	1613B		1	242614	08/28/18 03:08	AS	TAL SAC

Client Sample ID: PDI-RB-SS-180806

Lab Sample ID: 580-79444-44

Date Collected: 08/06/18 16:00

Matrix: Water

Date Received: 08/08/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			239597	08/13/18 12:46	A1A	TAL SAC
Total/NA	Analysis	1613B		1	240347	08/17/18 07:33	AS	TAL SAC

Laboratory References:

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

TestAmerica Seattle

Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79444-2

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	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

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

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

TestAmerica Seattle

Sample Summary

Client: AECOM

TestAmerica Job ID: 580-79444-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79444-1	PDI-SC-S226-6to8	Solid	08/06/18 15:05	08/08/18 15:30
580-79444-2	PDI-SC-S226-10to12	Solid	08/06/18 15:15	08/08/18 15:30
580-79444-3	PDI-SC-S226-8to10	Solid	08/06/18 15:10	08/08/18 15:30
580-79444-4	PDI-SC-S226-0to2	Solid	08/06/18 14:50	08/08/18 15:30
580-79444-5	PDI-SC-S226-2to4	Solid	08/06/18 14:55	08/08/18 15:30
580-79444-6	PDI-SC-S226-12to14	Solid	08/06/18 15:20	08/08/18 15:30
580-79444-7	PDI-SC-S226-4to6	Solid	08/06/18 15:00	08/08/18 15:30
580-79444-8	PDI-SC-S226-14to15.8	Solid	08/06/18 15:25	08/08/18 15:30
580-79444-9	PDI-SC-S222-0to2	Solid	08/07/18 09:45	08/08/18 15:30
580-79444-10	PDI-SC-S222-2to4	Solid	08/07/18 09:50	08/08/18 15:30
580-79444-11	PDI-SC-S222-4to5	Solid	08/07/18 09:55	08/08/18 15:30
580-79444-12	PDI-SC-S222-5to7.2	Solid	08/07/18 10:00	08/08/18 15:30
580-79444-13	PDI-SC-S222-5to7.2D	Solid	08/07/18 10:00	08/08/18 15:30
580-79444-14	PDI-SC-S222-7.2to9.2	Solid	08/07/18 10:05	08/08/18 15:30
580-79444-15	PDI-SC-S222-9.2to11.2	Solid	08/07/18 10:10	08/08/18 15:30
580-79444-16	PDI-SC-S222-11.2to13.2	Solid	08/07/18 10:15	08/08/18 15:30
580-79444-17	PDI-SC-S222-13.2to15.2	Solid	08/07/18 10:20	08/08/18 15:30
580-79444-18	PDI-SC-S248-0to2	Solid	08/07/18 16:45	08/08/18 15:30
580-79444-19	PDI-SC-S248-2to4	Solid	08/07/18 16:50	08/08/18 15:30
580-79444-20	PDI-SC-S248-4to6.2	Solid	08/07/18 16:55	08/08/18 15:30
580-79444-21	PDI-SC-S139-0to2	Solid	08/07/18 14:20	08/08/18 15:30
580-79444-22	PDI-SC-S139-2to4.1	Solid	08/07/18 14:25	08/08/18 15:30
580-79444-23	PDI-SC-S139-4.1to5.9	Solid	08/07/18 14:30	08/08/18 15:30
580-79444-24	PDI-SC-S139-4.1to5.9D	Solid	08/07/18 14:30	08/08/18 15:30
580-79444-25	PDI-SC-S117-0to2	Solid	08/07/18 16:00	08/08/18 15:30
580-79444-26	PDI-SC-S117-2to4	Solid	08/07/18 16:05	08/08/18 15:30
580-79444-27	PDI-SC-S117-4to6	Solid	08/07/18 16:10	08/08/18 15:30
580-79444-28	PDI-SC-S219-0to2	Solid	08/07/18 11:40	08/08/18 15:30
580-79444-29	PDI-SC-S219-2to4	Solid	08/07/18 11:45	08/08/18 15:30
580-79444-30	PDI-SC-S219-4to5.2	Solid	08/07/18 11:50	08/08/18 15:30
580-79444-31	PDI-SC-S105-0to2	Solid	08/08/18 08:55	08/08/18 15:30
580-79444-32	PDI-SC-S105-2to4	Solid	08/08/18 09:00	08/08/18 15:30
580-79444-33	PDI-SC-S105-4to5.6	Solid	08/08/18 09:05	08/08/18 15:30
580-79444-34	PDI-SC-S105-5.6to6.6	Solid	08/08/18 09:10	08/08/18 15:30
580-79444-35	PDI-SC-S191-0to2	Solid	08/08/18 10:15	08/08/18 15:30
580-79444-36	PDI-SC-S191-2to4	Solid	08/08/18 10:20	08/08/18 15:30
580-79444-37	PDI-SC-S191-4to6	Solid	08/08/18 10:25	08/08/18 15:30
580-79444-38	PDI-SC-S191-6to8.1	Solid	08/08/18 10:30	08/08/18 15:30
580-79444-39	PDI-SC-S192-0to1.5	Solid	08/08/18 11:20	08/08/18 15:30
580-79444-40	PDI-SC-S192-1.5to3	Solid	08/08/18 11:25	08/08/18 15:30
580-79444-41	PDI-SC-S192-3to4.2	Solid	08/08/18 11:30	08/08/18 15:30
580-79444-42	PDI-RB-SS-180807	Water	08/07/18 13:00	08/08/18 15:30
580-79444-43	PDI-RB-SS-180808	Water	08/08/18 10:55	08/08/18 15:30
580-79444-44	PDI-RB-SS-180806	Water	08/06/18 16:00	08/08/18 15:30

