

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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TestAmerica Job ID: 580-77233-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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5/31/2018 3:58:07 PM

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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: 580-77233-2

Job ID: 580-77233-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-77233-2

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

Sixteen samples were received on 5/11/2018 12:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.9° C, 1.8° C and 4.1° 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.

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-S004 (580-77233-1), PDI-SG-S003 (580-77233-2), PDI-SG-S028 (580-77233-3), PDI-SG-S087 (580-77233-4), PDI-SG-S088 (580-77233-5), PDI-SG-S091 (580-77233-6), PDI-SG-S021 (580-77233-7), PDI-SG-S094 (580-77233-8), PDI-SG-S101 (580-77233-9), PDI-SG-S024 (580-77233-10), PDI-SG-S025 (580-77233-11), PDI-SG-S027 (580-77233-12), PDI-SG-S026 (580-77233-13), PDI-SG-S007 (580-77233-14), PDI-SG-S012 (580-77233-15) and PDI-SG-S086 (580-77233-16) were analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 05/19/2018 and analyzed on 05/23/2018, 05/24/2018 and 05/26/2018.

Several analytes were detected in method blank MB 320-224251/1-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.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: PDI-SG-S003 (580-77233-2), PDI-SG-S028 (580-77233-3), and PDI-SG-S027 (580-77233-12). 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 samples. All detection limits are below the lower calibration.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: PDI-SG-S087 (580-77233-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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 sample run on instrument 10D5

Case Narrative

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

TestAmerica Job ID: 580-77233-2

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Laboratory: TestAmerica Seattle (Continued)

exceeded this criteria: PDI-SG-S091 (580-77233-6). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

The following sample was diluted due to the nature of the sample matrix: PDI-SG-S091 (580-77233-6). 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-S004 (580-77233-1), PDI-SG-S003 (580-77233-2), PDI-SG-S028 (580-77233-3), PDI-SG-S087 (580-77233-4), PDI-SG-S088 (580-77233-5), PDI-SG-S091 (580-77233-6), PDI-SG-S021 (580-77233-7), PDI-SG-S094 (580-77233-8), PDI-SG-S101 (580-77233-9), PDI-SG-S024 (580-77233-10), PDI-SG-S025 (580-77233-11), PDI-SG-S027 (580-77233-12), PDI-SG-S026 (580-77233-13), PDI-SG-S007 (580-77233-14), PDI-SG-S012 (580-77233-15) and PDI-SG-S086 (580-77233-16). The reporting limits (RLs) have been adjusted proportionately. Samples are associated with preparation batch 320-224251.

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: 580-77233-2

Qualifiers

Dioxin

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

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: 580-77233-2

Client Sample ID: PDI-SG-S004

Date Collected: 05/09/18 16:10

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-1

Matrix: Solid

Percent Solids: 62.0

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	0.030	B	0.0040	0.00062	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,4,6,7,8-HpCDF	0.0057	B	0.0040	0.00019	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,4,7,8,9-HpCDF	0.00055	J B	0.0040	0.00022	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,4,7,8-HxCDD	0.00042	J q B	0.0040	0.000073	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0040	0.000087	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,6,7,8-HxCDD	0.0014	J	0.0040	0.000062	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,6,7,8-HxCDF	0.00059	J q	0.0040	0.000083	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,7,8,9-HxCDD	0.0012	J B	0.0040	0.000060	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,7,8,9-HxCDF	0.00021	J B	0.0040	0.000054	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,7,8-PeCDD	0.00029	J	0.0040	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
1,2,3,7,8-PeCDF	0.00088	J	0.0040	0.000090	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
2,3,4,6,7,8-HxCDF	0.00045	J	0.0040	0.000058	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
2,3,4,7,8-PeCDF	0.0013	J	0.0040	0.000090	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
2,3,7,8-TCDD	0.00018	J q	0.00079	0.000050	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
OCDD	0.24	B	0.0079	0.00034	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
OCDF	0.013	B	0.0079	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 04:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	33		23 - 140				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,4,7,8,9-HpCDF	34		26 - 138				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,7,8,9-HxCDF	50		29 - 147				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,7,8-PeCDD	55		25 - 181				05/19/18 08:57	05/23/18 04:46	1
13C-1,2,3,7,8-PeCDF	53		24 - 185				05/19/18 08:57	05/23/18 04:46	1
13C-2,3,4,6,7,8-HxCDF	51		28 - 136				05/19/18 08:57	05/23/18 04:46	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				05/19/18 08:57	05/23/18 04:46	1
13C-2,3,7,8-TCDD	55		25 - 164				05/19/18 08:57	05/23/18 04:46	1
13C-OCDD	29		17 - 157				05/19/18 08:57	05/23/18 04:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197				05/19/18 08:57	05/23/18 04:46	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	0.00079	0.000067	ug/Kg	☼	05/19/18 08:57	05/23/18 15:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	68		24 - 169				05/19/18 08:57	05/23/18 15:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197				05/19/18 08:57	05/23/18 15:06	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S003

Date Collected: 05/09/18 14:50

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-2

Matrix: Solid

Percent Solids: 59.0

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0027	B	0.0042	0.00050	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,4,6,7,8-HpCDF	0.0051	B	0.0042	0.00022	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,4,7,8,9-HpCDF	0.00029	J q B	0.0042	0.00023	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,4,7,8-HxCDD	0.00039	J q B	0.0042	0.000077	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,4,7,8-HxCDF	0.00067	J	0.0042	0.000089	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,6,7,8-HxCDD	0.0011	J	0.0042	0.000072	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,6,7,8-HxCDF	0.00030	J	0.0042	0.000083	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,7,8,9-HxCDD	0.00087	J q B	0.0042	0.000067	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,7,8,9-HxCDF	0.000052	J q B	0.0042	0.000051	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,7,8-PeCDD	ND		0.0042	0.000078	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
1,2,3,7,8-PeCDF	0.00028	J q	0.0042	0.000067	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
2,3,4,6,7,8-HxCDF	0.00017	J	0.0042	0.000055	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
2,3,4,7,8-PeCDF	ND		0.0042	0.000069	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
2,3,7,8-TCDD	0.00019	J q	0.00083	0.000047	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
2,3,7,8-TCDF	0.00066	J B	0.00083	0.000037	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
OCDD	0.24	B	0.0083	0.00047	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1
OCDF	0.017	B	0.0083	0.00016	ug/Kg	✱	05/19/18 08:57	05/23/18 05:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	27		23 - 140	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,4,6,7,8-HpCDF	22	*	28 - 143	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,4,7,8,9-HpCDF	30		26 - 138	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,4,7,8-HxCDD	39		32 - 141	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,4,7,8-HxCDF	40		26 - 152	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,6,7,8-HxCDD	39		28 - 130	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,7,8,9-HxCDF	45		29 - 147	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,7,8-PeCDD	49		25 - 181	05/19/18 08:57	05/23/18 05:34	1
13C-1,2,3,7,8-PeCDF	47		24 - 185	05/19/18 08:57	05/23/18 05:34	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136	05/19/18 08:57	05/23/18 05:34	1
13C-2,3,4,7,8-PeCDF	50		21 - 178	05/19/18 08:57	05/23/18 05:34	1
13C-2,3,7,8-TCDD	49		25 - 164	05/19/18 08:57	05/23/18 05:34	1
13C-2,3,7,8-TCDF	55		24 - 169	05/19/18 08:57	05/23/18 05:34	1
13C-OCDD	22		17 - 157	05/19/18 08:57	05/23/18 05:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	05/19/18 08:57	05/23/18 05:34	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S028

