

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 580-77110-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Karen Mixon

M. Elaine Walker

Authorized for release by:
5/30/2018 4:47:21 PM

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

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

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Case Narrative

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

TestAmerica Job ID: 580-77110-2

Job ID: 580-77110-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-77110-2

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

Twenty-nine samples were received on 5/7/2018 2:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.6° C, 2.3° C, 3.6° C, 3.8° C and 5.0° C.

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

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

The following samples were received at the laboratory without a sample collection date documented on the chain of custody: PDI-SG-S152 (580-77110-14), PDI-SG-S169 (580-77110-15), PDI-SG-S170 (580-77110-16), PDI-SG-S173 (580-77110-17), PDI-SG-S177 (580-77110-18), PDI-SG-S178 (580-77110-19), PDI-SG-S035 (580-77110-20), PDI-SG-S023 (580-77110-21), PDI-SG-S018 (580-77110-22), PDI-SG-S005 (580-77110-23) and PDI-SG-S008 (580-77110-24). The sample dates were logged in according to the sample container labels and confirmed by the client.

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

DIOXIN/ FURAN

Samples PDI-SG-S006 (580-77110-1), PDI-SG-S009 (580-77110-2), PDI-SG-S071 (580-77110-3), PDI-SG-S069 (580-77110-4), PDI-SG-S068 (580-77110-5), PDI-SG-S067 (580-77110-6), PDI-SG-S056 (580-77110-7), PDI-SG-S048 (580-77110-8), PDI-SG-S108 (580-77110-9), PDI-SG-S130 (580-77110-10), PDI-SG-S133 (580-77110-11), PDI-SG-S134 (580-77110-12), PDI-SG-S180 (580-77110-13), PDI-SG-S152 (580-77110-14), PDI-SG-S169 (580-77110-15), PDI-SG-S170 (580-77110-16), PDI-SG-S173 (580-77110-17), PDI-SG-S177 (580-77110-18), PDI-SG-S178 (580-77110-19), PDI-SG-S035 (580-77110-20), PDI-SG-S023 (580-77110-21), PDI-SG-S018 (580-77110-22), PDI-SG-S005 (580-77110-23), PDI-SG-S008 (580-77110-24), PDI-SG-S131 (580-77110-25), PDI-SG-S143 (580-77110-26), PDI-SG-S145 (580-77110-27) and PDI-SG-S145-D (580-77110-28) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 05/16/2018 and 05/17/2018 and analyzed on 05/19/2018, 05/20/2018, 05/21/2018 and 05/22/2018.

1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,7,8-TCDF and OCDD were detected in method blank MB 320-223586/1-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.

Case Narrative

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

TestAmerica Job ID: 580-77110-2

Job ID: 580-77110-2 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Several analytes were detected in method blank MB 320-223855/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument 11D2 exceeded this criteria: PDI-SG-S006 (580-77110-1), PDI-SG-S009 (580-77110-2), PDI-SG-S069 (580-77110-4), PDI-SG-S068 (580-77110-5) and (CCV 320-224541/3). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: PDI-SG-S130 (580-77110-10), PDI-SG-S145 (580-77110-27) and PDI-SG-S145-D (580-77110-28). These analytes have been qualified; however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The following samples exhibited elevated noise or matrix interferences for one or more analytes causing elevation of the detection limit (EDL): PDI-SG-S067 (580-77110-6), PDI-SG-S108 (580-77110-9), PDI-SG-S130 (580-77110-10), PDI-SG-S170 (580-77110-16), PDI-SG-S173 (580-77110-17), PDI-SG-S177 (580-77110-18), PDI-SG-S145 (580-77110-27) and PDI-SG-S145-D (580-77110-28). 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-SG-S071 (580-77110-3) and PDI-SG-S067 (580-77110-6). 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.

The following samples were diluted due to the nature of the sample matrix: PDI-SG-S071 (580-77110-3) and PDI-SG-S067 (580-77110-6). Elevated reporting limits (RLs) are provided.

Due to the matrix, the initial volumes used for the following samples deviated from the standard procedure: PDI-SG-S006 (580-77110-1), PDI-SG-S009 (580-77110-2), PDI-SG-S071 (580-77110-3), PDI-SG-S069 (580-77110-4), PDI-SG-S068 (580-77110-5), PDI-SG-S067 (580-77110-6), PDI-SG-S056 (580-77110-7), PDI-SG-S048 (580-77110-8), PDI-SG-S108 (580-77110-9), PDI-SG-S130 (580-77110-10), PDI-SG-S133 (580-77110-11), PDI-SG-S134 (580-77110-12), PDI-SG-S180 (580-77110-13), PDI-SG-S152 (580-77110-14), PDI-SG-S169 (580-77110-15), PDI-SG-S170 (580-77110-16), PDI-SG-S173 (580-77110-17), PDI-SG-S177 (580-77110-18), PDI-SG-S178 (580-77110-19), PDI-SG-S035 (580-77110-20), PDI-SG-S023 (580-77110-21), PDI-SG-S018 (580-77110-22), PDI-SG-S005 (580-77110-23), PDI-SG-S008 (580-77110-24), PDI-SG-S131 (580-77110-25), PDI-SG-S143 (580-77110-26), PDI-SG-S145 (580-77110-27) and PDI-SG-S145-D (580-77110-28). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-223586.

Samples PDI-SG-S071 (580-77110-3)[10X] and PDI-SG-S067 (580-77110-6)[5X] required dilution prior to analysis. 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 - Rinse Blank

Sample PDI-RB-VV-180505 (580-77110-29) was analyzed for Dioxin/ Furan in accordance with 1613B. The sample was prepared on 05/16/2018 and analyzed on 05/19/2018.

Several analytes were detected in method blank MB 320-223466/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

Definitions/Glossary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77110-2

Qualifiers

Dioxin

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.
B	Compound was found in the blank and sample.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
E	Result exceeded calibration range.
*	Isotope Dilution analyte 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: 580-77110-2

Client Sample ID: PDI-SG-S006

Date Collected: 05/04/18 11:08

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-1

Matrix: Solid

Percent Solids: 40.6

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	0.088		0.0060	0.0011	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,4,6,7,8-HpCDF	0.015		0.0060	0.00056	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,4,7,8,9-HpCDF	0.0013	J q	0.0060	0.00065	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,4,7,8-HxCDD	0.0012	J B	0.0060	0.00031	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,4,7,8-HxCDF	0.0026	J q	0.0060	0.00032	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,6,7,8-HxCDD	0.0044	J	0.0060	0.00031	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,6,7,8-HxCDF	0.0015	J B	0.0060	0.00031	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,7,8,9-HxCDD	0.0024	J q	0.0060	0.00027	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,7,8,9-HxCDF	0.00076	J q B	0.0060	0.00025	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,7,8-PeCDD	0.00063	J q	0.0060	0.00038	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
1,2,3,7,8-PeCDF	0.00085	J q	0.0060	0.00020	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
2,3,4,6,7,8-HxCDF	0.00053	J q	0.0060	0.00025	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
2,3,4,7,8-PeCDF	0.0014	J	0.0060	0.00021	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
2,3,7,8-TCDD	0.00034	J q	0.0012	0.00032	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
OCDD	0.58	B	0.012	0.0024	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1
OCDF	0.060		0.012	0.00066	ug/Kg	☼	05/16/18 13:25	05/19/18 20:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	05/16/18 13:25	05/19/18 20:56	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	05/16/18 13:25	05/19/18 20:56	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	05/16/18 13:25	05/19/18 20:56	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	05/16/18 13:25	05/19/18 20:56	1
13C-2,3,7,8-TCDD	62		25 - 164	05/16/18 13:25	05/19/18 20:56	1
13C-2,3,7,8-TCDF	69		24 - 169	05/16/18 13:25	05/19/18 20:56	1
13C-OCDD	52		17 - 157	05/16/18 13:25	05/19/18 20:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	05/16/18 13:25	05/19/18 20:56	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	0.0012	0.000043	ug/Kg	☼	05/16/18 13:25	05/20/18 04:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169	05/16/18 13:25	05/20/18 04:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	05/16/18 13:25	05/20/18 04:33	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S009

Date Collected: 05/04/18 11:55

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-2

Matrix: Solid

Percent Solids: 38.7

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	0.063		0.0065	0.00089	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,4,6,7,8-HpCDF	0.012	q	0.0065	0.00044	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,4,7,8,9-HpCDF	0.0013	J	0.0065	0.00052	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,4,7,8-HxCDD	0.00082	J B q	0.0065	0.00029	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,4,7,8-HxCDF	0.0025	J	0.0065	0.00031	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,6,7,8-HxCDD	0.0031	J	0.0065	0.00028	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,6,7,8-HxCDF	ND		0.0065	0.00030	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,7,8,9-HxCDD	0.0017	J q	0.0065	0.00024	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,7,8,9-HxCDF	ND		0.0065	0.00025	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,7,8-PeCDD	0.00039	J q	0.0065	0.00027	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
1,2,3,7,8-PeCDF	0.0012	J	0.0065	0.00018	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
2,3,4,6,7,8-HxCDF	0.00052	J q	0.0065	0.00025	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
2,3,4,7,8-PeCDF	0.00060	J q	0.0065	0.00020	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
2,3,7,8-TCDD	ND		0.0013	0.00029	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
OCDD	0.43	B	0.013	0.0018	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1
OCDF	0.043		0.013	0.00067	ug/Kg	☼	05/16/18 13:25	05/19/18 21:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	05/16/18 13:25	05/19/18 21:39	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	05/16/18 13:25	05/19/18 21:39	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	05/16/18 13:25	05/19/18 21:39	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	05/16/18 13:25	05/19/18 21:39	1
13C-2,3,7,8-TCDD	65		25 - 164	05/16/18 13:25	05/19/18 21:39	1
13C-2,3,7,8-TCDF	72		24 - 169	05/16/18 13:25	05/19/18 21:39	1
13C-OCDD	60		17 - 157	05/16/18 13:25	05/19/18 21:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	05/16/18 13:25	05/19/18 21:39	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0010	J B	0.0013	0.000043	ug/Kg	☼	05/16/18 13:25	05/20/18 05:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				05/16/18 13:25	05/20/18 05:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				05/16/18 13:25	05/20/18 05:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S071

Date Collected: 05/05/18 16:22

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-3

Matrix: Solid

Percent Solids: 69.2

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	0.41		0.036	0.019	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,4,6,7,8-HpCDF	0.019	J	0.036	0.0014	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,4,7,8,9-HpCDF	ND		0.036	0.0018	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,4,7,8-HxCDD	ND		0.036	0.00092	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,4,7,8-HxCDF	0.0068	J	0.036	0.00083	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,6,7,8-HxCDD	0.0064	J q	0.036	0.00063	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,6,7,8-HxCDF	ND		0.036	0.00077	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,7,8,9-HxCDD	0.0044	J	0.036	0.00058	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,7,8,9-HxCDF	ND		0.036	0.00059	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,7,8-PeCDD	ND		0.036	0.00060	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
1,2,3,7,8-PeCDF	0.0049	J q	0.036	0.00045	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
2,3,4,6,7,8-HxCDF	ND		0.036	0.00069	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
2,3,4,7,8-PeCDF	0.0028	J q	0.036	0.00043	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
2,3,7,8-TCDD	ND		0.0072	0.00051	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
2,3,7,8-TCDF	0.0051	J B	0.0072	0.00045	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
OCDD	3.5	B	0.072	0.0057	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10
OCDF	0.11		0.072	0.0023	ug/Kg	☼	05/16/18 13:25	05/22/18 00:58	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	28		23 - 140	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,4,6,7,8-HpCDF	26	*	28 - 143	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,4,7,8,9-HpCDF	28		26 - 138	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,6,7,8-HxCDD	48		28 - 130	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,7,8-PeCDD	84		25 - 181	05/16/18 13:25	05/22/18 00:58	10
13C-1,2,3,7,8-PeCDF	70		24 - 185	05/16/18 13:25	05/22/18 00:58	10
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	05/16/18 13:25	05/22/18 00:58	10
13C-2,3,4,7,8-PeCDF	65		21 - 178	05/16/18 13:25	05/22/18 00:58	10
13C-2,3,7,8-TCDD	71		25 - 164	05/16/18 13:25	05/22/18 00:58	10
13C-2,3,7,8-TCDF	64		24 - 169	05/16/18 13:25	05/22/18 00:58	10
13C-OCDD	14	*	17 - 157	05/16/18 13:25	05/22/18 00:58	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	135		35 - 197	05/16/18 13:25	05/22/18 00:58	10

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S069

Date Collected: 05/05/18 15:34

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-4

Matrix: Solid

Percent Solids: 71.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.029		0.0035	0.00037	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,4,6,7,8-HpCDF	0.0040		0.0035	0.00027	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,4,7,8,9-HpCDF	ND		0.0035	0.00030	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,4,7,8-HxCDD	0.00020	J B q	0.0035	0.00016	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,4,7,8-HxCDF	0.0011	J q	0.0035	0.00012	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,6,7,8-HxCDD	0.0010	J	0.0035	0.00015	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,6,7,8-HxCDF	0.00025	J B q	0.0035	0.00013	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,7,8,9-HxCDD	0.00088	J	0.0035	0.00013	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,7,8,9-HxCDF	ND		0.0035	0.000098	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00019	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
1,2,3,7,8-PeCDF	0.00052	J q	0.0035	0.00014	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
2,3,4,6,7,8-HxCDF	0.00017	J q	0.0035	0.00010	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
2,3,4,7,8-PeCDF	0.00043	J	0.0035	0.00015	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
2,3,7,8-TCDD	ND		0.00070	0.00020	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
OCDD	0.21	B	0.0070	0.00060	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1
OCDF	0.010		0.0070	0.00035	ug/Kg	☼	05/16/18 13:25	05/19/18 23:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,4,7,8,9-HpCDF	57		26 - 138	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	05/16/18 13:25	05/19/18 23:05	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	05/16/18 13:25	05/19/18 23:05	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	05/16/18 13:25	05/19/18 23:05	1
13C-2,3,4,7,8-PeCDF	54		21 - 178	05/16/18 13:25	05/19/18 23:05	1
13C-2,3,7,8-TCDD	57		25 - 164	05/16/18 13:25	05/19/18 23:05	1
13C-2,3,7,8-TCDF	62		24 - 169	05/16/18 13:25	05/19/18 23:05	1
13C-OCDD	57		17 - 157	05/16/18 13:25	05/19/18 23:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	05/16/18 13:25	05/19/18 23:05	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	0.00063	J B	0.00070	0.000025	ug/Kg	☼	05/16/18 13:25	05/20/18 05:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169				05/16/18 13:25	05/20/18 05:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197				05/16/18 13:25	05/20/18 05:49	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S068