TestAmerica Seattle

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsea Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other		Site Contact: Jennifer Ray Laboratory Contact: Elaine Walker Grain size ASTM D7928/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3 Afterberg Limits ASTM D4318		Date: 8/8/18 Carrier: Courier		COC No: 1 of 9 pages			
Sample Identification		Sample Date		Sample Time		Matrix		QC Sample		Sampler's Initials		Total No. of Cont.	
PDI-SC-S222 - 5 to 7.2D		8/7/2018		10:00		SC				ED		3	
PDI-SC-S222 - 7.2 to 9.2		8/7/2018		10:05		SC		MS/MSD		ED		6	
PDI-SC-S222 - 9.2 to 11.2		8/7/2018		10:10		SC				ED		15	
PDI-SC-S222 - 11 to 13.2		8/7/2018		10:15		SC				ED		16	
PDI-SC-S222 - 13 to 15.2		8/7/2018		10:20		SC				ED		4	
PDI-SC-S248 - 0 to 2		8/7/2018		16:45		SC				ED		4	
PDI-SC-S248 - 2 to 4		8/7/2018		16:50		SC		MS/MSD		ED		6	
PDI-SC-S248 - 4 to 6.2		8/7/2018		16:55		SC				ED			
PDI-SC-S219 - 0 to 2		8/7/2018		11:40		SC				ED			
PDI-SC-S219 - 2 to 4		8/7/2018		11:45		SC		TC		ED			
PDI-SC-S219 - 4 to 5.2		8/7/2018		11:50		SC				ED			
PDI-SC-S219 - 0 to 2		8/7/2018		14:20		SC				ED			

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

Relinquished by: [Signature]		Company: M.E.		Date/Time: 8/8/18 1445	
Relinquished by: [Signature]		Company: TAFOR		Date/Time: 8/8/18 1530	
Relinquished by: [Signature]		Company:		Date/Time:	

Special Instructions/QC Requirements & Comments: **Separate reports for each lab**

SUBSURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:	
Project Contact: Amy Dahl / Chelsea Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other		Date: 8/8/18 Carrier: Courier	
Site Contact: Jennifer Ray Laboratory Contact: Elaine Walker		COC No. 1 3 of 4 pages	

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction				Sample Specific Notes:
							PDD's 1613B	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 1603	
PDI-SC-S139 - 0 to 2	8/7/2018	14:20	SC		ED	4					
PDI-SC-S139 - 2 to 4.1	8/7/2018	14:25	SC	MS/MSD	ED	4					
PDI-SC-S139 - 4.1 to 5.9	8/7/2018	14:30	SC		ED	3					
PDI-SC-S139 - 4.1 to 5.9D	8/7/2018	14:30	SC		ED	4					
PDI-SC-S117 - 0 to 2	8/7/2018	16:00	SC		ED	1					
PDI-SC-S117 - 2 to 4	8/7/2018	16:05	SC		ED						
PDI-SC-S117 - 4 to 6	8/7/2018	16:10	SC		ED						
PDI-SC-S219 - 0 to 2	8/7/2018	11:40	SC		ED						
PDI-SC-S219 - 2 to 4	8/7/2018	11:45	SC		ED						
PDI-SC-S219 - 4 to 5.2	8/7/2018	11:50	SC		ED						
PDI-SC-S105 - 0 to 2	8/8/2018	8:55	SC		ED						
PDI-SC-S105 - 2 to 4	8/8/2018	9:00	SC	MS/MSD	ED	6					

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

Sample Disposal ☐ Return To Client ☒ Archive For 12 Months	Date/Time 8/8/18 1445
---	--------------------------

Special Instructions/QC Requirements & Comments: Separate reports for each lab

Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i>	Company: <i>[Signature]</i> Company: <i>[Signature]</i> Company: <i>[Signature]</i>	Date/Time: 8/8/18 1445 Date/Time: 8/8/18 1530 Date/Time:
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SUBSURFACE SEDIMENT CHAIN OF CUSTODY