Date Collected: 05/09/18 11:45

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-3

Matrix: Solid

Percent Solids: 66.9

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.025	B	0.0038	0.00051	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,4,6,7,8-HpCDF	0.0057	q B	0.0038	0.00022	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,4,7,8,9-HpCDF	ND		0.0038	0.00022	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,4,7,8-HxCDD	0.00035	J B	0.0038	0.000088	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,4,7,8-HxCDF	0.00057	J q	0.0038	0.000091	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,6,7,8-HxCDD	0.00075	J q	0.0038	0.000081	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,6,7,8-HxCDF	0.00029	J	0.0038	0.000077	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,7,8,9-HxCDD	0.00076	J B	0.0038	0.000076	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,7,8,9-HxCDF	0.00055	J B	0.0038	0.000050	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,7,8-PeCDD	0.00010	J q	0.0038	0.000066	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
1,2,3,7,8-PeCDF	0.00023	J q	0.0038	0.000058	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
2,3,4,6,7,8-HxCDF	0.00016	J q	0.0038	0.000050	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
2,3,4,7,8-PeCDF	0.00022	J	0.0038	0.000066	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
2,3,7,8-TCDD	0.00010	J q	0.00077	0.000043	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
2,3,7,8-TCDF	0.00041	J B	0.00077	0.000030	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
OCDD	0.23	B	0.0077	0.00043	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1
OCDF	0.013	B	0.0077	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 06:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	28		23 - 140	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,4,6,7,8-HpCDF	22	*	28 - 143	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,4,7,8,9-HpCDF	30		26 - 138	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,4,7,8-HxCDD	38		32 - 141	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,4,7,8-HxCDF	38		26 - 152	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,6,7,8-HxCDD	38		28 - 130	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,6,7,8-HxCDF	38		26 - 123	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,7,8,9-HxCDF	43		29 - 147	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,7,8-PeCDD	47		25 - 181	05/19/18 08:57	05/23/18 06:23	1
13C-1,2,3,7,8-PeCDF	46		24 - 185	05/19/18 08:57	05/23/18 06:23	1
13C-2,3,4,6,7,8-HxCDF	45		28 - 136	05/19/18 08:57	05/23/18 06:23	1
13C-2,3,4,7,8-PeCDF	46		21 - 178	05/19/18 08:57	05/23/18 06:23	1
13C-2,3,7,8-TCDD	48		25 - 164	05/19/18 08:57	05/23/18 06:23	1
13C-2,3,7,8-TCDF	58		24 - 169	05/19/18 08:57	05/23/18 06:23	1
13C-OCDD	23		17 - 157	05/19/18 08:57	05/23/18 06:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197	05/19/18 08:57	05/23/18 06:23	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S087

Date Collected: 05/09/18 11:50

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-4

Matrix: Solid

Percent Solids: 73.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.15	B	0.0034	0.0023	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,4,6,7,8-HpCDF	0.011	B	0.0034	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,4,7,8,9-HpCDF	0.0029	J B	0.0034	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,4,7,8-HxCDD	0.00035	J B	0.0034	0.000059	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,4,7,8-HxCDF	0.020		0.0034	0.000079	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,6,7,8-HxCDD	0.0018	J	0.0034	0.000049	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,6,7,8-HxCDF	0.0075		0.0034	0.000070	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,7,8,9-HxCDD	0.0012	J B	0.0034	0.000048	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,7,8,9-HxCDF	0.00039	J B	0.0034	0.000087	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,7,8-PeCDD	ND		0.0034	0.000055	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
1,2,3,7,8-PeCDF	0.014		0.0034	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
2,3,4,6,7,8-HxCDF	0.00088	J	0.0034	0.000068	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
2,3,4,7,8-PeCDF	0.0031	J	0.0034	0.000088	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
2,3,7,8-TCDD	0.00011	J q	0.00067	0.000078	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
OCDD	0.89	B	0.0067	0.00066	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
OCDF	0.026	B	0.0067	0.000081	ug/Kg	☼	05/19/18 08:57	05/23/18 07:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,7,8-PeCDD	105		25 - 181				05/19/18 08:57	05/23/18 07:12	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				05/19/18 08:57	05/23/18 07:12	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136				05/19/18 08:57	05/23/18 07:12	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				05/19/18 08:57	05/23/18 07:12	1
13C-2,3,7,8-TCDD	28		25 - 164				05/19/18 08:57	05/23/18 07:12	1
13C-OCDD	39		17 - 157				05/19/18 08:57	05/23/18 07:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	50		35 - 197				05/19/18 08:57	05/23/18 07:12	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0021	B	0.00067	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 15:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	231	*	24 - 169				05/19/18 08:57	05/23/18 15:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	127		35 - 197				05/19/18 08:57	05/23/18 15:44	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S088

Date Collected: 05/09/18 17:11

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-5

Matrix: Solid

Percent Solids: 50.9

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	0.30	B	0.0050	0.0028	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,4,6,7,8-HpCDF	0.042	B	0.0050	0.00078	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,4,7,8,9-HpCDF	0.0026	J B	0.0050	0.00087	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,4,7,8-HxCDD	0.0026	J B	0.0050	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,4,7,8-HxCDF	0.0038	J	0.0050	0.00036	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,6,7,8-HxCDD	0.018		0.0050	0.00023	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0050	0.00030	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,7,8,9-HxCDD	0.0059	B	0.0050	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,7,8,9-HxCDF	ND		0.0050	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,7,8-PeCDD	0.0015	J	0.0050	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
1,2,3,7,8-PeCDF	0.0014	J	0.0050	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0050	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
2,3,4,7,8-PeCDF	0.0014	J	0.0050	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
2,3,7,8-TCDD	0.00032	J q	0.00099	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
OCDD	2.3	B	0.0099	0.0014	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
OCDF	0.082	B	0.0099	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 08:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,4,7,8,9-HpCDF	41		26 - 138				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,7,8-PeCDD	64		25 - 181				05/19/18 08:57	05/23/18 08:00	1
13C-1,2,3,7,8-PeCDF	62		24 - 185				05/19/18 08:57	05/23/18 08:00	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136				05/19/18 08:57	05/23/18 08:00	1
13C-2,3,4,7,8-PeCDF	65		21 - 178				05/19/18 08:57	05/23/18 08:00	1
13C-2,3,7,8-TCDD	59		25 - 164				05/19/18 08:57	05/23/18 08:00	1
13C-OCDD	42		17 - 157				05/19/18 08:57	05/23/18 08:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105		35 - 197				05/19/18 08:57	05/23/18 08:00	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	0.00099	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 16:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				05/19/18 08:57	05/23/18 16:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197				05/19/18 08:57	05/23/18 16:22	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S091