Date Collected: 05/05/18 13:20

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-5

Matrix: Solid

Percent Solids: 71.1

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	0.010		0.0035	0.00028	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,4,6,7,8-HpCDF	0.0015	J	0.0035	0.00019	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,4,7,8,9-HpCDF	ND		0.0035	0.00022	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,4,7,8-HxCDD	0.00019	J q B	0.0035	0.00014	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,4,7,8-HxCDF	0.0015	J	0.0035	0.00014	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,6,7,8-HxCDD	0.00027	J q	0.0035	0.00013	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,6,7,8-HxCDF	0.00052	J B	0.0035	0.00014	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,7,8,9-HxCDD	0.00036	J q	0.0035	0.00011	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,7,8,9-HxCDF	0.00040	J q B	0.0035	0.00012	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,7,8-PeCDD	ND		0.0035	0.00021	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
1,2,3,7,8-PeCDF	0.0022	J q	0.0035	0.00012	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
2,3,4,6,7,8-HxCDF	ND		0.0035	0.00012	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
2,3,4,7,8-PeCDF	0.0010	J	0.0035	0.00013	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
2,3,7,8-TCDD	ND		0.00071	0.00017	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
OCDD	0.072	B	0.0071	0.00050	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1
OCDF	0.0037	J	0.0071	0.00037	ug/Kg	☼	05/16/18 13:25	05/19/18 23:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	05/16/18 13:25	05/19/18 23:47	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	05/16/18 13:25	05/19/18 23:47	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	05/16/18 13:25	05/19/18 23:47	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	05/16/18 13:25	05/19/18 23:47	1
13C-2,3,7,8-TCDD	57		25 - 164	05/16/18 13:25	05/19/18 23:47	1
13C-2,3,7,8-TCDF	67		24 - 169	05/16/18 13:25	05/19/18 23:47	1
13C-OCDD	52		17 - 157	05/16/18 13:25	05/19/18 23:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	05/16/18 13:25	05/19/18 23:47	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	0.0032	B	0.00071	0.000022	ug/Kg	☼	05/16/18 13:25	05/20/18 06:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169				05/16/18 13:25	05/20/18 06:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				05/16/18 13:25	05/20/18 06:26	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S067

Date Collected: 05/05/18 11:26

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-6

Matrix: Solid

Percent Solids: 68.6

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.014		0.0036	0.00021	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,4,6,7,8-HpCDF	0.0022	J	0.0036	0.00018	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,4,7,8,9-HpCDF	ND		0.0036	0.00022	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,4,7,8-HxCDD	0.00018	J B q	0.0036	0.000098	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,6,7,8-HxCDD	0.00071	J q	0.0036	0.00010	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,7,8,9-HxCDD	0.00045	J	0.0036	0.000085	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,7,8-PeCDD	ND		0.0036	0.00016	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
1,2,3,7,8-PeCDF	0.0019	J	0.0036	0.00012	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
2,3,4,7,8-PeCDF	0.0010	J q	0.0036	0.00013	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
2,3,7,8-TCDD	ND		0.00072	0.00016	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
OCDD	0.10	B	0.0072	0.00050	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1
OCDF	0.0076		0.0072	0.00028	ug/Kg	☼	05/16/18 13:25	05/20/18 00:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,4,6,7,8-HpCDF	50		28 - 143	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,4,7,8-HxCDD	53		32 - 141	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	05/16/18 13:25	05/20/18 00:30	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	05/16/18 13:25	05/20/18 00:30	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	05/16/18 13:25	05/20/18 00:30	1
13C-2,3,7,8-TCDD	59		25 - 164	05/16/18 13:25	05/20/18 00:30	1
13C-2,3,7,8-TCDF	69		24 - 169	05/16/18 13:25	05/20/18 00:30	1
13C-OCDD	44		17 - 157	05/16/18 13:25	05/20/18 00:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	05/16/18 13:25	05/20/18 00:30	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0011	J	0.018	0.00020	ug/Kg	☼	05/16/18 13:25	05/22/18 00:09	5
1,2,3,6,7,8-HxCDF	0.00045	J B	0.018	0.00019	ug/Kg	☼	05/16/18 13:25	05/22/18 00:09	5
1,2,3,7,8,9-HxCDF	ND		0.018	0.00013	ug/Kg	☼	05/16/18 13:25	05/22/18 00:09	5
2,3,4,6,7,8-HxCDF	ND		0.018	0.00013	ug/Kg	☼	05/16/18 13:25	05/22/18 00:09	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	05/16/18 13:25	05/22/18 00:09	5
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	05/16/18 13:25	05/22/18 00:09	5
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	05/16/18 13:25	05/22/18 00:09	5
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	05/16/18 13:25	05/22/18 00:09	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	05/16/18 13:25	05/22/18 00:09	5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0024	B	0.00072	0.000055	ug/Kg	☼	05/16/18 13:25	05/22/18 03:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169	05/16/18 13:25	05/22/18 03:26	1

TestAmerica Seattle

Client Sample Results

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S067

Date Collected: 05/05/18 11:26

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-6

Matrix: Solid

Percent Solids: 68.6

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD	104		35 - 197	05/16/18 13:25	05/22/18 03:26	1

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S056

Date Collected: 05/05/18 10:29

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-7

Matrix: Solid

Percent Solids: 63.7

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	0.027		0.0039	0.00040	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,4,6,7,8-HpCDF	0.0045	q	0.0039	0.00023	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,4,7,8,9-HpCDF	0.00042	J q	0.0039	0.00024	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,4,7,8-HxCDD	0.00045	J B	0.0039	0.00014	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,4,7,8-HxCDF	0.00063	J q	0.0039	0.00013	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,6,7,8-HxCDD	0.0017	J	0.0039	0.00012	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,6,7,8-HxCDF	0.00039	J q B	0.0039	0.00012	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,7,8,9-HxCDD	0.0014	J	0.0039	0.00011	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,7,8,9-HxCDF	ND		0.0039	0.000093	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,7,8-PeCDD	ND		0.0039	0.00018	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
1,2,3,7,8-PeCDF	0.00031	J	0.0039	0.000099	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
2,3,4,6,7,8-HxCDF	0.00025	J	0.0039	0.00011	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
2,3,4,7,8-PeCDF	ND		0.0039	0.00011	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
2,3,7,8-TCDD	ND		0.00077	0.00017	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
OCDD	0.20	B	0.0077	0.00074	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1
OCDF	0.016		0.0077	0.00036	ug/Kg	☼	05/16/18 13:25	05/20/18 01:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,4,7,8-HxCDD	49		32 - 141	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	05/16/18 13:25	05/20/18 01:13	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	05/16/18 13:25	05/20/18 01:13	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	05/16/18 13:25	05/20/18 01:13	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	05/16/18 13:25	05/20/18 01:13	1
13C-2,3,7,8-TCDD	63		25 - 164	05/16/18 13:25	05/20/18 01:13	1
13C-2,3,7,8-TCDF	73		24 - 169	05/16/18 13:25	05/20/18 01:13	1
13C-OCDD	51		17 - 157	05/16/18 13:25	05/20/18 01:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	100		35 - 197	05/16/18 13:25	05/20/18 01:13	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.00055	J B	0.00077	0.000043	ug/Kg	☼	05/16/18 13:25	05/22/18 04:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				05/16/18 13:25	05/22/18 04:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197				05/16/18 13:25	05/22/18 04:04	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S048

Date Collected: 05/05/18 09:36

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-8

Matrix: Solid

Percent Solids: 37.1

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	0.12		0.0067	0.0017	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,4,6,7,8-HpCDF	0.027		0.0067	0.00085	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,4,7,8,9-HpCDF	0.0028	J	0.0067	0.0010	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,4,7,8-HxCDD	0.0016	J B	0.0067	0.00026	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,4,7,8-HxCDF	0.0053	J q	0.0067	0.00037	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,6,7,8-HxCDD	0.0051	J q	0.0067	0.00025	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,6,7,8-HxCDF	0.0018	J B q	0.0067	0.00037	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,7,8,9-HxCDD	0.0037	J	0.0067	0.00022	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,7,8,9-HxCDF	0.00034	J B q	0.0067	0.00029	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,7,8-PeCDD	0.0011	J	0.0067	0.00029	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
1,2,3,7,8-PeCDF	0.0015	J	0.0067	0.00024	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
2,3,4,6,7,8-HxCDF	0.00045	J q	0.0067	0.00031	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
2,3,4,7,8-PeCDF	0.0018	J	0.0067	0.00029	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
2,3,7,8-TCDD	0.00068	J	0.0013	0.00033	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
OCDD	0.82	B	0.013	0.0028	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1
OCDF	0.10		0.013	0.00074	ug/Kg	☼	05/16/18 13:25	05/20/18 01:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,4,6,7,8-HpCDF	55		28 - 143	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,7,8,9-HxCDF	71		29 - 147	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	05/16/18 13:25	05/20/18 01:56	1
13C-1,2,3,7,8-PeCDF	69		24 - 185	05/16/18 13:25	05/20/18 01:56	1
13C-2,3,4,6,7,8-HxCDF	71		28 - 136	05/16/18 13:25	05/20/18 01:56	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	05/16/18 13:25	05/20/18 01:56	1
13C-2,3,7,8-TCDD	65		25 - 164	05/16/18 13:25	05/20/18 01:56	1
13C-2,3,7,8-TCDF	74		24 - 169	05/16/18 13:25	05/20/18 01:56	1
13C-OCDD	67		17 - 157	05/16/18 13:25	05/20/18 01:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	96		35 - 197	05/16/18 13:25	05/20/18 01:56	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	0.0016	B	0.0013	0.000096	ug/Kg	☼	05/16/18 13:25	05/22/18 04:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169	05/16/18 13:25	05/22/18 04:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	05/16/18 13:25	05/22/18 04:41	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S108

Date Collected: 05/05/18 16:01

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-9

Matrix: Solid

Percent Solids: 57.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.22	G	0.0070	0.0070	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,4,6,7,8-HpCDF	0.087	q	0.0044	0.0023	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,4,7,8,9-HpCDF	0.0039	J	0.0044	0.0028	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0044	0.00014	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,4,7,8-HxCDF	0.023		0.0044	0.00056	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,6,7,8-HxCDD	0.0081		0.0044	0.00014	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,6,7,8-HxCDF	0.0098	B	0.0044	0.00050	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,7,8,9-HxCDD	0.0034	J	0.0044	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,7,8,9-HxCDF	0.00037	J B q	0.0044	0.00037	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,7,8-PeCDD	0.00077	J q	0.0044	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
1,2,3,7,8-PeCDF	0.060		0.0044	0.0013	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
2,3,4,6,7,8-HxCDF	0.0053		0.0044	0.00039	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
2,3,4,7,8-PeCDF	0.031		0.0044	0.0014	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
2,3,7,8-TCDD	0.00035	J q	0.00088	0.00010	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
OCDD	2.5	B	0.0088	0.0021	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1
OCDF	0.22		0.0088	0.00024	ug/Kg	☼	05/16/18 13:25	05/21/18 20:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	05/16/18 13:25	05/21/18 20:55	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	05/16/18 13:25	05/21/18 20:55	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	05/16/18 13:25	05/21/18 20:55	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	05/16/18 13:25	05/21/18 20:55	1
13C-2,3,7,8-TCDD	58		25 - 164	05/16/18 13:25	05/21/18 20:55	1
13C-2,3,7,8-TCDF	66		24 - 169	05/16/18 13:25	05/21/18 20:55	1
13C-OCDD	42		17 - 157	05/16/18 13:25	05/21/18 20:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	05/16/18 13:25	05/21/18 20:55	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	0.070	B	0.00088	0.00044	ug/Kg	☼	05/16/18 13:25	05/22/18 13:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	68		24 - 169				05/16/18 13:25	05/22/18 13:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	94		35 - 197				05/16/18 13:25	05/22/18 13:41	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S130

Lab Sample ID: 580-77110-10

Date Collected: 05/05/18 14:10

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 45.1

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	0.98	G	0.0075	0.0075	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,4,6,7,8-HpCDF	0.20		0.0054	0.0039	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,4,7,8,9-HpCDF	0.013	G q	0.0058	0.0058	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,4,7,8-HxCDD	0.0089	B	0.0054	0.00063	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,4,7,8-HxCDF	0.033		0.0054	0.0021	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,6,7,8-HxCDD	0.055		0.0054	0.00060	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,6,7,8-HxCDF	0.015	B	0.0054	0.0017	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,7,8,9-HxCDD	0.026		0.0054	0.00055	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,7,8,9-HxCDF	ND		0.0054	0.0013	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,7,8-PeCDD	0.0090		0.0054	0.00060	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
1,2,3,7,8-PeCDF	ND		0.0054	0.0043	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
2,3,4,6,7,8-HxCDF	0.016	q	0.0054	0.0013	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
2,3,4,7,8-PeCDF	0.013		0.0054	0.0051	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
2,3,7,8-TCDD	0.0017		0.0011	0.00022	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
OCDD	8.9	E B	0.011	0.0043	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1
OCDF	0.93		0.011	0.00056	ug/Kg	☼	05/16/18 13:25	05/21/18 10:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,4,7,8,9-HpCDF	32		26 - 138	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	05/16/18 13:25	05/21/18 10:31	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	05/16/18 13:25	05/21/18 10:31	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	05/16/18 13:25	05/21/18 10:31	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	05/16/18 13:25	05/21/18 10:31	1
13C-2,3,7,8-TCDD	57		25 - 164	05/16/18 13:25	05/21/18 10:31	1
13C-2,3,7,8-TCDF	63		24 - 169	05/16/18 13:25	05/21/18 10:31	1
13C-OCDD	42		17 - 157	05/16/18 13:25	05/21/18 10:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	05/16/18 13:25	05/21/18 10:31	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0085	G B	0.0018	0.0018	ug/Kg	☼	05/16/18 13:25	05/22/18 05:19	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169	05/16/18 13:25	05/22/18 05:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197	05/16/18 13:25	05/22/18 05:19	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S133

Lab Sample ID: 580-77110-11

Date Collected: 05/05/18 13:19

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 42.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.18		0.0058	0.0017	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,4,6,7,8-HpCDF	0.050		0.0058	0.0011	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,4,7,8,9-HpCDF	0.0041	J	0.0058	0.0018	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0058	0.00021	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,4,7,8-HxCDF	0.0083		0.0058	0.00049	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,6,7,8-HxCDD	0.011		0.0058	0.00020	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,6,7,8-HxCDF	ND		0.0058	0.00044	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,7,8,9-HxCDD	0.0054	J	0.0058	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,7,8,9-HxCDF	ND		0.0058	0.00033	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,7,8-PeCDD	0.0016	J q	0.0058	0.00039	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
1,2,3,7,8-PeCDF	0.0016	J	0.0058	0.00070	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
2,3,4,6,7,8-HxCDF	0.0049	J	0.0058	0.00035	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
2,3,4,7,8-PeCDF	0.0039	J	0.0058	0.00078	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
2,3,7,8-TCDD	0.00061	J q	0.0012	0.00016	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
OCDD	1.5	B	0.012	0.00096	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1
OCDF	0.084		0.012	0.00023	ug/Kg	☼	05/16/18 13:25	05/21/18 11:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,4,6,7,8-HpCDF	31		28 - 143	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,4,7,8,9-HpCDF	29		26 - 138	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	05/16/18 13:25	05/21/18 11:20	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	05/16/18 13:25	05/21/18 11:20	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	05/16/18 13:25	05/21/18 11:20	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	05/16/18 13:25	05/21/18 11:20	1
13C-2,3,7,8-TCDD	59		25 - 164	05/16/18 13:25	05/21/18 11:20	1
13C-2,3,7,8-TCDF	67		24 - 169	05/16/18 13:25	05/21/18 11:20	1
13C-OCDD	37		17 - 157	05/16/18 13:25	05/21/18 11:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	05/16/18 13:25	05/21/18 11:20	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0032	B	0.0012	0.00045	ug/Kg	☼	05/16/18 13:25	05/22/18 05:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169				05/16/18 13:25	05/22/18 05:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197				05/16/18 13:25	05/22/18 05:57	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S134