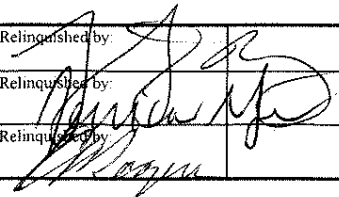
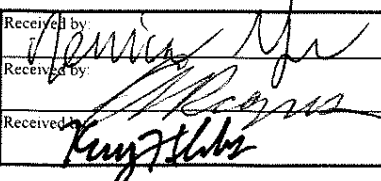
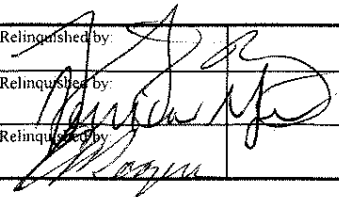
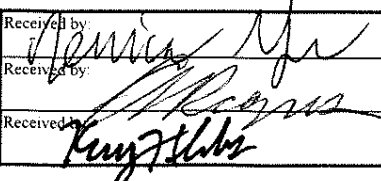
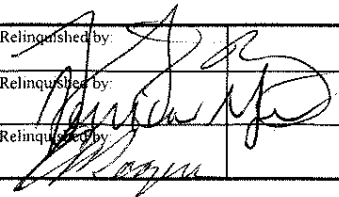
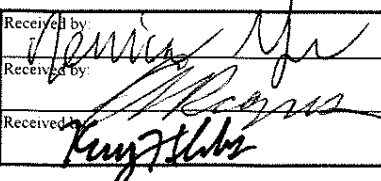
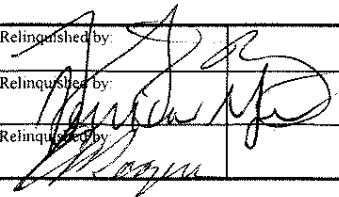
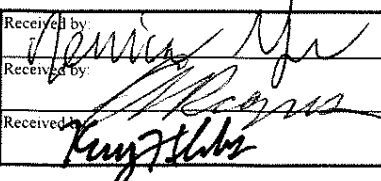
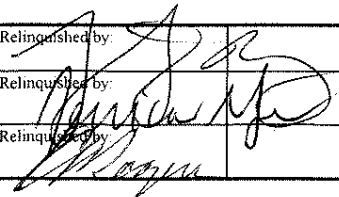
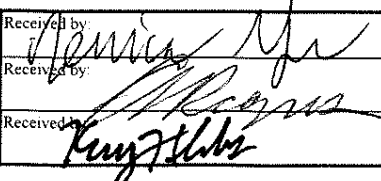
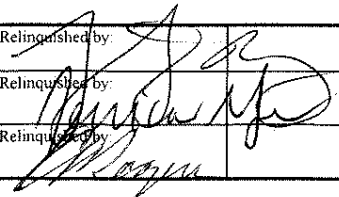
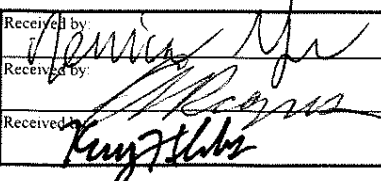
TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W 21 days ☒ 21 days ☐ Other		Site Contact: Jennifer Ray Laboratory Contact: Elaine Walker Date: 8/8/18 Carrier: Courier COC No: 1 of 1 pages							
Sample Identification		Sample Date		Sample Time		Matrix		QC Sample		Sampler's Initials		Total No. of Cont.	
PDI-SC-S105 - 4 to 5.6		8/8/2018		9:05		SC				ED		5	
PDI-SC-S105 - 5.6 to 6.6		8/8/2018		9:10		SC				ED		5	
PDI-SC-S191 - 0 to 2		8/8/2018		10:15		SC				ED		4	
PDI-SC-S191 - 2 to 4		8/8/2018		10:20		SC				ED		4	
PDI-SC-S191 - 4 to 6		8/8/2018		10:25		SC				ED		4	
PDI-SC-S191 - 6 to 8.1		8/8/2018		10:30		SC				ED		4	
PDI-SC-S192 - 0 to 1.5		8/8/2018		11:20		SC				ED		4	
PDI-SC-S192 - 1.5 to 3		8/8/2018		11:25		SC				ED		4	
PDI-SC-S192 - 3 to 4.2		8/8/2018		11:30		SC				ED		4	
PDI-RB-SS-180807		8/7/2018		13:00		W				ED		7	
PDI-RB-SS-180808		8/8/2018		10:55		W				ED		7	
PDI-185-SS-180806		8/6/18		W						ED		7	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months		Sample Disposal ☐ Return To Client ☒ Spinal By Lab ☒ Archive For 12 Months	
Special Instructions/QC Requirements & Comments: Separate reports for each lab													
Relinquished by: <i>[Signature]</i>		Date/Time: 8/8/18 1445		Company: M.E.		Received by: <i>[Signature]</i>		Date/Time: 8/8/18 1445		Company: M.E.		Received by: <i>[Signature]</i>	
Relinquished by: <i>[Signature]</i>		Date/Time: 8/8/18 1530		Company: M.E.		Received by: <i>[Signature]</i>		Date/Time: 8/8/18 1530		Company: M.E.		Received by: <i>[Signature]</i>	
Relinquished by: <i>[Signature]</i>		Date/Time: 8/8/18 1530		Company: M.E.		Received by: <i>[Signature]</i>		Date/Time: 8/8/18 1530		Company: M.E.		Received by: <i>[Signature]</i>	

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY														
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker				Date: 8/8/18		COC No: 1				
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____								Carrier: Courier		1 of 4 pages				
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Atterberg Limits ASTM D4318			Sample Specific Notes:
PDI-SC-S226 - 6 to 8		8/6/2018	15:05	SC		ED	4		x	x	x	x				
PDI-SC-S226 - 10 to 12		8/6/2018	15:15	SC		ED	1		x	x	x	x				
PDI-SC-S226 - 8 to 10		8/6/2018	15:10	SC		ED			x	x	x	x				
PDI-SC-S226 - 0 to 2		8/6/2018	14:50	SC		ED			x	x	x	x				
PDI-SC-S226 - 2 to 4		8/6/2018	14:55	SC		ED			x	x	x	x				
PDI-SC-S226 - 12 to 14		8/6/2018	15:20	SC		ED			x	x	x	x				
PDI-SC-S226 - 4 to 6		8/6/2018	15:00	SC		ED			x	x	x	x				
PDI-SC-S226 - 14 to 15.8		8/6/2018	15:25	SC		ED			x	x	x	x				
PDI-SC-S222 - 0 to 2		8/7/2018	09:45	SC		ED			x	x	x	x				
PDI-SC-S222 - 2 to 4		8/7/2018	9:50	SC		ED			x	x	x	x				
PDI-SC-S222 - 4 to 5		8/7/2018	9:55	SC		ED			x	x	x	x				
PDI-SC-S222 - 5 to 7.2		8/7/2018	10:00	SC		ED	✓	x	x	x	x					
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Co Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								AG	AG	WMG	WMG	AG				
Special Instructions/QC Requirements & Comments: Separate reports for each lab								Sample Disposal ☐ Return To Client ☒ Sposal By Lab ☒ Archive For 12 Months								
106, 107, 004, 402, 105, 309																
Relinquished by:		Company: AECOM		Date/Time: 8/8/18 1445		Received by:		Company: M-E		Date/Time: 8/8/18 1445						
Relinquished by:		Company: M-E		Date/Time: 8/8/18 1530		Received by:		Company: TAPOR		Date/Time: 8/8/18 1530						
Relinquished by:		Company: TAPOR		Date/Time: 8/8/18 1700		Received by:		Company: TAPOR		Date/Time: 8-9-18 0920						