Date Collected: 05/09/18 15:40

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-6

Matrix: Solid

Percent Solids: 71.0

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	1.1	B	0.035	0.0075	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,4,6,7,8-HpCDF	0.031	J B	0.035	0.00060	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,4,7,8,9-HpCDF	0.0033	J B	0.035	0.00073	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,4,7,8-HxCDD	0.0014	J B	0.035	0.00040	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,4,7,8-HxCDF	0.0050	J	0.035	0.00034	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,6,7,8-HxCDD	0.011	J	0.035	0.00036	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,6,7,8-HxCDF	0.0016	J	0.035	0.00029	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,7,8,9-HxCDD	0.0085	J B	0.035	0.00036	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,7,8,9-HxCDF	0.00034	J B q	0.035	0.00017	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,7,8-PeCDD	ND		0.035	0.00040	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
1,2,3,7,8-PeCDF	0.0030	J	0.035	0.00027	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
2,3,4,6,7,8-HxCDF	0.00069	J	0.035	0.00022	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
2,3,4,7,8-PeCDF	0.0019	J	0.035	0.00030	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
2,3,7,8-TCDD	0.0012	J	0.0070	0.00017	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
2,3,7,8-TCDF	0.0036	J B	0.0070	0.00019	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
OCDD	7.0	B	0.070	0.0033	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10
OCDF	0.20	B	0.070	0.00062	ug/Kg	☼	05/19/18 08:57	05/26/18 07:58	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	29		23 - 140	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,4,6,7,8-HpCDF	33		28 - 143	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,4,7,8,9-HpCDF	36		26 - 138	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,4,7,8-HxCDD	41		32 - 141	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,4,7,8-HxCDF	44		26 - 152	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,6,7,8-HxCDD	41		28 - 130	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,6,7,8-HxCDF	42		26 - 123	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,7,8,9-HxCDF	51		29 - 147	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,7,8-PeCDD	69		25 - 181	05/19/18 08:57	05/26/18 07:58	10
13C-1,2,3,7,8-PeCDF	64		24 - 185	05/19/18 08:57	05/26/18 07:58	10
13C-2,3,4,6,7,8-HxCDF	42		28 - 136	05/19/18 08:57	05/26/18 07:58	10
13C-2,3,4,7,8-PeCDF	61		21 - 178	05/19/18 08:57	05/26/18 07:58	10
13C-2,3,7,8-TCDD	64		25 - 164	05/19/18 08:57	05/26/18 07:58	10
13C-2,3,7,8-TCDF	60		24 - 169	05/19/18 08:57	05/26/18 07:58	10
13C-OCDD	19		17 - 157	05/19/18 08:57	05/26/18 07:58	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	128		35 - 197	05/19/18 08:57	05/26/18 07:58	10

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S021

Date Collected: 05/10/18 15:55

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-7

Matrix: Solid

Percent Solids: 56.8

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	0.11	B	0.0043	0.00078	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,4,6,7,8-HpCDF	0.013	B	0.0043	0.00028	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0043	0.00032	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,4,7,8-HxCDD	0.0010	J q B	0.0043	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,4,7,8-HxCDF	0.0059		0.0043	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,6,7,8-HxCDD	0.0037	J	0.0043	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,6,7,8-HxCDF	0.0022	J	0.0043	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,7,8,9-HxCDD	0.0025	J B	0.0043	0.000093	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,7,8,9-HxCDF	0.00020	J B	0.0043	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,7,8-PeCDD	0.00051	J	0.0043	0.000096	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
1,2,3,7,8-PeCDF	0.0049		0.0043	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
2,3,4,6,7,8-HxCDF	0.00063	J	0.0043	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
2,3,4,7,8-PeCDF	0.0018	J	0.0043	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
2,3,7,8-TCDD	0.00095		0.00086	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
OCDD	1.0	B	0.0086	0.00053	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
OCDF	0.031	B	0.0086	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 09:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	44		23 - 140				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,4,7,8,9-HpCDF	43		26 - 138				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,7,8-PeCDD	62		25 - 181				05/19/18 08:57	05/23/18 09:37	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				05/19/18 08:57	05/23/18 09:37	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136				05/19/18 08:57	05/23/18 09:37	1
13C-2,3,4,7,8-PeCDF	61		21 - 178				05/19/18 08:57	05/23/18 09:37	1
13C-2,3,7,8-TCDD	57		25 - 164				05/19/18 08:57	05/23/18 09:37	1
13C-OCDD	45		17 - 157				05/19/18 08:57	05/23/18 09:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197				05/19/18 08:57	05/23/18 09:37	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	0.0024	B	0.00086	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 17:00	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				05/19/18 08:57	05/23/18 17:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197				05/19/18 08:57	05/23/18 17:00	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S094

Date Collected: 05/10/18 12:20

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-8

Matrix: Solid

Percent Solids: 42.1

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	0.085	B	0.0059	0.0014	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,4,6,7,8-HpCDF	0.020	B	0.0059	0.00037	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,4,7,8,9-HpCDF	0.0037	J B	0.0059	0.00045	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,4,7,8-HxCDD	0.0010	J B	0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,4,7,8-HxCDF	0.017		0.0059	0.00020	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,6,7,8-HxCDD	0.0047	J	0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,6,7,8-HxCDF	0.0044	J	0.0059	0.00019	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,7,8,9-HxCDD	0.0028	J B	0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,7,8,9-HxCDF	0.00028	J B q	0.0059	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,7,8-PeCDD	0.00058	J q	0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
1,2,3,7,8-PeCDF	0.0093		0.0059	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
2,3,4,6,7,8-HxCDF	0.00087	J	0.0059	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
2,3,4,7,8-PeCDF	0.0038	J	0.0059	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
2,3,7,8-TCDD	0.00048	J	0.0012	0.000091	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
OCDD	0.77	B	0.012	0.00070	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1
OCDF	0.045	B	0.012	0.00018	ug/Kg	☼	05/19/18 08:57	05/23/18 14:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,4,6,7,8-HpCDF	42		28 - 143	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,6,7,8-HxCDD	60		28 - 130	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,7,8-PeCDD	70		25 - 181	05/19/18 08:57	05/23/18 14:09	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	05/19/18 08:57	05/23/18 14:09	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	05/19/18 08:57	05/23/18 14:09	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	05/19/18 08:57	05/23/18 14:09	1
13C-2,3,7,8-TCDD	61		25 - 164	05/19/18 08:57	05/23/18 14:09	1
13C-OCDD	45		17 - 157	05/19/18 08:57	05/23/18 14:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	112		35 - 197	05/19/18 08:57	05/23/18 14:09	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	0.0098	B	0.0012	0.00011	ug/Kg	☼	05/19/18 08:57	05/24/18 06:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169	05/19/18 08:57	05/24/18 06:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197	05/19/18 08:57	05/24/18 06:58	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S101