Date Collected: 05/05/18 12:15

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-12

Matrix: Solid

Percent Solids: 48.0

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	0.11		0.0052	0.0015	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,4,6,7,8-HpCDF	0.015	q	0.0052	0.00044	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,4,7,8,9-HpCDF	ND		0.0052	0.00049	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,4,7,8-HxCDD	0.0014	J B	0.0052	0.00015	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,4,7,8-HxCDF	0.0025	J	0.0052	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,6,7,8-HxCDD	0.0066		0.0052	0.00014	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,6,7,8-HxCDF	0.0012	J B	0.0052	0.00017	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,7,8,9-HxCDD	0.0040	J	0.0052	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,7,8,9-HxCDF	ND		0.0052	0.00011	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,7,8-PeCDD	0.00091	J	0.0052	0.00010	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
1,2,3,7,8-PeCDF	0.00075	J q	0.0052	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
2,3,4,6,7,8-HxCDF	0.00066	J	0.0052	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
2,3,4,7,8-PeCDF	0.00072	J	0.0052	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
2,3,7,8-TCDD	0.00018	J q	0.0010	0.000067	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
OCDD	0.92	B	0.010	0.00065	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1
OCDF	0.030		0.010	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 13:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,6,7,8-HxCDD	52		28 - 130	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,7,8-PeCDD	61		25 - 181	05/16/18 13:25	05/21/18 13:03	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	05/16/18 13:25	05/21/18 13:03	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136	05/16/18 13:25	05/21/18 13:03	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	05/16/18 13:25	05/21/18 13:03	1
13C-2,3,7,8-TCDD	60		25 - 164	05/16/18 13:25	05/21/18 13:03	1
13C-2,3,7,8-TCDF	65		24 - 169	05/16/18 13:25	05/21/18 13:03	1
13C-OCDD	39		17 - 157	05/16/18 13:25	05/21/18 13:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	05/16/18 13:25	05/21/18 13:03	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	0.0011	B	0.0010	0.00010	ug/Kg	☼	05/16/18 13:25	05/22/18 06:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	65		24 - 169				05/16/18 13:25	05/22/18 06:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				05/16/18 13:25	05/22/18 06:35	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S180

Date Collected: 05/04/18 09:39

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-13

Matrix: Solid

Percent Solids: 34.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.53		0.0072	0.0068	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,4,6,7,8-HpCDF	0.064		0.0072	0.0019	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,4,7,8,9-HpCDF	0.0034	J	0.0072	0.0021	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,4,7,8-HxCDD	0.0030	J B	0.0072	0.00030	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,4,7,8-HxCDF	0.0057	J	0.0072	0.00040	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,6,7,8-HxCDD	0.013		0.0072	0.00028	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,6,7,8-HxCDF	0.0021	J B	0.0072	0.00034	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,7,8,9-HxCDD	0.0067	J	0.0072	0.00026	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,7,8,9-HxCDF	ND		0.0072	0.00025	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,7,8-PeCDD	0.0012	J	0.0072	0.00016	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
1,2,3,7,8-PeCDF	0.0013	J	0.0072	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
2,3,4,6,7,8-HxCDF	0.0014	J	0.0072	0.00027	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
2,3,4,7,8-PeCDF	0.0013	J	0.0072	0.00020	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
2,3,7,8-TCDD	0.00039	J q	0.0014	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
OCDD	3.9	B	0.014	0.0030	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1
OCDF	0.23		0.014	0.00025	ug/Kg	☼	05/16/18 13:25	05/21/18 13:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,4,6,7,8-HpCDF	47		28 - 143	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,4,7,8-HxCDF	67		26 - 152	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,7,8-PeCDD	67		25 - 181	05/16/18 13:25	05/21/18 13:52	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/16/18 13:25	05/21/18 13:52	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136	05/16/18 13:25	05/21/18 13:52	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	05/16/18 13:25	05/21/18 13:52	1
13C-2,3,7,8-TCDD	61		25 - 164	05/16/18 13:25	05/21/18 13:52	1
13C-2,3,7,8-TCDF	65		24 - 169	05/16/18 13:25	05/21/18 13:52	1
13C-OCDD	58		17 - 157	05/16/18 13:25	05/21/18 13:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	05/16/18 13:25	05/21/18 13:52	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	0.0020	B	0.0014	0.00013	ug/Kg	☼	05/16/18 13:25	05/22/18 07:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169				05/16/18 13:25	05/22/18 07:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				05/16/18 13:25	05/22/18 07:13	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S152

Date Collected: 05/04/18 15:21

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-14

Matrix: Solid

Percent Solids: 48.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.27		0.0051	0.0036	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,4,6,7,8-HpCDF	0.035		0.0051	0.00093	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,4,7,8,9-HpCDF	ND		0.0051	0.00094	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,4,7,8-HxCDD	0.0023	J B	0.0051	0.00017	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,4,7,8-HxCDF	0.0054		0.0051	0.00027	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,6,7,8-HxCDD	0.011		0.0051	0.00016	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,6,7,8-HxCDF	0.0019	J B	0.0051	0.00023	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,7,8,9-HxCDD	0.0057		0.0051	0.00015	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,7,8,9-HxCDF	ND		0.0051	0.00016	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,7,8-PeCDD	0.0011	J	0.0051	0.000091	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
1,2,3,7,8-PeCDF	0.0013	J	0.0051	0.00014	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0051	0.00017	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
2,3,4,7,8-PeCDF	0.0013	J	0.0051	0.00015	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
2,3,7,8-TCDD	0.00024	J q	0.0010	0.000059	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
OCDD	2.0	B	0.010	0.0016	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1
OCDF	0.066		0.010	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 14:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	05/16/18 13:25	05/21/18 14:40	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/16/18 13:25	05/21/18 14:40	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	05/16/18 13:25	05/21/18 14:40	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	05/16/18 13:25	05/21/18 14:40	1
13C-2,3,7,8-TCDD	61		25 - 164	05/16/18 13:25	05/21/18 14:40	1
13C-2,3,7,8-TCDF	65		24 - 169	05/16/18 13:25	05/21/18 14:40	1
13C-OCDD	50		17 - 157	05/16/18 13:25	05/21/18 14:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	05/16/18 13:25	05/21/18 14:40	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	0.0011	B	0.0010	0.000074	ug/Kg	☼	05/16/18 13:25	05/22/18 07:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	05/16/18 13:25	05/22/18 07:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197	05/16/18 13:25	05/22/18 07:50	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S169

Lab Sample ID: 580-77110-15

Date Collected: 05/04/18 14:22

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 40.8

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	0.15		0.0062	0.0022	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,4,6,7,8-HpCDF	0.025		0.0062	0.00088	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,4,7,8,9-HpCDF	ND		0.0062	0.00095	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,4,7,8-HxCDD	0.0016	J B	0.0062	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,4,7,8-HxCDF	0.0025	J	0.0062	0.00025	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,6,7,8-HxCDD	0.0056	J	0.0062	0.00017	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,6,7,8-HxCDF	0.0013	J B	0.0062	0.00021	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,7,8,9-HxCDD	0.0036	J	0.0062	0.00015	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,7,8,9-HxCDF	ND		0.0062	0.00015	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,7,8-PeCDD	0.00095	J	0.0062	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
1,2,3,7,8-PeCDF	0.00060	J	0.0062	0.00010	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
2,3,4,6,7,8-HxCDF	0.00062	J q	0.0062	0.00016	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
2,3,4,7,8-PeCDF	0.00069	J	0.0062	0.00012	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
2,3,7,8-TCDD	0.00021	J	0.0012	0.000076	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
OCDD	1.3	B	0.012	0.0016	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1
OCDF	0.078		0.012	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 15:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		23 - 140	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,4,7,8,9-HpCDF	44		26 - 138	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	05/16/18 13:25	05/21/18 15:29	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/16/18 13:25	05/21/18 15:29	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	05/16/18 13:25	05/21/18 15:29	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	05/16/18 13:25	05/21/18 15:29	1
13C-2,3,7,8-TCDD	61		25 - 164	05/16/18 13:25	05/21/18 15:29	1
13C-2,3,7,8-TCDF	63		24 - 169	05/16/18 13:25	05/21/18 15:29	1
13C-OCDD	46		17 - 157	05/16/18 13:25	05/21/18 15:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	05/16/18 13:25	05/21/18 15:29	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	0.0022	B	0.0012	0.000096	ug/Kg	☼	05/16/18 13:25	05/22/18 08:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169	05/16/18 13:25	05/22/18 08:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	05/16/18 13:25	05/22/18 08:28	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S170

Date Collected: 05/04/18 13:31

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-16

Matrix: Solid

Percent Solids: 48.2

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	G	0.0066	0.0066	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,4,6,7,8-HpCDF	0.056		0.0051	0.0014	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,4,7,8,9-HpCDF	0.0025	J	0.0051	0.0018	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,4,7,8-HxCDD	0.0018	J B	0.0051	0.00022	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,4,7,8-HxCDF	0.0043	J	0.0051	0.00041	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,6,7,8-HxCDD	0.0086		0.0051	0.00020	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,6,7,8-HxCDF	0.0046	J B	0.0051	0.00036	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,7,8,9-HxCDD	0.0049	J	0.0051	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,7,8,9-HxCDF	ND		0.0051	0.00025	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,7,8-PeCDD	0.0011	J	0.0051	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
1,2,3,7,8-PeCDF	0.0016	J	0.0051	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
2,3,4,6,7,8-HxCDF	0.0014	J	0.0051	0.00026	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
2,3,4,7,8-PeCDF	0.0012	J	0.0051	0.00021	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
2,3,7,8-TCDD	0.00062	J q	0.0010	0.000090	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
OCDD	2.4	B	0.010	0.0017	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1
OCDF	0.13		0.010	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 21:44	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,4,6,7,8-HpCDF	38		28 - 143	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,4,7,8,9-HpCDF	41		26 - 138	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	05/16/18 13:25	05/21/18 21:44	1
13C-1,2,3,7,8-PeCDF	69		24 - 185	05/16/18 13:25	05/21/18 21:44	1
13C-2,3,4,6,7,8-HxCDF	66		28 - 136	05/16/18 13:25	05/21/18 21:44	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	05/16/18 13:25	05/21/18 21:44	1
13C-2,3,7,8-TCDD	64		25 - 164	05/16/18 13:25	05/21/18 21:44	1
13C-2,3,7,8-TCDF	68		24 - 169	05/16/18 13:25	05/21/18 21:44	1
13C-OCDD	48		17 - 157	05/16/18 13:25	05/21/18 21:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	05/16/18 13:25	05/21/18 21:44	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	0.0018	B	0.0010	0.00015	ug/Kg	☼	05/16/18 13:25	05/22/18 11:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169	05/16/18 13:25	05/22/18 11:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	05/16/18 13:25	05/22/18 11:48	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S173

Date Collected: 05/04/18 12:27

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-17

Matrix: Solid

Percent Solids: 35.0

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	0.36	G	0.010	0.010	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,4,6,7,8-HpCDF	0.041		0.0070	0.0014	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,4,7,8,9-HpCDF	0.0021	J	0.0070	0.0015	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,4,7,8-HxCDD	0.0020	J B	0.0070	0.00031	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,4,7,8-HxCDF	0.0045	J	0.0070	0.00043	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,6,7,8-HxCDD	0.011		0.0070	0.00028	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,6,7,8-HxCDF	0.0020	J B	0.0070	0.00038	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,7,8,9-HxCDD	0.0053	J	0.0070	0.00026	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,7,8,9-HxCDF	ND		0.0070	0.00026	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,7,8-PeCDD	0.0011	J q	0.0070	0.00023	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
1,2,3,7,8-PeCDF	0.0012	J	0.0070	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
2,3,4,6,7,8-HxCDF	0.0010	J	0.0070	0.00027	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
2,3,4,7,8-PeCDF	ND		0.0070	0.00019	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
2,3,7,8-TCDD	0.00067	J	0.0014	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
OCDD	2.7	B	0.014	0.0019	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1
OCDF	0.15		0.014	0.00037	ug/Kg	☼	05/16/18 13:25	05/21/18 22:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	37		23 - 140	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,4,6,7,8-HpCDF	30		28 - 143	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,4,7,8-HxCDD	50		32 - 141	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,6,7,8-HxCDF	50		26 - 123	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,7,8-PeCDD	57		25 - 181	05/16/18 13:25	05/21/18 22:32	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	05/16/18 13:25	05/21/18 22:32	1
13C-2,3,4,6,7,8-HxCDF	54		28 - 136	05/16/18 13:25	05/21/18 22:32	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	05/16/18 13:25	05/21/18 22:32	1
13C-2,3,7,8-TCDD	56		25 - 164	05/16/18 13:25	05/21/18 22:32	1
13C-2,3,7,8-TCDF	62		24 - 169	05/16/18 13:25	05/21/18 22:32	1
13C-OCDD	35		17 - 157	05/16/18 13:25	05/21/18 22:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	05/16/18 13:25	05/21/18 22:32	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0018	B	0.0014	0.00012	ug/Kg	☼	05/16/18 13:25	05/22/18 12:25	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169	05/16/18 13:25	05/22/18 12:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	05/16/18 13:25	05/22/18 12:25	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S177

Date Collected: 05/04/18 11:35

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-18

Matrix: Solid

Percent Solids: 38.9

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	0.45	G	0.014	0.014	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,4,6,7,8-HpCDF	0.043		0.0065	0.0015	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,4,7,8,9-HpCDF	0.0021	J	0.0065	0.0017	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0065	0.00029	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,4,7,8-HxCDF	0.0046	J	0.0065	0.00050	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,6,7,8-HxCDD	0.014		0.0065	0.00029	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,6,7,8-HxCDF	0.0021	J B	0.0065	0.00043	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,7,8,9-HxCDD	0.0056	J	0.0065	0.00026	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,7,8,9-HxCDF	ND		0.0065	0.00032	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,7,8-PeCDD	ND		0.0065	0.00030	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
1,2,3,7,8-PeCDF	0.0012	J	0.0065	0.00017	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
2,3,4,6,7,8-HxCDF	0.0011	J	0.0065	0.00033	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
2,3,4,7,8-PeCDF	0.0014	J	0.0065	0.00018	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
2,3,7,8-TCDD	0.00064	J	0.0013	0.00013	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
OCDD	3.4	B	0.013	0.0024	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1
OCDF	0.15		0.013	0.00028	ug/Kg	☼	05/16/18 13:25	05/21/18 23:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,4,7,8,9-HpCDF	37		26 - 138	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	05/16/18 13:25	05/21/18 23:21	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	05/16/18 13:25	05/21/18 23:21	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	05/16/18 13:25	05/21/18 23:21	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	05/16/18 13:25	05/21/18 23:21	1
13C-2,3,7,8-TCDD	58		25 - 164	05/16/18 13:25	05/21/18 23:21	1
13C-2,3,7,8-TCDF	63		24 - 169	05/16/18 13:25	05/21/18 23:21	1
13C-OCDD	36		17 - 157	05/16/18 13:25	05/21/18 23:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113		35 - 197	05/16/18 13:25	05/21/18 23:21	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	0.0033	B	0.0013	0.00012	ug/Kg	☼	05/16/18 13:25	05/22/18 13:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	05/16/18 13:25	05/22/18 13:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	05/16/18 13:25	05/22/18 13:03	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S178