IR9

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY																	
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____				Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Date: 8/8/18 Carrier: Courier				COC No: 1 2 of 9 pages									
		Fraction		PCDD/Fs 1613B		Archive		Grain size ASTM D7928/D6913		PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3		Atterberg Limits ASTM D4318							
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Sample Specific Notes:											
PDI-SC-S222 - 5 to 7.2D		8/7/2018	10:00	SC		ED	3												
PDI-SC-S222 - 7.2 to 9.2		8/7/2018	10:05	SC	MS/MSD	ED	6												
PDI-SC-S222 - 9.2 to 11.2		8/7/2018	10:10	SC		ED	9												
PDI-SC-S222 - 11.2 to 13.2		8/7/2018	10:15	SC		ED	4												
PDI-SC-S222 - 13.2 to 15.2		8/7/2018	10:20	SC		ED	4												
PDI-SC-S248 - 0 to 2		8/7/2018	16:45	SC		ED	4												
PDI-SC-S248 - 2 to 4		8/7/2018	16:50	SC	MS/MSD	ED	6												
PDI-SC-S248 - 4 to 6.2		8/7/2018	16:55	SC		ED													
PDI-SC-S219 - 0 to 2		8/7/2018	11:40	SC		ED													
PDI-SC-S219 - 2 to 4		8/7/2018	11:45	SC		ED													
PDI-SC-S219 - 4 to 5.2		8/7/2018	11:50	SC		ED													
PDI-SC-S139 - 0 to 2		8/7/2018	14:20	SC		ED													
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Container Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								Sample Disposal ☐ Return To Client ☒ Sposal By Lab ☒ Archive For 12 Months											
Special Instructions/QC Requirements & Comments: Separate reports for each lab																			
Relinquished by: <i>[Signature]</i> Company: AECOM Date/Time: 8/8/18 1445		Relinquished by: <i>[Signature]</i> Company: M.E. Date/Time: 8/8/18 1530		Relinquished by: <i>[Signature]</i> Company: TAPOR Date/Time: 8/8/18 1700		Received by: <i>[Signature]</i> Company: M.E. Date/Time: 8/8/18 1445		Received by: <i>[Signature]</i> Company: TAPOR Date/Time: 8/8/18 1530		Received by: <i>[Signature]</i> Company: TAPOR Date/Time: 8/8/18 0920									

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5847		SUBSURFACE SEDIMENT CHAIN OF CUSTODY												
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010			Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker			Date: 8/8/18 Carrier: Courier		COC No 1 3 of 4 pages				
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1-(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____			Fraction PCDD/Fs 1613B Aroclor Grain size ASTM D7528/D6913 PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8081A, 8270D-SIM, 9060, 160.3 Atterberg Limits ASTM D4318 P25 ACCO 8/7/18 (FN)									
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Aroclor	Grain size ASTM D7528/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8081A, 8270D-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	Sample Specific Notes:	
PDI-SC-S139 - 0 to 2	8/7/2018	14 20	SC		ED	4		x	x	x	x			
PDI-SC-S139 - 2 to 4.1	8/7/2018	14 25	SC	MS/MSD	ED	4		x	x	x	x			
PDI-SC-S139 - 4.1 to 5.9	8/7/2018	14 30	SC		ED	3		x	x	x	x			
PDI-SC-S139 - 4.1 to 5.9D	8/7/2018	14 30	SC		ED	4		x	x	x	x			
PDI-SC-S117 - 0 to 2	8/7/2018	16 00	SC		ED	1		x	x	x	x			
PDI-SC-S117 - 2 to 4	8/7/2018	16 05	SC		ED	1		x	x	x	x			
PDI-SC-S117 - 4 to 6	8/7/2018	16 10	SC		ED	1		x	x	x	x			
PDI-SC-S219 - 0 to 2	8/7/2018	11 40	SC		ED	1		x	x	x	x			
PDI-SC-S219 - 2 to 4	8/7/2018	11 45	SC		ED	1		x	x	x	x			
PDI-SC-S219 - 4 to 5.2	8/7/2018	11 50	SC		ED	1		x	x	x	x			
PDI-SC-S105 - 0 to 2	8/8/2018	8 55	SC		ED	1		x	x	x	x			
PDI-SC-S105 - 2 to 4	8/8/2018	9 00	SC	MS/MSD	ED	6		x	x	x	x			
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Coil							AG	AG	WMG	WMG	AG			
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid														
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)														
Sample Disposal							☐ Return To Client ☒ X Spinal By Lab ☒ X Archive For 12 Months							
Special Instructions/QC Requirements & Comments: Separate reports for each lab														
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:	Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:	Relinquished by:	Company:	Date/Time:
	AECOM	8/8/18 1445		M.E.	8/8/18 1530		M.E.	8/8/18 1445		TAPOR	8/8/18 1530		TAPOR	8/8/18 1530
	M.E.	8/8/18 1530		TAPOR	8/8/18 1530		TAPOR	8/8/18 1530		TAPOR	8/8/18 1530		TAPOR	8/8/18 1530