Date Collected: 05/10/18 10:55

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-9

Matrix: Solid

Percent Solids: 38.5

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	0.072	B	0.0066	0.0012	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,4,6,7,8-HpCDF	0.027	B	0.0066	0.00049	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,4,7,8,9-HpCDF	0.0082	B	0.0066	0.00053	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,4,7,8-HxCDD	0.00098	J B	0.0066	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,4,7,8-HxCDF	0.034		0.0066	0.00029	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0066	0.000098	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,6,7,8-HxCDF	0.017		0.0066	0.00025	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,7,8,9-HxCDD	0.0022	J B	0.0066	0.000089	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,7,8,9-HxCDF	0.0012	J B	0.0066	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,7,8-PeCDD	0.00042	J	0.0066	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
1,2,3,7,8-PeCDF	0.024		0.0066	0.00018	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
2,3,4,6,7,8-HxCDF	0.0032	J	0.0066	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
2,3,4,7,8-PeCDF	0.0070		0.0066	0.00018	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
2,3,7,8-TCDD	0.00036	J	0.0013	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
OCDD	0.59	B	0.013	0.00056	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1
OCDF	0.045	B	0.013	0.00023	ug/Kg	☼	05/19/18 08:57	05/23/18 14:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	43		23 - 140	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,4,6,7,8-HpCDF	35		28 - 143	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,4,7,8-HxCDD	56		32 - 141	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,4,7,8-HxCDF	55		26 - 152	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,6,7,8-HxCDF	54		26 - 123	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,7,8-PeCDD	66		25 - 181	05/19/18 08:57	05/23/18 14:57	1
13C-1,2,3,7,8-PeCDF	65		24 - 185	05/19/18 08:57	05/23/18 14:57	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136	05/19/18 08:57	05/23/18 14:57	1
13C-2,3,4,7,8-PeCDF	68		21 - 178	05/19/18 08:57	05/23/18 14:57	1
13C-2,3,7,8-TCDD	62		25 - 164	05/19/18 08:57	05/23/18 14:57	1
13C-OCDD	36		17 - 157	05/19/18 08:57	05/23/18 14:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	05/19/18 08:57	05/23/18 14:57	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	0.0078	B	0.0013	0.000093	ug/Kg	☼	05/19/18 08:57	05/24/18 07:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	76		24 - 169	05/19/18 08:57	05/24/18 07:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197	05/19/18 08:57	05/24/18 07:36	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S024

Date Collected: 05/10/18 09:40

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-10

Matrix: Solid

Percent Solids: 43.2

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	0.069	B	0.0059	0.0011	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,4,6,7,8-HpCDF	0.0095	B q	0.0059	0.00035	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,4,7,8,9-HpCDF	0.00063	J B	0.0059	0.00039	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,4,7,8-HxCDD	0.00098	J B	0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,4,7,8-HxCDF	0.0014	J	0.0059	0.00020	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,6,7,8-HxCDD	0.0029	J	0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,6,7,8-HxCDF	0.00071	J	0.0059	0.00018	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,7,8,9-HxCDD	0.0027	J B	0.0059	0.000099	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,7,8,9-HxCDF	ND		0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,7,8-PeCDD	0.00053	J	0.0059	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
1,2,3,7,8-PeCDF	0.00055	J q	0.0059	0.000091	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
2,3,4,6,7,8-HxCDF	0.00035	J q	0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
2,3,4,7,8-PeCDF	0.00048	J q	0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
2,3,7,8-TCDD	0.00024	J q	0.0012	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
2,3,7,8-TCDF	0.0011	J B	0.0012	0.000091	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
OCDD	0.56	B	0.012	0.00051	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1
OCDF	0.029	B	0.012	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 15:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	47		23 - 140	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,4,6,7,8-HpCDF	37		28 - 143	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,6,7,8-HxCDD	57		28 - 130	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	05/19/18 08:57	05/23/18 15:46	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	05/19/18 08:57	05/23/18 15:46	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	05/19/18 08:57	05/23/18 15:46	1
13C-2,3,4,7,8-PeCDF	60		21 - 178	05/19/18 08:57	05/23/18 15:46	1
13C-2,3,7,8-TCDD	60		25 - 164	05/19/18 08:57	05/23/18 15:46	1
13C-2,3,7,8-TCDF	65		24 - 169	05/19/18 08:57	05/23/18 15:46	1
13C-OCDD	43		17 - 157	05/19/18 08:57	05/23/18 15:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197	05/19/18 08:57	05/23/18 15:46	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S025

Date Collected: 05/10/18 10:45

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-11

Matrix: Solid

Percent Solids: 43.5

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	0.069	B	0.0057	0.0013	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,4,6,7,8-HpCDF	0.013	q B	0.0057	0.00050	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,4,7,8,9-HpCDF	0.0013	J B	0.0057	0.00050	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,4,7,8-HxCDD	0.00091	J B	0.0057	0.00018	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,4,7,8-HxCDF	0.0040	J	0.0057	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,6,7,8-HxCDD	0.0028	J	0.0057	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,6,7,8-HxCDF	0.0013	J	0.0057	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,7,8,9-HxCDD	0.0022	J B	0.0057	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,7,8,9-HxCDF	ND		0.0057	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,7,8-PeCDD	0.00051	J	0.0057	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
1,2,3,7,8-PeCDF	0.00096	J	0.0057	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
2,3,4,6,7,8-HxCDF	0.00041	J q	0.0057	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
2,3,4,7,8-PeCDF	0.00070	J	0.0057	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
2,3,7,8-TCDD	0.00018	J q	0.0011	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
OCDD	0.57	B	0.011	0.00072	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
OCDF	0.039	B	0.011	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 16:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	37		23 - 140				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,4,6,7,8-HpCDF	29		28 - 143				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				05/19/18 08:57	05/23/18 16:34	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				05/19/18 08:57	05/23/18 16:34	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136				05/19/18 08:57	05/23/18 16:34	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				05/19/18 08:57	05/23/18 16:34	1
13C-2,3,7,8-TCDD	58		25 - 164				05/19/18 08:57	05/23/18 16:34	1
13C-OCDD	31		17 - 157				05/19/18 08:57	05/23/18 16:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	106		35 - 197				05/19/18 08:57	05/23/18 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	0.00095	J B	0.0011	0.000085	ug/Kg	☼	05/19/18 08:57	05/24/18 08:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				05/19/18 08:57	05/24/18 08:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	101		35 - 197				05/19/18 08:57	05/24/18 08:14	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S027