Lab Sample ID: 580-77110-19

Date Collected: 05/04/18 10:38

Matrix: Solid

Date Received: 05/07/18 14:25

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	0.32	B	0.0066	0.0026	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,4,6,7,8-HpCDF	0.049	B	0.0066	0.0012	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,4,7,8,9-HpCDF	0.0023	J q B	0.0066	0.0013	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0066	0.00021	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,4,7,8-HxCDF	0.0047	J	0.0066	0.00037	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,6,7,8-HxCDD	0.011		0.0066	0.00020	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,6,7,8-HxCDF	0.0020	J	0.0066	0.00033	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,7,8,9-HxCDD	0.0057	J	0.0066	0.00019	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,7,8,9-HxCDF	0.00082	J B	0.0066	0.00025	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,7,8-PeCDD	0.00097	J q	0.0066	0.00019	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
1,2,3,7,8-PeCDF	0.0011	J B	0.0066	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
2,3,4,6,7,8-HxCDF	0.0011	J	0.0066	0.00027	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
2,3,4,7,8-PeCDF	0.0013	J	0.0066	0.00018	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
2,3,7,8-TCDD	0.00055	J q	0.0013	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
OCDD	2.4	B	0.013	0.0012	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1
OCDF	0.18		0.013	0.00024	ug/Kg	☼	05/17/18 12:48	05/20/18 02:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	45		23 - 140	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,7,8,9-HxCDF	63		29 - 147	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	05/17/18 12:48	05/20/18 02:21	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/17/18 12:48	05/20/18 02:21	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	05/17/18 12:48	05/20/18 02:21	1
13C-2,3,4,7,8-PeCDF	63		21 - 178	05/17/18 12:48	05/20/18 02:21	1
13C-2,3,7,8-TCDD	62		25 - 164	05/17/18 12:48	05/20/18 02:21	1
13C-2,3,7,8-TCDF	67		24 - 169	05/17/18 12:48	05/20/18 02:21	1
13C-OCDD	45		17 - 157	05/17/18 12:48	05/20/18 02:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	05/17/18 12:48	05/20/18 02:21	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0018	B	0.0013	0.00017	ug/Kg	☼	05/17/18 12:48	05/21/18 20:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169	05/17/18 12:48	05/21/18 20:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	05/17/18 12:48	05/21/18 20:00	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S035

Date Collected: 05/04/18 15:48

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-20

Matrix: Solid

Percent Solids: 53.7

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.13	B	0.0047	0.0012	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,4,6,7,8-HpCDF	0.014	q B	0.0047	0.00042	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0047	0.00049	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,4,7,8-HxCDD	0.00092	J B	0.0047	0.000099	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,4,7,8-HxCDF	0.0020	J	0.0047	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,6,7,8-HxCDD	0.0033	J	0.0047	0.000096	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,6,7,8-HxCDF	0.00085	J	0.0047	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,7,8,9-HxCDD	0.0023	J	0.0047	0.000088	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,7,8,9-HxCDF	0.00056	J B	0.0047	0.000089	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,7,8-PeCDD	ND		0.0047	0.00015	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
1,2,3,7,8-PeCDF	0.00096	J q B	0.0047	0.000065	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
2,3,4,6,7,8-HxCDF	0.00047	J	0.0047	0.000089	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
2,3,4,7,8-PeCDF	0.00084	J	0.0047	0.000072	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
2,3,7,8-TCDD	0.00027	J q	0.00094	0.000062	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
OCDD	0.92	B	0.0094	0.00055	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1
OCDF	0.046		0.0094	0.000097	ug/Kg	☼	05/17/18 12:48	05/20/18 03:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,6,7,8-HxCDD	75		28 - 130	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,7,8-PeCDD	76		25 - 181	05/17/18 12:48	05/20/18 03:09	1
13C-1,2,3,7,8-PeCDF	73		24 - 185	05/17/18 12:48	05/20/18 03:09	1
13C-2,3,4,6,7,8-HxCDF	76		28 - 136	05/17/18 12:48	05/20/18 03:09	1
13C-2,3,4,7,8-PeCDF	72		21 - 178	05/17/18 12:48	05/20/18 03:09	1
13C-2,3,7,8-TCDD	69		25 - 164	05/17/18 12:48	05/20/18 03:09	1
13C-2,3,7,8-TCDF	73		24 - 169	05/17/18 12:48	05/20/18 03:09	1
13C-OCDD	63		17 - 157	05/17/18 12:48	05/20/18 03:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	05/17/18 12:48	05/20/18 03:09	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	0.0014	B	0.00094	0.000097	ug/Kg	☼	05/17/18 12:48	05/21/18 20:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				05/17/18 12:48	05/21/18 20:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				05/17/18 12:48	05/21/18 20:38	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S023

Date Collected: 05/04/18 14:20

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-21

Matrix: Solid

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	0.048	B	0.0058	0.0011	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,4,6,7,8-HpCDF	0.010	B	0.0058	0.00043	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0058	0.00049	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,4,7,8-HxCDD	0.00077	J q B	0.0058	0.00010	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,4,7,8-HxCDF	0.0017	J	0.0058	0.00015	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,6,7,8-HxCDD	0.0020	J	0.0058	0.000097	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,6,7,8-HxCDF	0.00076	J	0.0058	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,7,8,9-HxCDD	0.0017	J	0.0058	0.000090	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,7,8,9-HxCDF	0.00075	J q B	0.0058	0.00010	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,7,8-PeCDD	ND		0.0058	0.00010	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
1,2,3,7,8-PeCDF	0.0010	J B	0.0058	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
2,3,4,6,7,8-HxCDF	0.00031	J q	0.0058	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
2,3,4,7,8-PeCDF	0.00062	J	0.0058	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
2,3,7,8-TCDD	0.00016	J q	0.0012	0.000084	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
OCDD	0.39	B	0.012	0.00056	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1
OCDF	0.038		0.012	0.00020	ug/Kg	☼	05/17/18 12:48	05/20/18 10:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,4,6,7,8-HpCDF	46		28 - 143	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,4,7,8,9-HpCDF	55		26 - 138	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	05/17/18 12:48	05/20/18 10:55	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	05/17/18 12:48	05/20/18 10:55	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	05/17/18 12:48	05/20/18 10:55	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	05/17/18 12:48	05/20/18 10:55	1
13C-2,3,7,8-TCDD	65		25 - 164	05/17/18 12:48	05/20/18 10:55	1
13C-2,3,7,8-TCDF	71		24 - 169	05/17/18 12:48	05/20/18 10:55	1
13C-OCDD	55		17 - 157	05/17/18 12:48	05/20/18 10:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	05/17/18 12:48	05/20/18 10:55	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	0.0010	J B	0.0012	0.00010	ug/Kg	☼	05/17/18 12:48	05/21/18 21:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	68		24 - 169				05/17/18 12:48	05/21/18 21:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				05/17/18 12:48	05/21/18 21:16	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S018

Date Collected: 05/04/18 13:25

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-22

Matrix: Solid

Percent Solids: 38.6

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	0.097	B	0.0063	0.0023	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0063	0.00065	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0063	0.00075	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,4,7,8-HxCDD	0.00097	J B	0.0063	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0063	0.00016	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,6,7,8-HxCDD	0.0032	J	0.0063	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,6,7,8-HxCDF	0.00076	J	0.0063	0.00015	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,7,8,9-HxCDD	0.0025	J	0.0063	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,7,8,9-HxCDF	0.00056	J q B	0.0063	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,7,8-PeCDD	0.00044	J q	0.0063	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
1,2,3,7,8-PeCDF	0.00084	J B	0.0063	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
2,3,4,6,7,8-HxCDF	0.00041	J	0.0063	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
2,3,4,7,8-PeCDF	0.00060	J	0.0063	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
2,3,7,8-TCDD	0.00037	J	0.0013	0.000089	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
2,3,7,8-TCDF	0.0012	J B	0.0013	0.000087	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
OCDD	0.80	B	0.013	0.0010	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1
OCDF	0.056		0.013	0.00031	ug/Kg	☼	05/17/18 12:48	05/20/18 11:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,4,6,7,8-HpCDF	41		28 - 143	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,4,7,8,9-HpCDF	46		26 - 138	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,6,7,8-HxCDD	64		28 - 130	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,7,8-PeCDD	67		25 - 181	05/17/18 12:48	05/20/18 11:43	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/17/18 12:48	05/20/18 11:43	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	05/17/18 12:48	05/20/18 11:43	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	05/17/18 12:48	05/20/18 11:43	1
13C-2,3,7,8-TCDD	64		25 - 164	05/17/18 12:48	05/20/18 11:43	1
13C-2,3,7,8-TCDF	69		24 - 169	05/17/18 12:48	05/20/18 11:43	1
13C-OCDD	41		17 - 157	05/17/18 12:48	05/20/18 11:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	05/17/18 12:48	05/20/18 11:43	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S005

Date Collected: 05/04/18 09:42

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-23

Matrix: Solid

Percent Solids: 38.7

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	0.075	B	0.0065	0.0017	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,4,6,7,8-HpCDF	0.014	B	0.0065	0.00058	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0065	0.00062	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0065	0.00016	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,4,7,8-HxCDF	0.0018	J q	0.0065	0.00027	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0065	0.00015	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,6,7,8-HxCDF	0.00099	J	0.0065	0.00024	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,7,8,9-HxCDD	0.0024	J	0.0065	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,7,8,9-HxCDF	0.00071	J q B	0.0065	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,7,8-PeCDD	0.00065	J	0.0065	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
1,2,3,7,8-PeCDF	0.00096	J B	0.0065	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
2,3,4,6,7,8-HxCDF	0.00050	J q	0.0065	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
2,3,4,7,8-PeCDF	0.00063	J q	0.0065	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
2,3,7,8-TCDD	0.00023	J q	0.0013	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
OCDD	0.64	B	0.013	0.00075	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1
OCDF	0.050		0.013	0.00024	ug/Kg	☼	05/17/18 12:48	05/20/18 12:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,4,6,7,8-HpCDF	40		28 - 143	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	05/17/18 12:48	05/20/18 12:32	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	05/17/18 12:48	05/20/18 12:32	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	05/17/18 12:48	05/20/18 12:32	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	05/17/18 12:48	05/20/18 12:32	1
13C-2,3,7,8-TCDD	62		25 - 164	05/17/18 12:48	05/20/18 12:32	1
13C-2,3,7,8-TCDF	69		24 - 169	05/17/18 12:48	05/20/18 12:32	1
13C-OCDD	49		17 - 157	05/17/18 12:48	05/20/18 12:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197	05/17/18 12:48	05/20/18 12:32	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0012	J B	0.0013	0.00012	ug/Kg	☼	05/17/18 12:48	05/21/18 21:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				05/17/18 12:48	05/21/18 21:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				05/17/18 12:48	05/21/18 21:54	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S008

Date Collected: 05/04/18 10:25

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-24

Matrix: Solid

Percent Solids: 40.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.061	B	0.0062	0.0014	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,4,6,7,8-HpCDF	0.011	q B	0.0062	0.00044	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,4,7,8,9-HpCDF	ND		0.0062	0.00047	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,4,7,8-HxCDD	0.00079	J q B	0.0062	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,4,7,8-HxCDF	0.0019	J	0.0062	0.00019	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,6,7,8-HxCDD	0.0025	J	0.0062	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,6,7,8-HxCDF	0.00085	J	0.0062	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,7,8,9-HxCDD	0.0015	J q	0.0062	0.00010	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,7,8,9-HxCDF	0.00058	J q B	0.0062	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,7,8-PeCDD	0.00049	J	0.0062	0.000098	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
1,2,3,7,8-PeCDF	0.00085	J B	0.0062	0.000077	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
2,3,4,6,7,8-HxCDF	0.00039	J	0.0062	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
2,3,4,7,8-PeCDF	0.00059	J	0.0062	0.000081	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
2,3,7,8-TCDD	ND		0.0012	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
2,3,7,8-TCDF	0.0012	J B	0.0012	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
OCDD	0.47	B	0.012	0.00059	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1
OCDF	0.042		0.012	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 13:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,6,7,8-HxCDF	71		26 - 123	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,7,8-PeCDD	75		25 - 181	05/17/18 12:48	05/20/18 13:20	1
13C-1,2,3,7,8-PeCDF	73		24 - 185	05/17/18 12:48	05/20/18 13:20	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	05/17/18 12:48	05/20/18 13:20	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	05/17/18 12:48	05/20/18 13:20	1
13C-2,3,7,8-TCDD	69		25 - 164	05/17/18 12:48	05/20/18 13:20	1
13C-2,3,7,8-TCDF	75		24 - 169	05/17/18 12:48	05/20/18 13:20	1
13C-OCDD	59		17 - 157	05/17/18 12:48	05/20/18 13:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	05/17/18 12:48	05/20/18 13:20	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S131

Date Collected: 05/05/18 11:32

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-25

Matrix: Solid

Percent Solids: 40.1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.065	B	0.0063	0.0013	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,4,6,7,8-HpCDF	0.012	q B	0.0063	0.00054	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,4,7,8,9-HpCDF	0.0011	J B	0.0063	0.00055	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,4,7,8-HxCDD	0.00080	J q B	0.0063	0.00016	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,4,7,8-HxCDF	0.0015	J q	0.0063	0.00027	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,6,7,8-HxCDD	0.0035	J	0.0063	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,6,7,8-HxCDF	0.00070	J q	0.0063	0.00024	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,7,8,9-HxCDD	0.0027	J	0.0063	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,7,8,9-HxCDF	0.00059	J q B	0.0063	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,7,8-PeCDD	0.00058	J	0.0063	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
1,2,3,7,8-PeCDF	0.00078	J B	0.0063	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
2,3,4,6,7,8-HxCDF	0.00043	J	0.0063	0.00017	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
2,3,4,7,8-PeCDF	0.00058	J	0.0063	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
2,3,7,8-TCDD	0.00027	J q	0.0013	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
2,3,7,8-TCDF	0.0010	J B	0.0013	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
OCDD	0.54	B	0.013	0.00073	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1
OCDF	0.033		0.013	0.00021	ug/Kg	☼	05/17/18 12:48	05/20/18 14:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	46		23 - 140	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,4,6,7,8-HpCDF	36		28 - 143	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,6,7,8-HxCDD	59		28 - 130	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	05/17/18 12:48	05/20/18 14:08	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	05/17/18 12:48	05/20/18 14:08	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	05/17/18 12:48	05/20/18 14:08	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	05/17/18 12:48	05/20/18 14:08	1
13C-2,3,7,8-TCDD	61		25 - 164	05/17/18 12:48	05/20/18 14:08	1
13C-2,3,7,8-TCDF	68		24 - 169	05/17/18 12:48	05/20/18 14:08	1
13C-OCDD	44		17 - 157	05/17/18 12:48	05/20/18 14:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	05/17/18 12:48	05/20/18 14:08	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S143