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SUBSURFACE SEDIMENT CHAIN OF CUSTODY																										
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Subsurface Sediment Sample Type:		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) W ☒ 21 days ☐ Other _____				Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Date: 8/8/18 Carrier: Courier				COC No: 1 4 of 4 pages																		
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCDD/Fs 1613B	Archive	Grain Size ASTM D7928/D6913	PCB Aroclors, PAHs, Total Organic Carbon, Total Solids 8082A, 8270D-SIM, 9060, 160.3	Atterberg Limits ASTM D4318	WQ-PCBA	WQ-PAHs	WQ-D/F	WQ-TOC	Sample Specific Notes:										
PDI-SC-S105 - 4 to 5.6		8/8/2018	9:05	SC		ED	5		x	x	x	x	x															
PDI-SC-S105 - 5.6 to 6.6		8/8/2018	9:10	SC		ED	4		x	x	x	x																
PDI-SC-S191 - 0 to 2		8/8/2018	10:15	SC		ED	4		x	x	x	x																
PDI-SC-S191 - 2 to 4		8/8/2018	10:20	SC		ED	4		x	x	x	x																
PDI-SC-S191 - 4 to 6		8/8/2018	10:25	SC		ED	4		x	x	x	x																
PDI-SC-S191 - 6 to 8.1		8/8/2018	10:30	SC		ED	4		x	x	x	x																
PDI-SC-S192 - 0 to 1.5		8/8/2018	11:20	SC		ED	4		x	x	x	x																
PDI-SC-S192 - 1.5 to 3		8/8/2018	11:25	SC		ED	4		x	x	x	x																
PDI-SC-S192 - 3 to 4.2		8/8/2018	11:30	SC		ED	4		x	x	x	x																
PDI-RB-SS-180807		8/7/2018	13:00	W		ED	7							x	x	x	x											
PDI-RB-SS-180808		8/8/2018	10:55	W		ED	7							x	x	x	x											
PDI-RB-SS-180806		8/6/18		W		ED	7							X	X	X	X											
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Col Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)								Sample Disposal ☐ Return To Client ☒ Sposal By Lab ☒ Archive For 12 Months																				
Special Instructions/QC Requirements & Comments: Separate reports for each lab																												
Relinquished by: 		Company: AECOM		Date/Time: 8/8/18 1445		Received by: 		Company: M-E		Date/Time: 8/8/18 1445		Relinquished by: 		Company: M-E		Date/Time: 8/8/18 1530		Received by: 		Company: TAPOR		Date/Time: 8/8/18 1530						
Relinquished by: 		Company: M-E		Date/Time: 8/8/18 1530		Received by: 		Company: TAPOR		Date/Time: 8/8/18 1530		Relinquished by: 		Company: TAPOR		Date/Time: 8/8/18 1530		Received by: 		Company: TAPOR		Date/Time: 8/8/18 1530						
Relinquished by: 		Company: TAPOR		Date/Time: 8/8/18 1700		Received by: 		Company: TAPOR		Date/Time: 8/8/18 1700		Relinquished by: 		Company: TAPOR		Date/Time: 8/8/18 1700		Received by: 		Company: TAPOR		Date/Time: 8/8/18 1700						

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

...the ...

[illegible]Page 86 of 100
$$A_2 = 0.6 / 0.5$$

Ver: 09/20/2016 8/30/2018

100

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

[illegible]

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2EXP 03/19 *

ORIGIN ID: BNOA (503) 906-9240
SAMPLE CONTROL
TESTAMERICA PORTLAND
8920 SW GEMINI DR
BUILDING 7
BEAVERTON, OR 970087145
UNITED STATES US

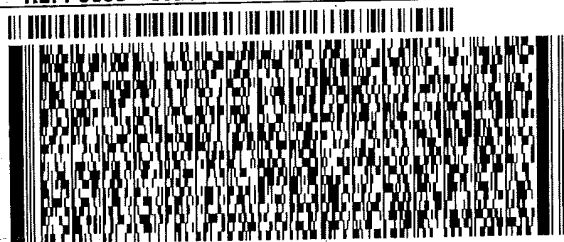
SHIP DATE: 13AUG18
ACTWGT: 30.00 LB
CAD: 0996922/CAFE3210

BILL RECIPIENT

TO SHIPPING/RECEIVING
TESTAMERICA LABORATORIES, INC.
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403

(802) 660-1990

REF: S580-30219



FedEx
Express

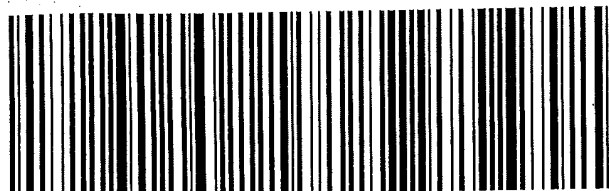


TRK# 4423 0750 8910
0201

TUE - 14 AUG 10:30A
PRIORITY OVERNIGHT

XH BTVA

05403
VT-US BTV



Client: AECOM

Job Number: 580-79444-2

Login Number: 79444

List Source: TestAmerica Seattle

List Number: 1

Creator: Antonson, Angeline D

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (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: 580-79444-2

Login Number: 79444

List Number: 2

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/11/18 01:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3c 4.7c 0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	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.	False	Refer to Job Narrative for details.
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79444-2

Login Number: 79444

List Number: 3

Creator: Her, David A

List Source: TestAmerica Sacramento

List Creation: 08/11/18 01:37 PM

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento



580-79444 Field Sheet

Job: _____

Tracking # 4423 07508851 SO PO / FO / 2-Day / Ground / UPS / Courier / GSO /
OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

CRACK LID

#34 1/2

#22 1/2

#18 1/2

#21 1/2

#27 1/2

#32 1/2

#40 1/2

Therm. ID: AK-2 / AK-3 / AK-5 / AK-6 / HACCP / Other _____
(+0.7°C)

Ice ☒ Wet ☒ Gel _____ Other _____

Cooler Custody Seal: SEAL

Sample Custody Seal: _____

Cooler ID: 20F3

Temp: Observed 4.3 Corrected _____

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

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

Initials: AP Date: 6/11/18

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





Job: _____

SO / PO / FO / 2-Day / Ground / UPS / Courier / GSO /
OnTrac / Goldstreak / USPS / Other