Date Collected: 05/10/18 11:33

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-12

Matrix: Solid

Percent Solids: 43.0

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	0.067	B	0.0058	0.0011	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,4,6,7,8-HpCDF	0.012	B q	0.0058	0.00051	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,4,7,8,9-HpCDF	0.00074	J B	0.0058	0.00050	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,4,7,8-HxCDD	0.0011	J B	0.0058	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,4,7,8-HxCDF	0.0018	J	0.0058	0.00024	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,6,7,8-HxCDD	0.0026	J	0.0058	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,6,7,8-HxCDF	0.00080	J	0.0058	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,7,8,9-HxCDD	0.0024	J B	0.0058	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,7,8,9-HxCDF	ND		0.0058	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,7,8-PeCDD	0.00030	J q	0.0058	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
1,2,3,7,8-PeCDF	0.00058	J q	0.0058	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
2,3,4,6,7,8-HxCDF	0.00044	J q	0.0058	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
2,3,4,7,8-PeCDF	0.00067	J	0.0058	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
2,3,7,8-TCDD	0.00017	J q	0.0012	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
OCDD	0.54	B	0.012	0.00077	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
OCDF	0.038	B	0.012	0.00034	ug/Kg	☼	05/19/18 08:57	05/23/18 17:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	36		23 - 140				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,4,6,7,8-HpCDF	27	*	28 - 143				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,4,7,8,9-HpCDF	38		26 - 138				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,4,7,8-HxCDD	47		32 - 141				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,4,7,8-HxCDF	48		26 - 152				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,6,7,8-HxCDD	49		28 - 130				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,7,8-PeCDD	60		25 - 181				05/19/18 08:57	05/23/18 17:23	1
13C-1,2,3,7,8-PeCDF	59		24 - 185				05/19/18 08:57	05/23/18 17:23	1
13C-2,3,4,6,7,8-HxCDF	52		28 - 136				05/19/18 08:57	05/23/18 17:23	1
13C-2,3,4,7,8-PeCDF	59		21 - 178				05/19/18 08:57	05/23/18 17:23	1
13C-2,3,7,8-TCDD	58		25 - 164				05/19/18 08:57	05/23/18 17:23	1
13C-OCDD	29		17 - 157				05/19/18 08:57	05/23/18 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197				05/19/18 08:57	05/23/18 17:23	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0013	B	0.0012	0.000068	ug/Kg	☼	05/19/18 08:57	05/24/18 08:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				05/19/18 08:57	05/24/18 08:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	102		35 - 197				05/19/18 08:57	05/24/18 08:52	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S026

Lab Sample ID: 580-77233-13

Date Collected: 05/10/18 12:24

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 41.9

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	0.068	B	0.0059	0.0013	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,4,6,7,8-HpCDF	0.0094	B q	0.0059	0.00043	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,4,7,8,9-HpCDF	ND		0.0059	0.00045	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,4,7,8-HxCDD	ND		0.0059	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,4,7,8-HxCDF	0.0015	J	0.0059	0.00020	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,6,7,8-HxCDD	0.0024	J	0.0059	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,6,7,8-HxCDF	0.00065	J	0.0059	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,7,8,9-HxCDD	0.0022	J B	0.0059	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,7,8,9-HxCDF	ND		0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,7,8-PeCDD	0.00042	J	0.0059	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
1,2,3,7,8-PeCDF	0.00058	J	0.0059	0.000093	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
2,3,4,6,7,8-HxCDF	0.00034	J q	0.0059	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
2,3,4,7,8-PeCDF	0.00057	J	0.0059	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
2,3,7,8-TCDD	0.00032	J q	0.0012	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
OCDD	0.51	B	0.012	0.00056	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
OCDF	0.033	B	0.012	0.00023	ug/Kg	☼	05/19/18 08:57	05/23/18 18:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,4,7,8,9-HpCDF	42		26 - 138				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,4,7,8-HxCDF	49		26 - 152				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,6,7,8-HxCDD	50		28 - 130				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,6,7,8-HxCDF	49		26 - 123				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,7,8-PeCDD	61		25 - 181				05/19/18 08:57	05/23/18 18:11	1
13C-1,2,3,7,8-PeCDF	60		24 - 185				05/19/18 08:57	05/23/18 18:11	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				05/19/18 08:57	05/23/18 18:11	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				05/19/18 08:57	05/23/18 18:11	1
13C-2,3,7,8-TCDD	58		25 - 164				05/19/18 08:57	05/23/18 18:11	1
13C-OCDD	36		17 - 157				05/19/18 08:57	05/23/18 18:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	107		35 - 197				05/19/18 08:57	05/23/18 18:11	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	0.00097	J B	0.0012	0.000072	ug/Kg	☼	05/19/18 08:57	05/24/18 09:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	70		24 - 169				05/19/18 08:57	05/24/18 09:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197				05/19/18 08:57	05/24/18 09:30	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S007

Date Collected: 05/10/18 14:48

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-14

Matrix: Solid

Percent Solids: 60.4

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.031	B	0.0041	0.00054	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,4,6,7,8-HpCDF	0.0048	B	0.0041	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,4,7,8,9-HpCDF	0.00039	J B	0.0041	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,4,7,8-HxCDD	0.00059	J B q	0.0041	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,4,7,8-HxCDF	0.0016	J	0.0041	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,6,7,8-HxCDD	0.0015	J q	0.0041	0.000083	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,6,7,8-HxCDF	0.00074	J	0.0041	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,7,8,9-HxCDD	0.0014	J B	0.0041	0.000081	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,7,8,9-HxCDF	ND		0.0041	0.000072	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,7,8-PeCDD	0.00047	J	0.0041	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
1,2,3,7,8-PeCDF	0.0011	J	0.0041	0.000080	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
2,3,4,6,7,8-HxCDF	0.00058	J	0.0041	0.000076	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
2,3,4,7,8-PeCDF	0.0019	J	0.0041	0.000091	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
2,3,7,8-TCDD	0.00017	J q	0.00081	0.000069	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
OCDD	0.29	B	0.0081	0.00031	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
OCDF	0.012	B	0.0081	0.000095	ug/Kg	☼	05/19/18 08:57	05/23/18 18:59	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,4,6,7,8-HpCDF	45		28 - 143				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,4,7,8,9-HpCDF	48		26 - 138				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,7,8-PeCDD	65		25 - 181				05/19/18 08:57	05/23/18 18:59	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				05/19/18 08:57	05/23/18 18:59	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136				05/19/18 08:57	05/23/18 18:59	1
13C-2,3,4,7,8-PeCDF	60		21 - 178				05/19/18 08:57	05/23/18 18:59	1
13C-2,3,7,8-TCDD	59		25 - 164				05/19/18 08:57	05/23/18 18:59	1
13C-OCDD	49		17 - 157				05/19/18 08:57	05/23/18 18:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	108		35 - 197				05/19/18 08:57	05/23/18 18:59	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	0.00081	0.000065	ug/Kg	☼	05/19/18 08:57	05/24/18 10:08	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169				05/19/18 08:57	05/24/18 10:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				05/19/18 08:57	05/24/18 10:08	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S012