Date Collected: 05/05/18 10:16

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-26

Matrix: Solid

Percent Solids: 51.5

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.043	B	0.0049	0.00092	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,4,6,7,8-HpCDF	0.0072	B	0.0049	0.00039	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,4,7,8,9-HpCDF	0.00094	J B	0.0049	0.00038	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,4,7,8-HxCDD	0.00069	J q B	0.0049	0.00011	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,4,7,8-HxCDF	0.0015	J	0.0049	0.00016	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,6,7,8-HxCDD	0.0022	J	0.0049	0.000094	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,6,7,8-HxCDF	0.00061	J	0.0049	0.00014	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,7,8,9-HxCDD	0.0016	J	0.0049	0.000090	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,7,8,9-HxCDF	0.00054	J B	0.0049	0.000096	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,7,8-PeCDD	0.00028	J q	0.0049	0.000078	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
1,2,3,7,8-PeCDF	0.00031	J q B	0.0049	0.000075	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
2,3,4,6,7,8-HxCDF	0.00030	J q	0.0049	0.000098	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
2,3,4,7,8-PeCDF	0.00047	J q	0.0049	0.000084	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
2,3,7,8-TCDD	ND		0.00097	0.000079	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
2,3,7,8-TCDF	0.00060	J B	0.00097	0.000058	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
OCDD	0.36	B	0.0097	0.00052	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1
OCDF	0.019		0.0097	0.00016	ug/Kg	☼	05/17/18 12:48	05/20/18 14:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,4,6,7,8-HpCDF	39		28 - 143	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,6,7,8-HxCDD	64		28 - 130	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	05/17/18 12:48	05/20/18 14:57	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	05/17/18 12:48	05/20/18 14:57	1
13C-2,3,4,6,7,8-HxCDF	69		28 - 136	05/17/18 12:48	05/20/18 14:57	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	05/17/18 12:48	05/20/18 14:57	1
13C-2,3,7,8-TCDD	66		25 - 164	05/17/18 12:48	05/20/18 14:57	1
13C-2,3,7,8-TCDF	74		24 - 169	05/17/18 12:48	05/20/18 14:57	1
13C-OCDD	48		17 - 157	05/17/18 12:48	05/20/18 14:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197	05/17/18 12:48	05/20/18 14:57	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S145

Date Collected: 05/05/18 09:33

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-27

Matrix: Solid

Percent Solids: 51.6

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	4.1	E G B	0.031	0.031	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,4,6,7,8-HpCDF	0.73	G B	0.010	0.010	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,4,7,8,9-HpCDF	0.045	G B	0.012	0.012	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,4,7,8-HxCDD	0.011	B	0.0048	0.0014	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,4,7,8-HxCDF	0.067		0.0048	0.0023	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,6,7,8-HxCDD	0.075		0.0048	0.0014	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,6,7,8-HxCDF	0.022		0.0048	0.0021	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,7,8,9-HxCDD	0.021		0.0048	0.0013	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0048	0.0015	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,7,8-PeCDD	0.0029	J	0.0048	0.00023	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
1,2,3,7,8-PeCDF	0.0076	B	0.0048	0.00057	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
2,3,4,6,7,8-HxCDF	0.0070		0.0048	0.0015	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
2,3,4,7,8-PeCDF	0.0093		0.0048	0.00060	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
2,3,7,8-TCDD	0.0011		0.00097	0.00013	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
OCDD	33	E G B	0.013	0.013	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1
OCDF	2.4		0.0097	0.00090	ug/Kg	☼	05/17/18 12:48	05/20/18 15:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	39		23 - 140	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,4,7,8,9-HpCDF	40		26 - 138	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,7,8-PeCDD	78		25 - 181	05/17/18 12:48	05/20/18 15:45	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	05/17/18 12:48	05/20/18 15:45	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136	05/17/18 12:48	05/20/18 15:45	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	05/17/18 12:48	05/20/18 15:45	1
13C-2,3,7,8-TCDD	59		25 - 164	05/17/18 12:48	05/20/18 15:45	1
13C-2,3,7,8-TCDF	54		24 - 169	05/17/18 12:48	05/20/18 15:45	1
13C-OCDD	40		17 - 157	05/17/18 12:48	05/20/18 15:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	116		35 - 197	05/17/18 12:48	05/20/18 15:45	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0045	B	0.00097	0.00031	ug/Kg	☼	05/17/18 12:48	05/21/18 22:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169	05/17/18 12:48	05/21/18 22:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	05/17/18 12:48	05/21/18 22:31	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S145-D

Lab Sample ID: 580-77110-28

Date Collected: 05/05/18 09:32

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 51.2

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	2.2	E G B	0.011	0.011	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,4,6,7,8-HpCDF	0.57	G B	0.0075	0.0075	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,4,7,8,9-HpCDF	0.036	G B	0.0083	0.0083	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,4,7,8-HxCDD	0.0096	B	0.0048	0.00051	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,4,7,8-HxCDF	0.061		0.0048	0.0019	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,6,7,8-HxCDD	0.058		0.0048	0.00053	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,6,7,8-HxCDF	0.020		0.0048	0.0018	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,7,8,9-HxCDD	0.016		0.0048	0.00046	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,7,8,9-HxCDF	0.0021	J B	0.0048	0.0015	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,7,8-PeCDD	0.0029	J	0.0048	0.00026	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
1,2,3,7,8-PeCDF	0.0074	B	0.0048	0.00058	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
2,3,4,6,7,8-HxCDF	0.0062		0.0048	0.0015	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
2,3,4,7,8-PeCDF	0.0093		0.0048	0.00061	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
2,3,7,8-TCDD	0.0012		0.00096	0.00012	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
OCDD	21	E B	0.0096	0.0071	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1
OCDF	1.8		0.0096	0.00081	ug/Kg	☼	05/17/18 12:48	05/20/18 16:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,4,6,7,8-HpCDF	34		28 - 143	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,4,7,8-HxCDF	69		26 - 152	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,7,8-PeCDD	84		25 - 181	05/17/18 12:48	05/20/18 16:34	1
13C-1,2,3,7,8-PeCDF	69		24 - 185	05/17/18 12:48	05/20/18 16:34	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	05/17/18 12:48	05/20/18 16:34	1
13C-2,3,4,7,8-PeCDF	80		21 - 178	05/17/18 12:48	05/20/18 16:34	1
13C-2,3,7,8-TCDD	61		25 - 164	05/17/18 12:48	05/20/18 16:34	1
13C-2,3,7,8-TCDF	57		24 - 169	05/17/18 12:48	05/20/18 16:34	1
13C-OCDD	41		17 - 157	05/17/18 12:48	05/20/18 16:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	117		35 - 197	05/17/18 12:48	05/20/18 16:34	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	0.0043	B	0.00096	0.00028	ug/Kg	☼	05/17/18 12:48	05/21/18 23:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	64		24 - 169				05/17/18 12:48	05/21/18 23:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				05/17/18 12:48	05/21/18 23:09	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-RB-VV-180505

Lab Sample ID: 580-77110-29

Date Collected: 05/05/18 17:00

Matrix: Water

Date Received: 05/07/18 14:25

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		48	0.59	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,4,6,7,8-HpCDF	0.70	J q B	48	0.48	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,4,7,8,9-HpCDF	2.7	J q B	48	0.61	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,4,7,8-HxCDD	ND		48	0.64	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,4,7,8-HxCDF	ND		48	1.7	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,6,7,8-HxCDD	ND		48	0.59	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,6,7,8-HxCDF	ND		48	1.4	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,7,8,9-HxCDD	ND		48	0.55	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,7,8,9-HxCDF	5.5	J B	48	1.0	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,7,8-PeCDD	ND		48	1.1	pg/L		05/16/18 08:27	05/19/18 12:08	1
1,2,3,7,8-PeCDF	ND		48	0.67	pg/L		05/16/18 08:27	05/19/18 12:08	1
2,3,4,6,7,8-HxCDF	ND		48	0.99	pg/L		05/16/18 08:27	05/19/18 12:08	1
2,3,4,7,8-PeCDF	ND		48	0.75	pg/L		05/16/18 08:27	05/19/18 12:08	1
2,3,7,8-TCDD	ND		9.6	1.2	pg/L		05/16/18 08:27	05/19/18 12:08	1
2,3,7,8-TCDF	1.5	J B	9.6	0.62	pg/L		05/16/18 08:27	05/19/18 12:08	1
OCDD	2.5	J q B	96	0.60	pg/L		05/16/18 08:27	05/19/18 12:08	1
OCDF	ND		96	1.3	pg/L		05/16/18 08:27	05/19/18 12:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	69		23 - 140	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,4,6,7,8-HpCDF	63		28 - 143	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,4,7,8-HxCDD	67		32 - 141	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,6,7,8-HxCDD	76		28 - 130	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,7,8-PeCDD	80		25 - 181	05/16/18 08:27	05/19/18 12:08	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	05/16/18 08:27	05/19/18 12:08	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136	05/16/18 08:27	05/19/18 12:08	1
13C-2,3,4,7,8-PeCDF	75		21 - 178	05/16/18 08:27	05/19/18 12:08	1
13C-2,3,7,8-TCDD	75		25 - 164	05/16/18 08:27	05/19/18 12:08	1
13C-2,3,7,8-TCDF	82		24 - 169	05/16/18 08:27	05/19/18 12:08	1
13C-OCDD	78		17 - 157	05/16/18 08:27	05/19/18 12:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197	05/16/18 08:27	05/19/18 12:08	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: MB 320-223466/1-A

Matrix: Water

Analysis Batch: 224312

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223466

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	1.81	J q	50	0.23	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,4,6,7,8-HpCDF	1.47	J q	50	0.35	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,4,7,8,9-HpCDF	2.53	J	50	0.46	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,4,7,8-HxCDD	1.70	J	50	0.27	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,4,7,8-HxCDF	ND		50	0.50	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,6,7,8-HxCDD	1.02	J	50	0.26	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,6,7,8-HxCDF	0.857	J	50	0.45	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,7,8,9-HxCDD	0.885	J	50	0.24	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,7,8,9-HxCDF	2.09	J q	50	0.34	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,7,8-PeCDD	0.354	J q	50	0.33	pg/L		05/16/18 08:27	05/19/18 08:06	1
1,2,3,7,8-PeCDF	0.808	J	50	0.30	pg/L		05/16/18 08:27	05/19/18 08:06	1
2,3,4,6,7,8-HxCDF	ND		50	0.35	pg/L		05/16/18 08:27	05/19/18 08:06	1
2,3,4,7,8-PeCDF	ND		50	0.30	pg/L		05/16/18 08:27	05/19/18 08:06	1
2,3,7,8-TCDD	ND		10	0.29	pg/L		05/16/18 08:27	05/19/18 08:06	1
2,3,7,8-TCDF	0.504	J	10	0.16	pg/L		05/16/18 08:27	05/19/18 08:06	1
OCDD	10.2	J q	100	0.31	pg/L		05/16/18 08:27	05/19/18 08:06	1
OCDF	3.53	J q	100	0.40	pg/L		05/16/18 08:27	05/19/18 08:06	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,6,7,8-HxCDD	73		28 - 130	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	05/16/18 08:27	05/19/18 08:06	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	05/16/18 08:27	05/19/18 08:06	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136	05/16/18 08:27	05/19/18 08:06	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	05/16/18 08:27	05/19/18 08:06	1
13C-2,3,7,8-TCDD	68		25 - 164	05/16/18 08:27	05/19/18 08:06	1
13C-2,3,7,8-TCDF	73		24 - 169	05/16/18 08:27	05/19/18 08:06	1
13C-OCDD	67		17 - 157	05/16/18 08:27	05/19/18 08:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	05/16/18 08:27	05/19/18 08:06	1

Lab Sample ID: LCS 320-223466/2-A

Matrix: Water

Analysis Batch: 224312

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223466

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	995		pg/L		99	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	1000		pg/L		100	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	962		pg/L		96	78 - 138
1,2,3,4,7,8-HxCDD	1000	978		pg/L		98	70 - 164
1,2,3,4,7,8-HxCDF	1000	997		pg/L		100	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: LCS 320-223466/2-A

Matrix: Water

Analysis Batch: 224312

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223466

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	1000	958		pg/L		96	76 - 134
1,2,3,6,7,8-HxCDF	1000	967		pg/L		97	84 - 130
1,2,3,7,8,9-HxCDD	1000	1020		pg/L		102	64 - 162
1,2,3,7,8,9-HxCDF	1000	1000		pg/L		100	78 - 130
1,2,3,7,8-PeCDD	1000	1010		pg/L		101	70 - 142
1,2,3,7,8-PeCDF	1000	1030		pg/L		103	80 - 134
2,3,4,6,7,8-HxCDF	1000	961		pg/L		96	70 - 156
2,3,4,7,8-PeCDF	1000	1030		pg/L		103	68 - 160
2,3,7,8-TCDD	200	206		pg/L		103	67 - 158
2,3,7,8-TCDF	200	211		pg/L		106	75 - 158
OCDD	2000	1740		pg/L		87	78 - 144
OCDF	2000	1720		pg/L		86	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	57		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	54		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	55		20 - 186
13C-1,2,3,4,7,8-HxCDD	60		21 - 193
13C-1,2,3,4,7,8-HxCDF	58		19 - 202
13C-1,2,3,6,7,8-HxCDD	64		25 - 163
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-1,2,3,7,8-PeCDD	64		21 - 227
13C-1,2,3,7,8-PeCDF	60		21 - 192
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-2,3,7,8-TCDD	63		20 - 175
13C-2,3,7,8-TCDF	67		22 - 152
13C-OCDD	58		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	107		31 - 191

Lab Sample ID: LCSD 320-223466/3-A

Matrix: Water

Analysis Batch: 224312

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 223466

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	1000	1060		pg/L		106	70 - 140	6	50
1,2,3,4,6,7,8-HpCDF	1000	1040		pg/L		104	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF	1000	1020		pg/L		102	78 - 138	6	50
1,2,3,4,7,8-HxCDD	1000	1080		pg/L		108	70 - 164	10	50
1,2,3,4,7,8-HxCDF	1000	1020		pg/L		102	72 - 134	3	50
1,2,3,6,7,8-HxCDD	1000	1060		pg/L		106	76 - 134	10	50
1,2,3,6,7,8-HxCDF	1000	1030		pg/L		103	84 - 130	6	50
1,2,3,7,8,9-HxCDD	1000	1130		pg/L		113	64 - 162	11	50
1,2,3,7,8,9-HxCDF	1000	1030		pg/L		103	78 - 130	3	50
1,2,3,7,8-PeCDD	1000	1080		pg/L		108	70 - 142	6	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: LCSD 320-223466/3-A