Notes:

Ice ☒ Wet ☒ Gel ☐ Other ☐

Cooler Custody Seal: SEAL

Sample Custody Seal: _____

Cooler ID: 3 of 3

Temp: Observed 0.6 Corrected

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

Yes No NA

Perchlorate has headspace? ☐ ☐ ☒

Alkalinity has no headspace? ☐ ☐ ☒

CoC is complete w/o discrepancies? ☒ ☐ ☐

Samples received within holding time? ☒ ☐ ☐

Sample preservatives verified? ☒ ☐ ☐

Cooler compromised/tampered with? ☐ ☒ ☐

Samples compromised/tampered with? ☐ ☒ ☐

Samples w/o discrepancies? ☒ ☐ ☐

Sample containers have legible labels? ☒ ☐ ☐

Containers are not broken or leaking? ☒ ☐ ☐

Sample date/times are provided.

Appropriate containers are used? ☒ ☐ ☐

Sample bottles are completely filled? ☒ ☐ ☐

Zero headspace?*

Multiphasic samples are not present? ☒ ☐ ☐

Sample temp OK? ☒ ☐ ☐

Sample out of temp? ☐ ☒ ☐

Initials: AP Date: 08/11/18

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

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79444-2

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

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
Lab Sample ID	Client Sample ID								
580-79444-1	PDI-SC-S226-6to8	52	50	47	58	59	58	59	61
580-79444-1 - RA	PDI-SC-S226-6to8								
580-79444-2	PDI-SC-S226-10to12	41	38	31	51	49	53	52	53
580-79444-2 - RA	PDI-SC-S226-10to12								
580-79444-3	PDI-SC-S226-8to10	30	29	18 *	50	50	49	51	50
580-79444-3 - RA	PDI-SC-S226-8to10								
580-79444-4	PDI-SC-S226-0to2	50	49	50	53	52	55	53	60
580-79444-4 - RA	PDI-SC-S226-0to2								
580-79444-5	PDI-SC-S226-2to4	48	46	47	52	52	56	56	56
580-79444-5 - RA	PDI-SC-S226-2to4								
580-79444-6	PDI-SC-S226-12to14	47	44	42	55	53	56	58	57
580-79444-6 - RA	PDI-SC-S226-12to14								
580-79444-7	PDI-SC-S226-4to6	49	44	46	54	53	56	56	56
580-79444-7 - RA	PDI-SC-S226-4to6								
580-79444-8	PDI-SC-S226-14to15.8	52	48	48	64	62	65	67	65
580-79444-8 - RA	PDI-SC-S226-14to15.8								
580-79444-9	PDI-SC-S222-0to2	42	36	47	65	132	145 *	141 *	68
580-79444-9 - RA	PDI-SC-S222-0to2								
580-79444-9 - DL	PDI-SC-S222-0to2	74	60						
580-79444-10	PDI-SC-S222-2to4	31	29	31	73	106	65	103	63
580-79444-10 - RA	PDI-SC-S222-2to4								
580-79444-11	PDI-SC-S222-4to5	35	31	38	53	124	73	135 *	59
580-79444-11 - RA	PDI-SC-S222-4to5								
580-79444-12	PDI-SC-S222-5to7.2	21 *	21 *	21 *	61	73	63	77	51
580-79444-13	PDI-SC-S222-5to7.2D	50	44	50	49	50	52	51	54
580-79444-14	PDI-SC-S222-7.2to9.2	53	46	53	45	45	52	53	52
580-79444-15	PDI-SC-S222-9.2to11.2	46	38	47	41	41	47	47	50
580-79444-16	PDI-SC-S222-11.2to13.2	37	30	38	32	32	40	38	40
580-79444-17	PDI-SC-S222-13.2to15.2	59	51	58	46	49	55	55	55
580-79444-18	PDI-SC-S248-0to2	59	51	58	51	53	51	52	56
580-79444-19	PDI-SC-S248-2to4	56	48	55	44	44	56	50	56
580-79444-20	PDI-SC-S248-4to6.2	47	43	41	45	44	50	48	50
580-79444-21	PDI-SC-S139-0to2	46	40	45	44	41	41	42	43
580-79444-21 - RA	PDI-SC-S139-0to2								
580-79444-22	PDI-SC-S139-2to4.1	60	51	57	46	44	53	48	49
580-79444-22 - RA	PDI-SC-S139-2to4.1								
580-79444-23	PDI-SC-S139-4.1to5.9	49	41	50	41	39	47	42	44
580-79444-24	PDI-SC-S139-4.1to5.9D	44	38	46	38	36	43	39	42
580-79444-25	PDI-SC-S117-0to2	86	74	78	75	68	68	68	72
580-79444-25 - RA	PDI-SC-S117-0to2								
580-79444-26 - RA	PDI-SC-S117-2to4								
580-79444-26	PDI-SC-S117-2to4	33	34	36	39	47	39	48	46
580-79444-27 - RA	PDI-SC-S117-4to6								
580-79444-27	PDI-SC-S117-4to6	31	35	34	36	45	37	47	51
580-79444-28	PDI-SC-S219-0to2	47	40	47	40	40	37	40	43
580-79444-28 - RA	PDI-SC-S219-0to2								
580-79444-29	PDI-SC-S219-2to4	38	29	40	38	34	35	35	40
580-79444-30	PDI-SC-S219-4to5.2	60	52	58	52	53	52	53	55
580-79444-31	PDI-SC-S105-0to2	51	45	49	48	49	48	48	53