Date Collected: 05/10/18 15:41

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-15

Matrix: Solid

Percent Solids: 40.2

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	0.15	B	0.0061	0.0032	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,4,6,7,8-HpCDF	0.018	B	0.0061	0.00049	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,4,7,8,9-HpCDF	0.0016	J B	0.0061	0.00055	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,4,7,8-HxCDD	0.0012	J B	0.0061	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,4,7,8-HxCDF	0.019		0.0061	0.00021	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,6,7,8-HxCDD	0.0038	J	0.0061	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,6,7,8-HxCDF	0.0053	J	0.0061	0.00019	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,7,8,9-HxCDD	0.0032	J B	0.0061	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,7,8,9-HxCDF	ND		0.0061	0.00012	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,7,8-PeCDD	0.00054	J	0.0061	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
1,2,3,7,8-PeCDF	0.0090		0.0061	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
2,3,4,6,7,8-HxCDF	0.0012	J	0.0061	0.00013	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
2,3,4,7,8-PeCDF	0.0027	J	0.0061	0.00015	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
2,3,7,8-TCDD	0.00029	J q	0.0012	0.000082	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
OCDD	1.2	B	0.012	0.0015	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
OCDF	0.048	B	0.012	0.00017	ug/Kg	☼	05/19/18 08:57	05/23/18 19:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	41		23 - 140				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,4,6,7,8-HpCDF	30		28 - 143				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,4,7,8,9-HpCDF	41		26 - 138				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,4,7,8-HxCDD	44		32 - 141				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,6,7,8-HxCDD	46		28 - 130				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,6,7,8-HxCDF	47		26 - 123				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				05/19/18 08:57	05/23/18 19:48	1
13C-1,2,3,7,8-PeCDF	58		24 - 185				05/19/18 08:57	05/23/18 19:48	1
13C-2,3,4,6,7,8-HxCDF	55		28 - 136				05/19/18 08:57	05/23/18 19:48	1
13C-2,3,4,7,8-PeCDF	54		21 - 178				05/19/18 08:57	05/23/18 19:48	1
13C-2,3,7,8-TCDD	57		25 - 164				05/19/18 08:57	05/23/18 19:48	1
13C-OCDD	37		17 - 157				05/19/18 08:57	05/23/18 19:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	110		35 - 197				05/19/18 08:57	05/23/18 19:48	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0019	B	0.0012	0.000066	ug/Kg	☼	05/19/18 08:57	05/24/18 13:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				05/19/18 08:57	05/24/18 13:47	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	103		35 - 197				05/19/18 08:57	05/24/18 13:47	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S086

Lab Sample ID: 580-77233-16

Date Collected: 05/09/18 10:30

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 65.8

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	0.033	B	0.0038	0.00051	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,4,6,7,8-HpCDF	0.0036	J B	0.0038	0.00014	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,4,7,8,9-HpCDF	0.00034	J B	0.0038	0.00016	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,4,7,8-HxCDD	0.00035	J B	0.0038	0.000059	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,4,7,8-HxCDF	0.0011	J	0.0038	0.00011	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,6,7,8-HxCDD	0.00095	J	0.0038	0.000058	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,6,7,8-HxCDF	0.00042	J	0.0038	0.000099	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,7,8,9-HxCDD	0.00089	J B	0.0038	0.000053	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,7,8,9-HxCDF	ND		0.0038	0.000065	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,7,8-PeCDD	0.00013	J q	0.0038	0.000067	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
1,2,3,7,8-PeCDF	0.00082	J	0.0038	0.000051	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
2,3,4,6,7,8-HxCDF	0.00014	J q	0.0038	0.000070	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
2,3,4,7,8-PeCDF	0.00040	J	0.0038	0.000053	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
2,3,7,8-TCDD	0.000075	J q	0.00076	0.000064	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
OCDD	0.25	B	0.0076	0.00031	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
OCDF	0.013	B	0.0076	0.00010	ug/Kg	☼	05/19/18 08:57	05/23/18 20:36	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	38		23 - 140				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,4,6,7,8-HpCDF	32		28 - 143				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,4,7,8,9-HpCDF	39		26 - 138				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,4,7,8-HxCDD	45		32 - 141				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,4,7,8-HxCDF	47		26 - 152				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,6,7,8-HxCDD	47		28 - 130				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,6,7,8-HxCDF	46		26 - 123				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				05/19/18 08:57	05/23/18 20:36	1
13C-1,2,3,7,8-PeCDF	54		24 - 185				05/19/18 08:57	05/23/18 20:36	1
13C-2,3,4,6,7,8-HxCDF	50		28 - 136				05/19/18 08:57	05/23/18 20:36	1
13C-2,3,4,7,8-PeCDF	58		21 - 178				05/19/18 08:57	05/23/18 20:36	1
13C-2,3,7,8-TCDD	52		25 - 164				05/19/18 08:57	05/23/18 20:36	1
13C-OCDD	33		17 - 157				05/19/18 08:57	05/23/18 20:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	109		35 - 197				05/19/18 08:57	05/23/18 20:36	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0013	B	0.00076	0.000042	ug/Kg	☼	05/19/18 08:57	05/24/18 14:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	71		24 - 169				05/19/18 08:57	05/24/18 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197				05/19/18 08:57	05/24/18 14:25	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77233-2

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

Lab Sample ID: MB 320-224251/1-A

Matrix: Solid

Analysis Batch: 224918

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 224251

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.000121	J q	0.0050	0.000038	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,4,6,7,8-HpCDF	0.000110	J q	0.0050	0.000031	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,4,7,8,9-HpCDF	0.0000892	J	0.0050	0.000043	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,4,7,8-HxCDD	0.000206	J	0.0050	0.000032	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,4,7,8-HxCDF	ND		0.0050	0.000034	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,6,7,8-HxCDD	ND		0.0050	0.000028	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,6,7,8-HxCDF	ND		0.0050	0.000030	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,7,8,9-HxCDD	0.0000903	J q	0.0050	0.000026	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,7,8,9-HxCDF	0.0000610	J q	0.0050	0.000022	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,7,8-PeCDD	ND		0.0050	0.000037	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
1,2,3,7,8-PeCDF	ND		0.0050	0.000035	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
2,3,4,6,7,8-HxCDF	ND		0.0050	0.000021	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
2,3,4,7,8-PeCDF	ND		0.0050	0.000042	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
2,3,7,8-TCDD	ND		0.0010	0.000035	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
2,3,7,8-TCDF	0.0000901	J	0.0010	0.000025	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
OCDD	0.000356	J q	0.010	0.000040	ug/Kg		05/19/18 08:57	05/23/18 02:21	1
OCDF	0.000117	J q	0.010	0.000053	ug/Kg		05/19/18 08:57	05/23/18 02:21	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,4,6,7,8-HpCDF	61		28 - 143	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,6,7,8-HxCDD	76		28 - 130	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,7,8-PeCDD	76		25 - 181	05/19/18 08:57	05/23/18 02:21	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	05/19/18 08:57	05/23/18 02:21	1
13C-2,3,4,6,7,8-HxCDF	79		28 - 136	05/19/18 08:57	05/23/18 02:21	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	05/19/18 08:57	05/23/18 02:21	1
13C-2,3,7,8-TCDD	69		25 - 164	05/19/18 08:57	05/23/18 02:21	1
13C-2,3,7,8-TCDF	72		24 - 169	05/19/18 08:57	05/23/18 02:21	1
13C-OCDD	63		17 - 157	05/19/18 08:57	05/23/18 02:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197	05/19/18 08:57	05/23/18 02:21	1

Lab Sample ID: LCS 320-224251/2-A

Matrix: Solid

Analysis Batch: 224918

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 224251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.100	0.0994		ug/Kg		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.100	0.0964		ug/Kg		96	82 - 122
1,2,3,4,7,8,9-HpCDF	0.100	0.0939		ug/Kg		94	78 - 138
1,2,3,4,7,8-HxCDD	0.100	0.0984		ug/Kg		98	70 - 164
1,2,3,4,7,8-HxCDF	0.100	0.0906		ug/Kg		91	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77233-2