Matrix: Water

Analysis Batch: 224312

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 223466

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	1060		pg/L		106	80 - 134	3	50
2,3,4,6,7,8-HxCDF	1000	1010		pg/L		101	70 - 156	5	50
2,3,4,7,8-PeCDF	1000	1060		pg/L		106	68 - 160	3	50
2,3,7,8-TCDD	200	209		pg/L		104	67 - 158	1	50
2,3,7,8-TCDF	200	209		pg/L		104	75 - 158	1	50
OCDD	2000	1950		pg/L		97	78 - 144	11	50
OCDF	2000	1870		pg/L		93	63 - 170	8	50

Isotope Dilution	LCSD %Recovery	LCSD 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	66		20 - 186
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	72		17 - 205
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,6,7,8-HxCDF	75		22 - 176
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-2,3,7,8-TCDD	72		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	67		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	103		31 - 191

Lab Sample ID: MB 320-223586/1-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223586

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	ND		0.0050	0.00012	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,4,6,7,8-HpCDF	ND		0.0050	0.000090	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,4,7,8,9-HpCDF	ND		0.0050	0.00012	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,4,7,8-HxCDD	0.000392	J q	0.0050	0.00010	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.00012	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000097	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,6,7,8-HxCDF	0.000297	J q	0.0050	0.00011	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000086	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,7,8,9-HxCDF	0.000273	J q	0.0050	0.000092	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,7,8-PeCDD	ND		0.0050	0.00021	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
1,2,3,7,8-PeCDF	ND		0.0050	0.00012	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.00010	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
2,3,4,7,8-PeCDF	ND		0.0050	0.00015	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
2,3,7,8-TCDD	ND		0.0010	0.00021	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
2,3,7,8-TCDF	0.000789	J q	0.0010	0.00013	ug/Kg		05/16/18 13:25	05/19/18 18:47	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: MB 320-223586/1-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223586

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.00139	J	0.010	0.00016	ug/Kg		05/16/18 13:25	05/19/18 18:47	1
OCDF	ND		0.010	0.00029	ug/Kg		05/16/18 13:25	05/19/18 18:47	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	68		23 - 140	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,4,6,7,8-HpCDF	66		28 - 143	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,4,7,8,9-HpCDF	69		26 - 138	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,6,7,8-HxCDF	75		26 - 123	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	05/16/18 13:25	05/19/18 18:47	1
13C-1,2,3,7,8-PeCDF	67		24 - 185	05/16/18 13:25	05/19/18 18:47	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	05/16/18 13:25	05/19/18 18:47	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	05/16/18 13:25	05/19/18 18:47	1
13C-2,3,7,8-TCDD	65		25 - 164	05/16/18 13:25	05/19/18 18:47	1
13C-2,3,7,8-TCDF	67		24 - 169	05/16/18 13:25	05/19/18 18:47	1
13C-OCDD	78		17 - 157	05/16/18 13:25	05/19/18 18:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197	05/16/18 13:25	05/19/18 18:47	1

Lab Sample ID: LCS 320-223586/2-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223586

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.108		ug/Kg		108	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	0.107		ug/Kg		107	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.114		ug/Kg		114	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.111		ug/Kg		111	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.118		ug/Kg		118	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.114		ug/Kg		114	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.114		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	0.0990		ug/Kg		99	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	0.116		ug/Kg		116	70 - 156
2,3,4,7,8-PeCDF	0.100	0.122		ug/Kg		122	68 - 160
2,3,7,8-TCDD	0.0200	0.0249		ug/Kg		124	67 - 158
2,3,7,8-TCDF	0.0200	0.0213		ug/Kg		106	75 - 158
OCDD	0.200	0.189		ug/Kg		95	78 - 144
OCDF	0.200	0.190		ug/Kg		95	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: 580-77110-2

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

Lab Sample ID: LCS 320-223586/2-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223586

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDF	72		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	75		20 - 186
13C-1,2,3,4,7,8-HxCDD	71		21 - 193
13C-1,2,3,4,7,8-HxCDF	82		19 - 202
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	77		17 - 205
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	79		22 - 176
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-2,3,7,8-TCDD	69		20 - 175
13C-2,3,7,8-TCDF	74		22 - 152
13C-OCDD	82		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	98		31 - 191

Lab Sample ID: LCSD 320-223586/3-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 223586

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	0.113		ug/Kg		113	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.100	0.115		ug/Kg		115	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.100	0.108		ug/Kg		108	78 - 138	1	50
1,2,3,4,7,8-HxCDD	0.100	0.119		ug/Kg		119	70 - 164	4	50
1,2,3,4,7,8-HxCDF	0.100	0.111		ug/Kg		111	72 - 134	0	50
1,2,3,6,7,8-HxCDD	0.100	0.108		ug/Kg		108	76 - 134	9	50
1,2,3,6,7,8-HxCDF	0.100	0.120		ug/Kg		120	84 - 130	5	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	0.114		ug/Kg		114	78 - 130	1	50
1,2,3,7,8-PeCDD	0.100	0.102		ug/Kg		102	70 - 142	3	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	0.118		ug/Kg		118	70 - 156	2	50
2,3,4,7,8-PeCDF	0.100	0.122		ug/Kg		122	68 - 160	1	50
2,3,7,8-TCDD	0.0200	0.0257		ug/Kg		128	67 - 158	3	50
2,3,7,8-TCDF	0.0200	0.0223		ug/Kg		112	75 - 158	5	50
OCDD	0.200	0.195		ug/Kg		98	78 - 144	3	50
OCDF	0.200	0.197		ug/Kg		98	63 - 170	4	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	77		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	82		19 - 202
13C-1,2,3,6,7,8-HxCDD	81		25 - 163

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: LCSD 320-223586/3-A

Matrix: Solid

Analysis Batch: 224335

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 223586

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	78		21 - 159
13C-1,2,3,7,8,9-HxCDF	79		17 - 205
13C-1,2,3,7,8-PeCDD	75		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,6,7,8-HxCDF	80		22 - 176
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	71		22 - 152
13C-OCDD	85		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	99		31 - 191

Lab Sample ID: MB 320-223855/1-A

Matrix: Solid

Analysis Batch: 224318

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223855

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000132	J q	0.0050	0.000050	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,4,6,7,8-HpCDF	0.000101	J q	0.0050	0.000035	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,4,7,8,9-HpCDF	0.000332	J q	0.0050	0.000045	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,4,7,8-HxCDD	0.000215	J	0.0050	0.000048	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000064	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000046	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000056	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,7,8,9-HxCDD	ND		0.0050	0.000042	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,7,8,9-HxCDF	0.000713	J	0.0050	0.000045	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000065	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
1,2,3,7,8-PeCDF	0.000125	J q	0.0050	0.000057	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000042	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000066	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
2,3,7,8-TCDD	ND		0.0010	0.000072	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
2,3,7,8-TCDF	0.000161	J q	0.0010	0.000040	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
OCDD	0.000441	J	0.010	0.000046	ug/Kg		05/17/18 12:48	05/20/18 08:30	1
OCDF	ND		0.010	0.000077	ug/Kg		05/17/18 12:48	05/20/18 08:30	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,6,7,8-HxCDF	71		26 - 123	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	05/17/18 12:48	05/20/18 08:30	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	05/17/18 12:48	05/20/18 08:30	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	05/17/18 12:48	05/20/18 08:30	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: MB 320-223855/1-A

Matrix: Solid

Analysis Batch: 224318

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 223855

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,7,8-PeCDF	68		21 - 178	05/17/18 12:48	05/20/18 08:30	1
13C-2,3,7,8-TCDD	65		25 - 164	05/17/18 12:48	05/20/18 08:30	1
13C-2,3,7,8-TCDF	70		24 - 169	05/17/18 12:48	05/20/18 08:30	1
13C-OCDD	69		17 - 157	05/17/18 12:48	05/20/18 08:30	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197	05/17/18 12:48	05/20/18 08:30	1

Lab Sample ID: LCS 320-223855/2-A

Matrix: Solid

Analysis Batch: 224318

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223855

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.116		ug/Kg		116	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.115		ug/Kg		115	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.115		ug/Kg		115	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.116		ug/Kg		116	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.113		ug/Kg		113	72 - 134
1,2,3,6,7,8-HxCDD	0.100	0.110		ug/Kg		110	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	0.119		ug/Kg		119	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.111		ug/Kg		111	78 - 130
1,2,3,7,8-PeCDD	0.100	0.115		ug/Kg		115	70 - 142
1,2,3,7,8-PeCDF	0.100	0.115		ug/Kg		115	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	0.116		ug/Kg		116	68 - 160
2,3,7,8-TCDD	0.0200	0.0232		ug/Kg		116	67 - 158
2,3,7,8-TCDF	0.0200	0.0216		ug/Kg		108	75 - 158
OCDD	0.200	0.212		ug/Kg		106	78 - 144
OCDF	0.200	0.195		ug/Kg		98	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	60		20 - 186
13C-1,2,3,4,7,8-HxCDD	64		21 - 193
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		17 - 205
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	65		21 - 192
13C-2,3,4,6,7,8-HxCDF	72		22 - 176
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	69		22 - 152
13C-OCDD	68		13 - 199

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77110-2

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

Lab Sample ID: LCS 320-223855/2-A

Matrix: Solid

Analysis Batch: 224318

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 223855

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	111		31 - 191

Lab Sample ID: LCSD 320-223855/3-A

Matrix: Solid

Analysis Batch: 224318

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 223855

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	0.115		ug/Kg		115	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.100	0.116		ug/Kg		116	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.113		ug/Kg		113	78 - 138	2	50
1,2,3,4,7,8-HxCDD	0.100	0.113		ug/Kg		113	70 - 164	2	50
1,2,3,4,7,8-HxCDF	0.100	0.112		ug/Kg		112	72 - 134	1	50
1,2,3,6,7,8-HxCDD	0.100	0.113		ug/Kg		113	76 - 134	2	50
1,2,3,6,7,8-HxCDF	0.100	0.111		ug/Kg		111	84 - 130	1	50
1,2,3,7,8,9-HxCDD	0.100	0.124		ug/Kg		124	64 - 162	4	50
1,2,3,7,8,9-HxCDF	0.100	0.108		ug/Kg		108	78 - 130	2	50
1,2,3,7,8-PeCDD	0.100	0.110		ug/Kg		110	70 - 142	4	50
1,2,3,7,8-PeCDF	0.100	0.111		ug/Kg		111	80 - 134	4	50
2,3,4,6,7,8-HxCDF	0.100	0.110		ug/Kg		110	70 - 156	1	50
2,3,4,7,8-PeCDF	0.100	0.112		ug/Kg		112	68 - 160	4	50
2,3,7,8-TCDD	0.0200	0.0230		ug/Kg		115	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0220		ug/Kg		110	75 - 158	2	50
OCDD	0.200	0.214		ug/Kg		107	78 - 144	1	50
OCDF	0.200	0.206		ug/Kg		103	63 - 170	5	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	65		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	62		20 - 186
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	73		17 - 205
13C-1,2,3,7,8-PeCDD	72		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	67		13 - 328
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	71		22 - 152
13C-OCDD	68		13 - 199

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

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S006

Date Collected: 05/04/18 11:08

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-1

Matrix: Solid

Percent Solids: 40.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224541	05/20/18 04:33	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/19/18 20:56	AS	TAL SAC

Client Sample ID: PDI-SG-S009

Date Collected: 05/04/18 11:55

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-2

Matrix: Solid

Percent Solids: 38.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224541	05/20/18 05:11	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/19/18 21:39	AS	TAL SAC

Client Sample ID: PDI-SG-S071

Date Collected: 05/05/18 16:22

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-3

Matrix: Solid

Percent Solids: 69.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		10	224651	05/22/18 00:58	AS	TAL SAC

Client Sample ID: PDI-SG-S069

Date Collected: 05/05/18 15:34

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-4

Matrix: Solid

Percent Solids: 71.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224541	05/20/18 05:49	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/19/18 23:05	AS	TAL SAC

Client Sample ID: PDI-SG-S068

Date Collected: 05/05/18 13:20

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-5

Matrix: Solid

Percent Solids: 71.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224541	05/20/18 06:26	KSS	TAL SAC
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/19/18 23:47	AS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S067

Lab Sample ID: 580-77110-6

Date Collected: 05/05/18 11:26

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 68.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox	DL		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	DL	5	224651	05/22/18 00:09	AS	TAL SAC
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/20/18 00:30	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 03:26	KSS	TAL SAC

Client Sample ID: PDI-SG-S056

Lab Sample ID: 580-77110-7

Date Collected: 05/05/18 10:29

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 63.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/20/18 01:13	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 04:04	KSS	TAL SAC

Client Sample ID: PDI-SG-S048

Lab Sample ID: 580-77110-8

Date Collected: 05/05/18 09:36

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 37.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224335	05/20/18 01:56	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 04:41	KSS	TAL SAC

Client Sample ID: PDI-SG-S108

Lab Sample ID: 580-77110-9

Date Collected: 05/05/18 16:01

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 57.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224651	05/21/18 20:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224873	05/22/18 13:41	KSS	TAL SAC

Client Sample ID: PDI-SG-S130

Lab Sample ID: 580-77110-10

Date Collected: 05/05/18 14:10

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 45.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S130

Date Collected: 05/05/18 14:10

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-10

Matrix: Solid

Percent Solids: 45.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B		1	224531	05/21/18 10:31	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 05:19	KSS	TAL SAC

Client Sample ID: PDI-SG-S133

Date Collected: 05/05/18 13:19

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-11

Matrix: Solid

Percent Solids: 42.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224531	05/21/18 11:20	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 05:57	KSS	TAL SAC

Client Sample ID: PDI-SG-S134

Date Collected: 05/05/18 12:15

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-12

Matrix: Solid

Percent Solids: 48.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224531	05/21/18 13:03	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 06:35	KSS	TAL SAC

Client Sample ID: PDI-SG-S180

Date Collected: 05/04/18 09:39

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-13

Matrix: Solid

Percent Solids: 34.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224531	05/21/18 13:52	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 07:13	KSS	TAL SAC

Client Sample ID: PDI-SG-S152

Date Collected: 05/04/18 15:21

Date Received: 05/07/18 14:25

Lab Sample ID: 580-77110-14

Matrix: Solid

Percent Solids: 48.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224531	05/21/18 14:40	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 07:50	KSS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S169

Lab Sample ID: 580-77110-15

Date Collected: 05/04/18 14:22

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 40.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224531	05/21/18 15:29	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224765	05/22/18 08:28	KSS	TAL SAC

Client Sample ID: PDI-SG-S170

Lab Sample ID: 580-77110-16

Date Collected: 05/04/18 13:31

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 48.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224651	05/21/18 21:44	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224873	05/22/18 11:48	KSS	TAL SAC