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79444-2

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

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
Lab Sample ID	Client Sample ID								
580-79444-31 - RA	PDI-SC-S105-0to2								
580-79444-32	PDI-SC-S105-2to4	63	54	63	54	57	54	56	61
580-79444-32 - RA	PDI-SC-S105-2to4								
580-79444-33	PDI-SC-S105-4to5.6	54	43	51	46	45	50	48	51
580-79444-33 - RA	PDI-SC-S105-4to5.6								
580-79444-34	PDI-SC-S105-5.6to6.6	50	51	50	61	72	49	73	75
580-79444-34 - RA	PDI-SC-S105-5.6to6.6								
580-79444-35	PDI-SC-S191-0to2	53	44	52	60	62	45	53	55
580-79444-35 - RA	PDI-SC-S191-0to2								
580-79444-36	PDI-SC-S191-2to4	57	47	56	64	64	44	50	54
580-79444-36 - RA	PDI-SC-S191-2to4								
580-79444-37	PDI-SC-S191-4to6	50	41	48	70	64	60	61	61
580-79444-37 - RA	PDI-SC-S191-4to6								
580-79444-38	PDI-SC-S191-6to8.1	35	32	33	43	48	33	51	51
580-79444-38 - RA	PDI-SC-S191-6to8.1								
580-79444-39	PDI-SC-S192-0to1.5	54	48	40	75	94	70	83	73
580-79444-39 - RA	PDI-SC-S192-0to1.5								
580-79444-40	PDI-SC-S192-1.5to3	52	47	40	78	114	73	111	76
580-79444-40 - RA	PDI-SC-S192-1.5to3								
580-79444-41	PDI-SC-S192-3to4.2	39	41	39	66	70	63	72	64
580-79444-41 - RA	PDI-SC-S192-3to4.2								
MB 320-240851/1-A	Method Blank	78	75	72	69	72	78	78	74
MB 320-240898/1-A	Method Blank	64	59	61	51	49	58	54	55
MB 320-241175/1-A	Method Blank	90	81	84	71	76	74	78	75
		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (25-181)	PeCDF (24-185)	13ChxCf (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
Lab Sample ID	Client Sample ID								
580-79444-1	PDI-SC-S226-6to8	60	59	60	59	64		43	
580-79444-1 - RA	PDI-SC-S226-6to8						60		
580-79444-2	PDI-SC-S226-10to12	53	52	53	53	62		31	
580-79444-2 - RA	PDI-SC-S226-10to12						55		
580-79444-3	PDI-SC-S226-8to10	39	44	51	44	58		22	
580-79444-3 - RA	PDI-SC-S226-8to10						57		
580-79444-4	PDI-SC-S226-0to2	56	55	55	52	65		43	
580-79444-4 - RA	PDI-SC-S226-0to2						55		
580-79444-5	PDI-SC-S226-2to4	57	56	57	57	63		40	
580-79444-5 - RA	PDI-SC-S226-2to4						58		
580-79444-6	PDI-SC-S226-12to14	55	55	56	56	58		39	
580-79444-6 - RA	PDI-SC-S226-12to14						58		
580-79444-7	PDI-SC-S226-4to6	54	53	56	55	61		38	
580-79444-7 - RA	PDI-SC-S226-4to6						59		
580-79444-8	PDI-SC-S226-14to15.8	66	63	65	64	66		44	
580-79444-8 - RA	PDI-SC-S226-14to15.8						61		
580-79444-9	PDI-SC-S222-0to2	84	74	85	84	69			
580-79444-9 - RA	PDI-SC-S222-0to2						81		
580-79444-9 - DL	PDI-SC-S222-0to2							85	
580-79444-10	PDI-SC-S222-2to4	67	63	77	67	59		32	
580-79444-10 - RA	PDI-SC-S222-2to4						71		
580-79444-11	PDI-SC-S222-4to5	75	68	78	77	64		35	

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79444-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79444-11 - RA	PDI-SC-S222-4to5						80	
580-79444-12	PDI-SC-S222-5to7.2	54	54	72	55	62	60	18
580-79444-13	PDI-SC-S222-5to7.2D	50	49	52	51	60	59	36
580-79444-14	PDI-SC-S222-7.2to9.2	53	48	51	56	67	57	42
580-79444-15	PDI-SC-S222-9.2to11.2	51	51	46	53	67	64	33
580-79444-16	PDI-SC-S222-11.2to13.2	38	44	37	45	63	50	25
580-79444-17	PDI-SC-S222-13.2to15.2	55	53	53	54	73	63	46
580-79444-18	PDI-SC-S248-0to2	52	49	53	51	58	59	48
580-79444-19	PDI-SC-S248-2to4	45	43	51	46	74	55	43
580-79444-20	PDI-SC-S248-4to6.2	51	50	46	52	71	60	37
580-79444-21	PDI-SC-S139-0to2	42	43	42	43	44		44
580-79444-21 - RA	PDI-SC-S139-0to2						42	
580-79444-22	PDI-SC-S139-2to4.1	52	48	48	49	50		66
580-79444-22 - RA	PDI-SC-S139-2to4.1						44	
580-79444-23	PDI-SC-S139-4.1to5.9	46	45	42	45	48	45	49
580-79444-24	PDI-SC-S139-4.1to5.9D	44	40	39	41	44	41	43
580-79444-25	PDI-SC-S117-0to2	81	76	67	73	73		93
580-79444-25 - RA	PDI-SC-S117-0to2						73	
580-79444-26 - RA	PDI-SC-S117-2to4						53	
580-79444-26	PDI-SC-S117-2to4	44	38	48	38	44		27
580-79444-27 - RA	PDI-SC-S117-4to6						56	
580-79444-27	PDI-SC-S117-4to6	47	42	47	36	56		14 *
580-79444-28	PDI-SC-S219-0to2	38	41	39	40	44		51
580-79444-28 - RA	PDI-SC-S219-0to2						43	
580-79444-29	PDI-SC-S219-2to4	37	36	36	38	42	43	31
580-79444-30	PDI-SC-S219-4to5.2	51	49	54	51	61	60	47
580-79444-31	PDI-SC-S105-0to2	49	49	50	51	59		41
580-79444-31 - RA	PDI-SC-S105-0to2						66	
580-79444-32	PDI-SC-S105-2to4	54	53	56	52	61		50
580-79444-32 - RA	PDI-SC-S105-2to4						64	
580-79444-33	PDI-SC-S105-4to5.6	58	52	49	56	54		54
580-79444-33 - RA	PDI-SC-S105-4to5.6						74	
580-79444-34	PDI-SC-S105-5.6to6.6	78	62	69	70	82		33
580-79444-34 - RA	PDI-SC-S105-5.6to6.6						85	
580-79444-35	PDI-SC-S191-0to2	63	57	55	58	59		54
580-79444-35 - RA	PDI-SC-S191-0to2						62	
580-79444-36	PDI-SC-S191-2to4	61	56	55	57	55		63
580-79444-36 - RA	PDI-SC-S191-2to4						72	
580-79444-37	PDI-SC-S191-4to6	58	59	61	64	57		43
580-79444-37 - RA	PDI-SC-S191-4to6						83	
580-79444-38	PDI-SC-S191-6to8.1	38	44	41	46	57		28
580-79444-38 - RA	PDI-SC-S191-6to8.1						62	
580-79444-39	PDI-SC-S192-0to1.5	75	64	74	75	66		49
580-79444-39 - RA	PDI-SC-S192-0to1.5						82	
580-79444-40	PDI-SC-S192-1.5to3	95	73	87	84	73		47
580-79444-40 - RA	PDI-SC-S192-1.5to3						81	
580-79444-41	PDI-SC-S192-3to4.2	63	62	71	64	66		36
580-79444-41 - RA	PDI-SC-S192-3to4.2						66	
MB 320-240851/1-A	Method Blank	67	64	74	63	75	67	63