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

Lab Sample ID: LCS 320-224251/2-A

Matrix: Solid

Analysis Batch: 224918

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 224251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,6,7,8-HxCDD	0.100	0.0975		ug/Kg		97	76 - 134
1,2,3,6,7,8-HxCDF	0.100	0.0940		ug/Kg		94	84 - 130
1,2,3,7,8,9-HxCDD	0.100	0.105		ug/Kg		105	64 - 162
1,2,3,7,8,9-HxCDF	0.100	0.0934		ug/Kg		93	78 - 130
1,2,3,7,8-PeCDD	0.100	0.0964		ug/Kg		96	70 - 142
1,2,3,7,8-PeCDF	0.100	0.0951		ug/Kg		95	80 - 134
2,3,4,6,7,8-HxCDF	0.100	0.0915		ug/Kg		91	70 - 156
2,3,4,7,8-PeCDF	0.100	0.0959		ug/Kg		96	68 - 160
2,3,7,8-TCDD	0.0200	0.0194		ug/Kg		97	67 - 158
2,3,7,8-TCDF	0.0200	0.0182		ug/Kg		91	75 - 158
OCDD	0.200	0.183		ug/Kg		92	78 - 144
OCDF	0.200	0.171		ug/Kg		85	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	58		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	55		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	54		20 - 186
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDD	66		25 - 163
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		17 - 205
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-2,3,4,7,8-PeCDF	63		13 - 328
13C-2,3,7,8-TCDD	63		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-OCDD	60		13 - 199

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

Lab Sample ID: LCSD 320-224251/3-A

Matrix: Solid

Analysis Batch: 224918

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 224251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,2,3,4,6,7,8-HpCDD	0.100	0.0993		ug/Kg		99	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.100	0.0973		ug/Kg		97	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.100	0.0943		ug/Kg		94	78 - 138	0	50
1,2,3,4,7,8-HxCDD	0.100	0.0948		ug/Kg		95	70 - 164	4	50
1,2,3,4,7,8-HxCDF	0.100	0.0943		ug/Kg		94	72 - 134	4	50
1,2,3,6,7,8-HxCDD	0.100	0.0948		ug/Kg		95	76 - 134	3	50
1,2,3,6,7,8-HxCDF	0.100	0.0942		ug/Kg		94	84 - 130	0	50
1,2,3,7,8,9-HxCDD	0.100	0.0962		ug/Kg		96	64 - 162	9	50
1,2,3,7,8,9-HxCDF	0.100	0.0936		ug/Kg		94	78 - 130	0	50
1,2,3,7,8-PeCDD	0.100	0.0944		ug/Kg		94	70 - 142	2	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-77233-2

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

Lab Sample ID: LCSD 320-224251/3-A

Matrix: Solid

Analysis Batch: 224918

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 224251

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.100	0.0973		ug/Kg		97	80 - 134	2	50
2,3,4,6,7,8-HxCDF	0.100	0.0943		ug/Kg		94	70 - 156	3	50
2,3,4,7,8-PeCDF	0.100	0.0978		ug/Kg		98	68 - 160	2	50
2,3,7,8-TCDD	0.0200	0.0195		ug/Kg		98	67 - 158	1	50
2,3,7,8-TCDF	0.0200	0.0184		ug/Kg		92	75 - 158	1	50
OCDD	0.200	0.186		ug/Kg		93	78 - 144	2	50
OCDF	0.200	0.178		ug/Kg		89	63 - 170	4	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	61		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	58		20 - 186
13C-1,2,3,4,7,8-HxCDD	71		21 - 193
13C-1,2,3,4,7,8-HxCDF	73		19 - 202
13C-1,2,3,6,7,8-HxCDD	74		25 - 163
13C-1,2,3,6,7,8-HxCDF	73		21 - 159
13C-1,2,3,7,8,9-HxCDF	69		17 - 205
13C-1,2,3,7,8-PeCDD	74		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,6,7,8-HxCDF	74		22 - 176
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	59		13 - 199

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

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S004

Date Collected: 05/09/18 16:10

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-1

Matrix: Solid

Percent Solids: 62.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 04:46	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 15:06	ALM	TAL SAC

Client Sample ID: PDI-SG-S003

Date Collected: 05/09/18 14:50

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-2

Matrix: Solid

Percent Solids: 59.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 05:34	SMA	TAL SAC

Client Sample ID: PDI-SG-S028

Date Collected: 05/09/18 11:45

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-3

Matrix: Solid

Percent Solids: 66.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 06:23	SMA	TAL SAC

Client Sample ID: PDI-SG-S087

Date Collected: 05/09/18 11:50

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-4

Matrix: Solid

Percent Solids: 73.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 07:12	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 15:44	ALM	TAL SAC

Client Sample ID: PDI-SG-S088

Date Collected: 05/09/18 17:11

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-5

Matrix: Solid

Percent Solids: 50.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 08:00	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 16:22	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S091

Date Collected: 05/09/18 15:40

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-6

Matrix: Solid

Percent Solids: 71.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		10	225662	05/26/18 07:58	AS	TAL SAC

Client Sample ID: PDI-SG-S021

Date Collected: 05/10/18 15:55

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-7

Matrix: Solid

Percent Solids: 56.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224918	05/23/18 09:37	SMA	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225142	05/23/18 17:00	ALM	TAL SAC

Client Sample ID: PDI-SG-S094

Date Collected: 05/10/18 12:20

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-8

Matrix: Solid

Percent Solids: 42.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 14:09	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 06:58	KSS	TAL SAC

Client Sample ID: PDI-SG-S101

Date Collected: 05/10/18 10:55

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-9

Matrix: Solid

Percent Solids: 38.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 14:57	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 07:36	KSS	TAL SAC

Client Sample ID: PDI-SG-S024

Date Collected: 05/10/18 09:40

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-10

Matrix: Solid

Percent Solids: 43.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 15:46	ALM	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S025

Lab Sample ID: 580-77233-11

Date Collected: 05/10/18 10:45

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 43.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 16:34	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 08:14	KSS	TAL SAC

Client Sample ID: PDI-SG-S027

Lab Sample ID: 580-77233-12

Date Collected: 05/10/18 11:33

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 43.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 17:23	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 08:52	KSS	TAL SAC

Client Sample ID: PDI-SG-S026

Lab Sample ID: 580-77233-13

Date Collected: 05/10/18 12:24

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 41.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 18:11	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 09:30	KSS	TAL SAC

Client Sample ID: PDI-SG-S007

Lab Sample ID: 580-77233-14

Date Collected: 05/10/18 14:48

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 60.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 18:59	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225340	05/24/18 10:08	KSS	TAL SAC

Client Sample ID: PDI-SG-S012

Lab Sample ID: 580-77233-15

Date Collected: 05/10/18 15:41

Matrix: Solid

Date Received: 05/11/18 12:45

Percent Solids: 40.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 19:48	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-77233-2

Client Sample ID: PDI-SG-S012

Date Collected: 05/10/18 15:41

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-15

Matrix: Solid

Percent Solids: 40.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1613B	RA	1	225409	05/24/18 13:47	ALM	TAL SAC