Client Sample ID: PDI-SG-S173

Lab Sample ID: 580-77110-17

Date Collected: 05/04/18 12:27

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 35.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224651	05/21/18 22:32	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224873	05/22/18 12:25	KSS	TAL SAC

Client Sample ID: PDI-SG-S177

Lab Sample ID: 580-77110-18

Date Collected: 05/04/18 11:35

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 38.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224651	05/21/18 23:21	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223586	05/16/18 13:25	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224873	05/22/18 13:03	KSS	TAL SAC

Client Sample ID: PDI-SG-S178

Lab Sample ID: 580-77110-19

Date Collected: 05/04/18 10:38

Matrix: Solid

Date Received: 05/07/18 14:25

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			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224316	05/20/18 02:21	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S178

Lab Sample ID: 580-77110-19

Date Collected: 05/04/18 10:38

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 37.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 20:00	KSS	TAL SAC

Client Sample ID: PDI-SG-S035

Lab Sample ID: 580-77110-20

Date Collected: 05/04/18 15:48

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 53.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224316	05/20/18 03:09	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 20:38	KSS	TAL SAC

Client Sample ID: PDI-SG-S023

Lab Sample ID: 580-77110-21

Date Collected: 05/04/18 14:20

Matrix: Solid

Date Received: 05/07/18 14:25

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			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 10:55	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 21:16	KSS	TAL SAC

Client Sample ID: PDI-SG-S018

Lab Sample ID: 580-77110-22

Date Collected: 05/04/18 13:25

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 38.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 11:43	AS	TAL SAC

Client Sample ID: PDI-SG-S005

Lab Sample ID: 580-77110-23

Date Collected: 05/04/18 09:42

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 38.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 12:32	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 21:54	KSS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-SG-S008

Lab Sample ID: 580-77110-24

Date Collected: 05/04/18 10:25

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 40.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 13:20	AS	TAL SAC

Client Sample ID: PDI-SG-S131

Lab Sample ID: 580-77110-25

Date Collected: 05/05/18 11:32

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 40.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 14:08	AS	TAL SAC

Client Sample ID: PDI-SG-S143

Lab Sample ID: 580-77110-26

Date Collected: 05/05/18 10:16

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 51.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 14:57	AS	TAL SAC

Client Sample ID: PDI-SG-S145

Lab Sample ID: 580-77110-27

Date Collected: 05/05/18 09:33

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 51.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 15:45	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 22:31	KSS	TAL SAC

Client Sample ID: PDI-SG-S145-D

Lab Sample ID: 580-77110-28

Date Collected: 05/05/18 09:32

Matrix: Solid

Date Received: 05/07/18 14:25

Percent Solids: 51.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224318	05/20/18 16:34	AS	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		223855	05/17/18 12:48	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	224633	05/21/18 23:09	KSS	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77110-2

Client Sample ID: PDI-RB-VV-180505

Lab Sample ID: 580-77110-29

Date Collected: 05/05/18 17:00

Matrix: Water

Date Received: 05/07/18 14:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			223466	05/16/18 08:27	ITH	TAL SAC
Total/NA	Analysis	1613B		1	224312	05/19/18 12:08	KSS	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-77110-2

Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

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

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

TestAmerica Seattle

Sample Summary

Client: AECOM

TestAmerica Job ID: 580-77110-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77110-1	PDI-SG-S006	Solid	05/04/18 11:08	05/07/18 14:25
580-77110-2	PDI-SG-S009	Solid	05/04/18 11:55	05/07/18 14:25
580-77110-3	PDI-SG-S071	Solid	05/05/18 16:22	05/07/18 14:25
580-77110-4	PDI-SG-S069	Solid	05/05/18 15:34	05/07/18 14:25
580-77110-5	PDI-SG-S068	Solid	05/05/18 13:20	05/07/18 14:25
580-77110-6	PDI-SG-S067	Solid	05/05/18 11:26	05/07/18 14:25
580-77110-7	PDI-SG-S056	Solid	05/05/18 10:29	05/07/18 14:25
580-77110-8	PDI-SG-S048	Solid	05/05/18 09:36	05/07/18 14:25
580-77110-9	PDI-SG-S108	Solid	05/05/18 16:01	05/07/18 14:25
580-77110-10	PDI-SG-S130	Solid	05/05/18 14:10	05/07/18 14:25
580-77110-11	PDI-SG-S133	Solid	05/05/18 13:19	05/07/18 14:25
580-77110-12	PDI-SG-S134	Solid	05/05/18 12:15	05/07/18 14:25
580-77110-13	PDI-SG-S180	Solid	05/04/18 09:39	05/07/18 14:25
580-77110-14	PDI-SG-S152	Solid	05/04/18 15:21	05/07/18 14:25
580-77110-15	PDI-SG-S169	Solid	05/04/18 14:22	05/07/18 14:25
580-77110-16	PDI-SG-S170	Solid	05/04/18 13:31	05/07/18 14:25
580-77110-17	PDI-SG-S173	Solid	05/04/18 12:27	05/07/18 14:25
580-77110-18	PDI-SG-S177	Solid	05/04/18 11:35	05/07/18 14:25
580-77110-19	PDI-SG-S178	Solid	05/04/18 10:38	05/07/18 14:25
580-77110-20	PDI-SG-S035	Solid	05/04/18 15:48	05/07/18 14:25
580-77110-21	PDI-SG-S023	Solid	05/04/18 14:20	05/07/18 14:25
580-77110-22	PDI-SG-S018	Solid	05/04/18 13:25	05/07/18 14:25
580-77110-23	PDI-SG-S005	Solid	05/04/18 09:42	05/07/18 14:25
580-77110-24	PDI-SG-S008	Solid	05/04/18 10:25	05/07/18 14:25
580-77110-25	PDI-SG-S131	Solid	05/05/18 11:32	05/07/18 14:25
580-77110-26	PDI-SG-S143	Solid	05/05/18 10:16	05/07/18 14:25
580-77110-27	PDI-SG-S145	Solid	05/05/18 09:33	05/07/18 14:25
580-77110-28	PDI-SG-S145-D	Solid	05/05/18 09:32	05/07/18 14:25
580-77110-29	PDI-RB-VV-180505	Water	05/05/18 17:00	05/07/18 14:25

TestAmerica Seattle

$$IR4 = 1.3 / 1.1, \quad IR5 = 2.4 / 2.3$$



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Chain of Custody Record



Client Information (Sub Contract Lab) Shipping/Receiving Company: TestAmerica Laboratories, Inc. Address: 880 Riverside Parkway, West Sacramento, CA 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email: Project Name: Portland Harbor Pre-Remedial Design Site:		Sampler: Walker, Elaine M Lab Pkt: Elaine Walker E-Mail: elaine.walker@testamericainc.com Phone: Carrier Tracking No(s): State of Origin: Oregon Page: Page 1 of 1 Job #: 580-77110-2	COC No: 580-55228.1 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
Analysis Requested Due Date Requested: 5/23/2018 TAT Requested (days): PO #: 58012120 WFO #: 58012120 Project #: 58012120 SSOW#:		Total Number of Containers: 2 Special Instructions/Note:	
Sample Identification - Client ID (Lab ID) PDI-RBVV180505 (580-77110-29)	Sample Date: 5/5/18 Sample Time: 17:00 Pacific	Sample Type (C=Comp, G=grab) Preservation Code:	Matrix (W=Water, S=Soil, O=Organic, A=Air) Water
Field Filtered Sample (Yes or No) X Perform MS/MSD (Yes or No) X 1613B/1613B_Sox_Sep_P Full List w/o Totals X		Special Instructions/Note:	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.			
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months			
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: [Signature] Date: 5-8-18 1335 Company: [Signature]		Received by: [Signature] Date/Time: 5/9/18 920 Company: [Signature]	
Relinquished by:		Received by:	
Relinquished by:		Received by:	
Custody Seal No.: 4782203 Custody Seals Intact: Yes ☒ No ☐		Cooler Temperature(s) °C and Other Remarks: 0.7	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



Client Information (Sub Contract Lab)				Lab Pmt. Walker, Elaine M		Carrier Tracking No(s):		COC No: 580-55211-1	
Client Contact: Shipping/Receiving				Phone: Elaine Walker		State of Origin: Oregon		Page 1 of 4	
Company: TestAmerica Laboratories, Inc.				E-Mail: elaine.walker@testamericainc.com		Accreditations Required (See note):		Job #: 580-77110-2	
Address: 880 Riverside Parkway, West Sacramento, CA 95605				Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Due Date Requested: 5/23/2018		Analysis Requested	
City: West Sacramento				State, Zip: CA, 95605		TAT Requested (days):		Preservation Codes:	
PO #: 58012120				WO #: 58012120		Project #: 58012120		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (Specify)	
Project Name: Portland Harbor Pre-Remedial Design				Site: 58012120		SSOW#: 58012120		Other:	
Sample Identification - Client ID (Lab ID)				Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
Matrix (W=water, S=solid, O=oil, etc.)				Preservation Code:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)	
1613B/HRMS_Sox_P Full List w/o Totals				1613B/1613B_Sox_Sep_P Full List w/o Totals		Total Number of Containers		Special Instructions/Note:	
PDI-SG-S006 (580-77110-1)	5/4/18	11:08 Pacific	Solid						
PDI-SG-S009 (580-77110-2)	5/4/18	11:55 Pacific	Solid						
PDI-SG-S071 (580-77110-3)	5/5/18	16:22 Pacific	Solid						
PDI-SG-S069 (580-77110-4)	5/5/18	15:34 Pacific	Solid						
PDI-SG-S068 (580-77110-5)	5/5/18	13:20 Pacific	Solid						
PDI-SG-S067 (580-77110-6)	5/5/18	11:26 Pacific	Solid						
PDI-SG-S056 (580-77110-7)	5/5/18	10:29 Pacific	Solid						
PDI-SG-S048 (580-77110-8)	5/5/18	09:36 Pacific	Solid						
PDI-SG-S108 (580-77110-9)	5/5/18	16:01 Pacific	Solid						
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.									
Possible Hazard Identification									
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)									
Primary Deliverable Rank: 2									
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months									
Special Instructions/QC Requirements:									
Method of Shipment:									
Received by: <i>Elaine Walker</i> Date/Time: 5/18/18 9:20 Received by: _____ Date/Time: _____ Received by: _____ Date/Time: _____ Received by: _____ Date/Time: _____									
Company: <i>TestAmerica</i> Company: _____ Company: _____ Company: _____									
Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 0.8, 3.1									

Chain of Custody record

Client Information (Sub Contract Lab)		Sampler:		Lab P/M:		Carrier Tracking No(s):		COC No:	
Client Contact:		Walker, Elaine M		Walker, Elaine M				580-55211.2	
Shipping/Receiving		Phone:		E-Mail:		State of Origin:		Page:	
Company:		TestAmerica Laboratories, Inc.		elaine.walker@testamericainc.com		Oregon		Page 2 of 4	
Address:		880 Riverside Parkway,		Due Date Requested:		Job #:		580-77110-2	
City:		West Sacramento		TAT Requested (days):		Preservation Codes:		A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 F - MeOH R - Na2SO3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice J - DI Water U - Acetone K - EDTA V - MCAA W - pH 4.5 L - EDA Z - other (specify) Other:	
State, Zip:		CA, 95605		PO #:		Analysis Requested			
Phone:		916-373-5800(Tel) 916-372-1059(Fax)		WO #:		Total Number of containers			
Email:				Project #:		1613B/HRMS_Sox_P Full List w/o Totals			
Project Name:		Portland Harbor Pre-Remedial Design		SSOW#:		1613B/1613B_Sox_Sep_P Full List w/o Totals			
Site:				Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)			
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=organic, B=biomass, A=air)	
PDI-SG-S130 (580-77110-10)		5/5/18		14:10 Pacific		Solid		Solid	
PDI-SG-S133 (580-77110-11)		5/5/18		13:19 Pacific		Solid		Solid	
PDI-SG-S134 (580-77110-12)		5/5/18		12:15 Pacific		Solid		Solid	
PDI-SG-S180 (580-77110-13)		5/4/18		09:39 Pacific		Solid		Solid	
PDI-SG-S152 (580-77110-14)		5/4/18		15:21 Pacific		Solid		Solid	
PDI-SG-S169 (580-77110-15)		5/4/18		14:22 Pacific		Solid		Solid	
PDI-SG-S170 (580-77110-16)		5/4/18		13:31 Pacific		Solid		Solid	
PDI-SG-S173 (580-77110-17)		5/4/18		12:27 Pacific		Solid		Solid	
PDI-SG-S177 (580-77110-18)		5/4/18		11:35 Pacific		Solid		Solid	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I									
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2									
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____ Relinquished by: _____ Date/Time: 5/8/18 1430 Company: TAPOR Relinquished by: _____ Date/Time: _____ Company: TA-Soc Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 0.8, 3.1									

Chain of Custody record

Client Information (Sub Contract Lab)		Lab P/N: Walker, Elaine M		Carrier Tracking No(s):		COC No: 580-55211.3	
Client Contact: Shipping/Receiving		E-Mail: elaine.walker@testamericainc.com		State of Origin: Oregon		Page: Page 3 of 4	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 580-77110-2		Preservation Codes:	
Address: 880 Riverside Parkway,		Due Date Requested: 5/23/2018		Analysis Requested		A - HCL M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
City: West Sacramento		TAT Requested (days):		1613B/HRMS_Sox_P Full List w/o Totals		Other:	
State, Zip: CA, 95605		PO #:		1613B/1613B_Sox_P Full List w/o Totals		Total Number of containers	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		WO #:		Perform MS/MSD (Yes or No)		Field Filtered Sample (Yes or No)	
Email:		Project #:		Field Filtered Sample (Yes or No)		Special Instructions/Note:	
Project Name: Portland Harbor Pre-Remedial Design		58012120		Preservation Code:			
Site:		SSOW#:					
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
PDI-SG-S178 (580-77110-19)		5/4/18		10:38 Pacific		Solid	
PDI-SG-S035 (580-77110-20)		5/4/18		15:48 Pacific		Solid	
PDI-SG-S023 (580-77110-21)		5/4/18		14:20 Pacific		Solid	
PDI-SG-S018 (580-77110-22)		5/4/18		13:25 Pacific		Solid	
PDI-SG-S005 (580-77110-23)		5/4/18		09:42 Pacific		Solid	
PDI-SG-S008 (580-77110-24)		5/4/18		10:25 Pacific		Solid	
PDI-SG-S131 (580-77110-25)		5/5/18		11:32 Pacific		Solid	
PDI-SG-S143 (580-77110-26)		5/5/18		10:16 Pacific		Solid	
PDI-SG-S145 (580-77110-27)		5/5/18		09:33 Pacific		Solid	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client ☐ Disposal By Lab ☐ Archive For ☐ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Primary Deliverable Rank: 2		Method of Shipment:	
Empty Kit Relinquished by:		Time:	
Relinquished by: <i>Ch...</i>		Date: 5/18/18	
Relinquished by:		Date: 5/18/18	
Relinquished by:		Date: 5/18/18	
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.8, 3.1	