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79444-2

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

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
MB 320-240898/1-A	Method Blank	58	56	54	55	56	51	68
MB 320-241175/1-A	Method Blank	45	50	75	45	74	68	78

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)							
		HpCDD	HpCDF	HpCDF2	HxCDD	HxCDF	HxDD	HxDF	HxCF
Lab Sample ID	Client Sample ID	(26-166)	(21-158)	(20-186)	(21-193)	(19-202)	(25-163)	(21-159)	(17-205)
LCS 320-240851/2-A	Lab Control Sample	75	71	70	66	68	72	72	69
LCS 320-240898/2-A	Lab Control Sample	51	50	47	42	41	48	47	45
LCS 320-241175/2-A	Lab Control Sample	85	75	79	66	70	68	72	71
LCSD 320-240851/3-A	Lab Control Sample Dup	79	74	74	69	70	76	76	74
LCSD 320-240898/3-A	Lab Control Sample Dup	54	51	51	45	43	49	48	45
LCSD 320-241175/3-A	Lab Control Sample Dup	90	78	83	73	69	72	73	74

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-240851/2-A	Lab Control Sample	64	61	70	61	69	63	61
LCS 320-240898/2-A	Lab Control Sample	44	42	44	41	46	43	56
LCS 320-241175/2-A	Lab Control Sample	33	23	70	31	70	64	75
LCSD 320-240851/3-A	Lab Control Sample Dup	67	64	74	61	75	68	64
LCSD 320-240898/3-A	Lab Control Sample Dup	46	43	47	42	48	43	54
LCSD 320-241175/3-A	Lab Control Sample Dup	80	69	74	69	74	67	102

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79444-2

HxCDF = 13C-1,2,3,7,8,9-HxCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF = 13C-1,2,3,7,8-PeCDF
 13CHxCDF = 13C-2,3,4,6,7,8-HxCDF
 PeCF = 13C-2,3,4,7,8-PeCDF
 TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 OCDD = 13C-OCDD

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-79444-42	PDI-RB-SS-180807	81	83	83	75	83	78	86	85
580-79444-43	PDI-RB-SS-180808	90	84	85	79	78	83	84	82
580-79444-44	PDI-RB-SS-180806	81	81	82	73	78	77	81	80
MB 320-239597/1-A	Method Blank	56	56	56	55	59	56	60	60
MB 320-239721/1-A	Method Blank	73	67	68	67	66	72	73	70

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCDF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-79444-42	PDI-RB-SS-180807	55	63	83	64	83	85	68
580-79444-43	PDI-RB-SS-180808	92	79	83	79	83	78	100
580-79444-44	PDI-RB-SS-180806	69	75	77	73	78	84	66
MB 320-239597/1-A	Method Blank	55	57	61	59	66	68	44
MB 320-239721/1-A	Method Blank	76	64	74	67	70	67	76

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
 13CHxCDF = 13C-2,3,4,6,7,8-HxCDF
 PeCF = 13C-2,3,4,7,8-PeCDF
 TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 OCDD = 13C-OCDD

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-239597/2-A	Lab Control Sample	68	63	72	60	52	64	53	65
LCS 320-239721/2-A	Lab Control Sample	75	69	70	68	67	72	74	70
LCSD 320-239597/3-A	Lab Control Sample Dup	79	74	82	73	69	77	63	78

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-79444-2

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCSD 320-239721/3-A	Lab Control Sample Dup	76	69	72	67	65	69	70	70
		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 320-239597/2-A	Lab Control Sample	89	72	59	76	69	67	92	
LCS 320-239721/2-A	Lab Control Sample	77	64	73	69	69	65	80	
LCSD 320-239597/3-A	Lab Control Sample Dup	95	78	71	77	75	77	99	
LCSD 320-239721/3-A	Lab Control Sample Dup	81	71	71	73	79	76	84	

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

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