Ver: 09/20/2016



Client Information (Sub Contract Lab)				Lab PM:	Walker, Elaine M	Carrier Tracking No(s):	COC No:					
Client Contact:				Phone:	E-Mail:	State of Origin:	580-55211.1					
Shipping/Receiving				Page 1 of 4								
Company:				Job #:								
TestAmerica Laboratories, Inc.				580-77110-4								
Address:				Preservation Codes:								
880 Riverside Parkway,				A - HCL								
City:				M - Hexane								
West Sacramento				N - None								
State, Zip:				O - AsNaO2								
CA, 95605				P - Na2O4S								
Phone:				Q - Na2SO3								
916-373-5600(Tel) 916-372-1059(Fax)				R - Na2SO3								
Email:				S - H2SO4								
				T - TSP Dodecahydrate								
Project Name:				U - Acetone								
Portland Harbor Pre-Remedial Design				V - MCAA								
Site:				W - pH 4-5								
				L - EDA								
				Other:								
Sample Identification - Client ID (Lab ID)				Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, Solid, O=oil, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AutoCP/PH Frozen Archive Container billed @ \$0.	Total Number of containers	Special Instructions/Note:
PDI-SG-S006 (580-77110-1)	5/4/18	11:08 Pacific	Solid								2	
PDI-SG-S009 (580-77110-2)	5/4/18	11:55 Pacific	Solid								2	
PDI-SG-S071 (580-77110-3)	5/5/18	16:22 Pacific	Solid								2	
PDI-SG-S069 (580-77110-4)	5/5/18	15:34 Pacific	Solid								2	
PDI-SG-S068 (580-77110-5)	5/5/18	13:20 Pacific	Solid								2	
PDI-SG-S067 (580-77110-6)	5/5/18	11:26 Pacific	Solid								2	
PDI-SG-S056 (580-77110-7)	5/5/18	10:29 Pacific	Solid								2	
PDI-SG-S048 (580-77110-8)	5/5/18	09:36 Pacific	Solid								2	
PDI-SG-S108 (580-77110-9)	5/5/18	16:01 Pacific	Solid								2	

Possible Hazard Identification

Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 1

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

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

Special Instructions/QC Requirements:

Method of Shipment:

Time:

Date:

Relinquished by: *[Signature]* Date/Time: 5/8/18 14:30

Relinquished by: *[Signature]* Date/Time: 5/8/18 14:30

Relinquished by: *[Signature]* Date/Time: 5/8/18 14:30

Custody Seal No.: 08.3.1

Custody Seals Intact: Yes

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:		Lab P/N:		Carrier Tracking No(s):		COC No:		
Client Contact:		Walker, Elaine M		E-Mail:		State of Origin:		580-55211.2		
Shipping/Receiving		Phone:		elaine.walker@testamericainc.com		Oregon		Page: 2 of 4		
Company:		TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #:		580-77110-4		
Address:		880 Riverside Parkway,		Due Date Requested:		Analysis Requested		Preservation Codes:		
City:		West Sacramento		5/23/2018				A - HCL M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - NCA W - pH 4.5 Z - other (specify)		
State, Zip:		CA, 95605		TAT Requested (days):						
Phone:		916-373-5600(Tel) 916-372-1059(Fax)		PO #:						
Email:				WO #:						
Project Name:		Portland Harbor Pre-Remedial Design		Project #:						
Site:		SSOW#:		58012120						
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=other, T=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AutoOP/PH Frozen Archive Container billed @ \$0.	Total Number of Containers	Special Instructions/Note:
PDI-SG-S130 (580-77110-10)		5/5/18	14:10 Pacific		Solid			X	2	
PDI-SG-S133 (580-77110-11)		5/5/18	13:19 Pacific		Solid			X	2	
PDI-SG-S134 (580-77110-12)		5/5/18	12:15 Pacific		Solid			X	2	
PDI-SG-S180 (580-77110-13)		5/4/18	09:39 Pacific		Solid			X	2	
PDI-SG-S152 (580-77110-14)		5/4/18	15:21 Pacific		Solid			X	2	
PDI-SG-S169 (580-77110-15)		5/4/18	14:22 Pacific		Solid			X	2	
PDI-SG-S170 (580-77110-16)		5/4/18	13:31 Pacific		Solid			X	2	
PDI-SG-S173 (580-77110-17)		5/4/18	12:27 Pacific		Solid			X	2	
PDI-SG-S177 (580-77110-18)		5/4/18	11:35 Pacific		Solid			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/OC Requirements:	
Primary Deliverable Rank: 1		Method of Shipment:	
Empty Kit Relinquished by:		Time:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	
Yes Δ No		0.8, 3.1	

Ver: 09/20/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77110-2

Login Number: 77110

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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.	False	Refer to Job Narrative for details.
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.	False	No date or time on COC, logged in per container labels.
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	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



580-77110 Field Sheet

Job: _____

Tracking # 4375 5081 4050 SO / PO / FO

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

Notes: _____

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

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 478263

Sample Custody Seal: _____

Cooler ID: _____

Temp: Observed 0.7

From: Temp Blank ☒ Sample ☐

NCM Filed: Yes ☐ No ☐

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

Initials: ML Date: 5/19/18 Time: 920

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

W19E



580-77110 Field Sheet

S

Job: _____

Tracking # 4236 6923 2321 SO PO / FO

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

Notes: _____

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

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: -

Cooler ID: 1 of 2

Temp: Observed 3.1

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

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

Initials: Wln Date: 5/9/18 Time: 920

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

FIOB/ WIAO
1620

Sacramento Sample Receiving Notes

Job: _____

Tracking # 4236 5923 2332 SO / PO / FO

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

Notes: _____

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

Ice X Wet X Gel _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: -

Cooler ID: 2 of 2

Temp: Observed 0.8

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

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

Initials: Mjn Date: 5/9/18 Time: 920

*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: 580-77110-2

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								
580-77110-1	PDI-SG-S006	50	45	52	50	60	55	58	63
580-77110-1 - RA	PDI-SG-S006								
580-77110-2	PDI-SG-S009	57	55	62	58	66	59	65	71
580-77110-2 - RA	PDI-SG-S009								
580-77110-3	PDI-SG-S071	28	26 *	28	50	56	48	54	54
580-77110-4	PDI-SG-S069	56	48	57	51	60	54	57	65
580-77110-4 - RA	PDI-SG-S069								
580-77110-5	PDI-SG-S068	52	48	56	57	63	55	59	63
580-77110-5 - RA	PDI-SG-S068								
580-77110-6	PDI-SG-S067	52	50	53	53		54		
580-77110-6 - DL	PDI-SG-S067					55		53	57
580-77110-6 - RA	PDI-SG-S067								
580-77110-7	PDI-SG-S056	51	45	55	49	61	54	58	67
580-77110-7 - RA	PDI-SG-S056								
580-77110-8	PDI-SG-S048	58	55	63	56	66	63	65	71
580-77110-8 - RA	PDI-SG-S048								
580-77110-9	PDI-SG-S108	44	38	43	56	56	57	53	55
580-77110-9 - RA	PDI-SG-S108								
580-77110-10	PDI-SG-S130	41	33	32	54	58	55	59	59
580-77110-10 - RA	PDI-SG-S130								
580-77110-11	PDI-SG-S133	40	31	29	56	59	55	57	57
580-77110-11 - RA	PDI-SG-S133								
580-77110-12	PDI-SG-S134	43	35	45	51	50	52	50	58
580-77110-12 - RA	PDI-SG-S134								
580-77110-13	PDI-SG-S180	56	47	53	66	67	71	66	68
580-77110-13 - RA	PDI-SG-S180								
580-77110-14	PDI-SG-S152	49	37	48	56	56	57	56	61
580-77110-14 - RA	PDI-SG-S152								
580-77110-15	PDI-SG-S169	46	35	44	56	57	59	58	62
580-77110-15 - RA	PDI-SG-S169								
580-77110-16	PDI-SG-S170	49	38	41	61	63	61	62	67
580-77110-16 - RA	PDI-SG-S170								
580-77110-17	PDI-SG-S173	37	30	38	50	50	50	50	53
580-77110-17 - RA	PDI-SG-S173								
580-77110-18	PDI-SG-S177	40	32	37	55	56	55	56	56
580-77110-18 - RA	PDI-SG-S177								
580-77110-19	PDI-SG-S178	45	35	42	61	63	60	61	63
580-77110-19 - RA	PDI-SG-S178								
580-77110-20	PDI-SG-S035	62	46	53	72	74	75	73	75
580-77110-20 - RA	PDI-SG-S035								
580-77110-21	PDI-SG-S023	56	46	55	61	66	70	66	68
580-77110-21 - RA	PDI-SG-S023								
580-77110-22	PDI-SG-S018	50	41	46	63	62	64	64	64
580-77110-23	PDI-SG-S005	49	40	51	58	58	62	58	61
580-77110-23 - RA	PDI-SG-S005								
580-77110-24	PDI-SG-S008	60	49	61	70	71	73	71	72
580-77110-25	PDI-SG-S131	46	36	49	55	54	59	55	60
580-77110-26	PDI-SG-S143	52	39	53	60	61	64	63	68
580-77110-27	PDI-SG-S145	39	33	40	54	61	50	56	60

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77110-2

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

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-77110-27 - RA	PDI-SG-S145								
580-77110-28	PDI-SG-S145-D	40	34	42	61	69	53	61	62
580-77110-28 - RA	PDI-SG-S145-D								
MB 320-223586/1-A	Method Blank	68	66	69	66	73	69	75	76
MB 320-223855/1-A	Method Blank	65	62	65	69	71	71	71	69
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
580-77110-1	PDI-SG-S006	62	60	61	61	62	69	52	
580-77110-1 - RA	PDI-SG-S006						60		
580-77110-2	PDI-SG-S009	70	66	69	63	65	72	60	
580-77110-2 - RA	PDI-SG-S009						65		
580-77110-3	PDI-SG-S071	84	70	52	65	71	64	14 *	
580-77110-4	PDI-SG-S069	65	60	64	54	57	62	57	
580-77110-4 - RA	PDI-SG-S069						55		
580-77110-5	PDI-SG-S068	61	57	63	59	57	67	52	
580-77110-5 - RA	PDI-SG-S068						58		
580-77110-6	PDI-SG-S067	62	61		62	59	69	44	
580-77110-6 - DL	PDI-SG-S067			59					
580-77110-6 - RA	PDI-SG-S067						65		
580-77110-7	PDI-SG-S056	71	62	60	63	63	73	51	
580-77110-7 - RA	PDI-SG-S056						66		
580-77110-8	PDI-SG-S048	72	69	71	64	65	74	67	
580-77110-8 - RA	PDI-SG-S048						69		
580-77110-9	PDI-SG-S108	63	62	57	64	58	66	42	
580-77110-9 - RA	PDI-SG-S108						68		
580-77110-10	PDI-SG-S130	65	63	60	60	57	63	42	
580-77110-10 - RA	PDI-SG-S130						70		
580-77110-11	PDI-SG-S133	64	63	58	66	59	67	37	
580-77110-11 - RA	PDI-SG-S133						67		
580-77110-12	PDI-SG-S134	61	59	55	57	60	65	39	
580-77110-12 - RA	PDI-SG-S134						65		
580-77110-13	PDI-SG-S180	67	64	68	65	61	65	58	
580-77110-13 - RA	PDI-SG-S180						64		
580-77110-14	PDI-SG-S152	65	64	59	60	61	65	50	
580-77110-14 - RA	PDI-SG-S152						66		
580-77110-15	PDI-SG-S169	65	64	62	60	61	63	46	
580-77110-15 - RA	PDI-SG-S169						67		
580-77110-16	PDI-SG-S170	72	69	66	67	64	68	48	
580-77110-16 - RA	PDI-SG-S170						70		
580-77110-17	PDI-SG-S173	57	58	54	59	56	62	35	
580-77110-17 - RA	PDI-SG-S173						64		
580-77110-18	PDI-SG-S177	62	60	58	62	58	63	36	
580-77110-18 - RA	PDI-SG-S177						66		
580-77110-19	PDI-SG-S178	65	64	64	63	62	67	45	
580-77110-19 - RA	PDI-SG-S178						62		
580-77110-20	PDI-SG-S035	76	73	76	72	69	73	63	
580-77110-20 - RA	PDI-SG-S035						71		
580-77110-21	PDI-SG-S023	71	68	69	68	65	71	55	

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77110-2

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)
580-77110-21 - RA	PDI-SG-S023						68	
580-77110-22	PDI-SG-S018	67	64	65	66	64	69	41
580-77110-23	PDI-SG-S005	66	66	63	64	62	69	49
580-77110-23 - RA	PDI-SG-S005						62	
580-77110-24	PDI-SG-S008	75	73	75	73	69	75	59
580-77110-25	PDI-SG-S131	63	61	62	60	61	68	44
580-77110-26	PDI-SG-S143	69	68	69	67	66	74	48
580-77110-27	PDI-SG-S145	78	66	52	74	59	54	40
580-77110-27 - RA	PDI-SG-S145						63	
580-77110-28	PDI-SG-S145-D	84	69	57	80	61	57	41
580-77110-28 - RA	PDI-SG-S145-D						64	
MB 320-223586/1-A	Method Blank	71	67	75	61	65	67	78
MB 320-223855/1-A	Method Blank	71	70	73	68	65	70	69

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

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		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 320-223586/2-A	Lab Control Sample	75	72	75	71	82	67	79	77
LCS 320-223855/2-A	Lab Control Sample	63	60	60	64	69	70	69	68
LCSD 320-223586/3-A	Lab Control Sample Dup	74	74	77	67	82	81	78	79
LCSD 320-223855/3-A	Lab Control Sample Dup	65	61	62	65	67	71	69	73

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 320-223586/2-A	Lab Control Sample	77	72	79	67	69	74	82
LCS 320-223855/2-A	Lab Control Sample	67	65	72	64	65	69	68
LCSD 320-223586/3-A	Lab Control Sample Dup	75	72	80	65	67	71	85
LCSD 320-223855/3-A	Lab Control Sample Dup	72	69	74	67	66	71	68

Surrogate Legend

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77110-2

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

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-77110-29	PDI-RB-VV-180505	69	63	65	67	70	76	72	73
MB 320-223466/1-A	Method Blank	64	60	60	65	66	73	66	66
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
580-77110-29	PDI-RB-VV-180505	80	78	78	75	75	82	78	
MB 320-223466/1-A	Method Blank	70	65	68	68	68	73	67	

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-223466/2-A	Lab Control Sample	57	54	55	60	58	64	61	59
LCSD 320-223466/3-A	Lab Control Sample Dup	68	63	66	65	67	71	68	72

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77110-2

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD (21-227)	PeCDF (21-192)	¹³ CH _x CF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-223466/2-A	Lab Control Sample	64	60	64	61	63	67	58
LCSD 320-223466/3-A	Lab Control Sample Dup	71	70	75	66	72	74	67

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
¹³CH_xCF = 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