Client Sample ID: PDI-SG-S086

Date Collected: 05/09/18 10:30

Date Received: 05/11/18 12:45

Lab Sample ID: 580-77233-16

Matrix: Solid

Percent Solids: 65.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HRMS-Sox			224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B		1	224934	05/23/18 20:36	ALM	TAL SAC
Total/NA	Prep	HRMS-Sox	RA		224251	05/19/18 08:57	SR1	TAL SAC
Total/NA	Analysis	1613B	RA	1	225409	05/24/18 14:25	ALM	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-77233-2

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

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77233-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-77233-1	PDI-SG-S004	Solid	05/09/18 16:10	05/11/18 12:45
580-77233-2	PDI-SG-S003	Solid	05/09/18 14:50	05/11/18 12:45
580-77233-3	PDI-SG-S028	Solid	05/09/18 11:45	05/11/18 12:45
580-77233-4	PDI-SG-S087	Solid	05/09/18 11:50	05/11/18 12:45
580-77233-5	PDI-SG-S088	Solid	05/09/18 17:11	05/11/18 12:45
580-77233-6	PDI-SG-S091	Solid	05/09/18 15:40	05/11/18 12:45
580-77233-7	PDI-SG-S021	Solid	05/10/18 15:55	05/11/18 12:45
580-77233-8	PDI-SG-S094	Solid	05/10/18 12:20	05/11/18 12:45
580-77233-9	PDI-SG-S101	Solid	05/10/18 10:55	05/11/18 12:45
580-77233-10	PDI-SG-S024	Solid	05/10/18 09:40	05/11/18 12:45
580-77233-11	PDI-SG-S025	Solid	05/10/18 10:45	05/11/18 12:45
580-77233-12	PDI-SG-S027	Solid	05/10/18 11:33	05/11/18 12:45
580-77233-13	PDI-SG-S026	Solid	05/10/18 12:24	05/11/18 12:45
580-77233-14	PDI-SG-S007	Solid	05/10/18 14:48	05/11/18 12:45
580-77233-15	PDI-SG-S012	Solid	05/10/18 15:41	05/11/18 12:45
580-77233-16	PDI-SG-S086	Solid	05/09/18 10:30	05/11/18 12:45

SURFACE SEDIMENT CHAIN OF CUSTODY										
TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047			Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment-SMA			Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) ☒ 21 days ☐ Other _____		Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Carrier: Courier COC No: 1 of 2 pages		
Sample Identification PDI-SG-S004 PDI-SG-S003 PDI-SG-S028 PDI-SG-S087 PDI-SG-S088 PDI-SG-S089 PDI-SG-S021 PDI-SG-S094 PDI-SG-S101 PDI-SG-S024 PDI-SG-S025 PDI-SG-S027			Sample Date 5/9/2018 5/9/2018 5/9/2018 5/9/2018 5/9/2018 5/9/2018 5/10/2018 5/10/2018 5/10/2018 5/10/2018 5/10/2018 5/10/2018	Sample Time 16:10 14:50 11:45 11:50 17:11 15:40 15:55 12:20 10:55 9:40 10:45 11:33	Matrix SS SS SS SS SS SS SS SS SS SS SS	QC Sample 	Sampler's Initials AC AC AC KK MT MT MT MT MT MM MM MM	Total No. of Cont. 5 5 5 5 5 5 5 5 5 9 5 5	Fraction PCB Congeners 168A PCDD/Fs 1613B Grain size ASTM D7928/D6913 Total organic carbon, Total solids 9060 Archive-Archive -20 C	Sample Specific Notes: 580-77233 Chain of Custody
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)										
Sample Disposal ☐ Return To Client ☐ Disposal By Lab ☐ Archive For 12 Months										
Special Instructions/QC Requirements & Comments: Separate reports for each lab SMA Study samples - Log in separately from SS Study samples										
Relinquished by: <i>Mieha J. Log</i> Relinquished by: <i>Hemina Nju</i> Relinquished by: _____			Company: AECOM Company: M.E. Company: _____			Date/Time: 5-11-18 1205 Date/Time: 5/11/18 1245 Date/Time: _____			Company: M.E. Company: TAPOR Company: _____	Date/Time: 5-11-18 1205 Date/Time: 5/11/18 1245 Date/Time: _____

Test America- Seattle
5755-8th-Street-East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047
Client Contact
AECOM
11111 3rd Ave Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700 Fax: 1-(866) 495-5288
Project Name: Portland Harbor Pre-Remedial Design
Investigation and Baseline Sampling
Portland, OR
Project #: 60566335 Study: Surface Sediment-SMA

Relinquished by: <i>Michael McCoy</i>	Company: HECOM	Date/Time: 5-11-18	Received by: <i>Jenina Yu</i>	Company: M.E.	Date/Time: 5/11/18	1205
Relinquished by: <i>Jenina Yu</i>	Company: M.E.	Date/Time: 5/11/18	Received by: <i>Chloe</i>	Company: THOR	Date/Time: 5/11/18	1245
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:	



Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler: Lab PM: Walker, Elaine M		Carrier Tracking No(s):		COC No: 580-55347.1	
Client Contact: Shipping/Receiving		Phone: E-Mail: elaine.walker@testamericainc.com		State of Origin: Oregon		Page: Page 1 of 2	
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 5/30/2018		Accreditations Required (See note):		Job #: 580-77233-1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		TAT Requested (days):		Analysis Requested:		Preservation Codes:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:		1613B/HRMS_Sox_P Full List w/o Totals		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:	
Email:		WO #:		Perform MS/MSD (Yes or No)		M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - NCA W - pH 4-5 Z - other (specify)	
Project Name: Portland Harbor Pre-Remedial Design		Project #: 58012120		Field Filtered Sample (Yes or No)		Total Number of Containers	
Site:		SSOW#:		Preservation Code:		Special Instructions/Note:	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=other, A=air)	1613B/HRMS_Sox_P Full List w/o Totals	Perform MS/MSD (Yes or No)	Total Number of Containers
PDI-SG-S004 (580-77233-1)	5/9/18	16:10 Pacific		Solid	X	X	2
PDI-SG-S003 (580-77233-2)	5/9/18	14:50 Pacific		Solid	X	X	2
PDI-SG-S028 (580-77233-3)	5/9/18	11:45 Pacific		Solid	X	X	2
PDI-SG-S087 (580-77233-4)	5/9/18	11:50 Pacific		Solid	X	X	2
PDI-SG-S088 (580-77233-5)	5/9/18	17:11 Pacific		Solid	X	X	2
PDI-SG-S091 (580-77233-6)	5/9/18	15:40 Pacific		Solid	X	X	2
PDI-SG-S021 (580-77233-7)	5/10/18	15:55 Pacific		Solid	X	X	2
PDI-SG-S094 (580-77233-8)	5/10/18	12:20 Pacific		Solid	X	X	2
PDI-SG-S101 (580-77233-9)	5/10/18	10:55 Pacific		Solid	X	X	2

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our 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/matrix being analyzed, this sample 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		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:	
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: [Signature]		Date: 5/11/18 17:00	
Relinquished by:		Received by: [Signature]	
Relinquished by:		Date/Time: 5/12/18 09:25	
Relinquished by:		Company: TASA AC	
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	
Δ Yes Δ No		Ver: 09/20/2016	

x 1/2 Received with Cracked Lid. Trapped in Lab PH Ship

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:	
Client Contact:		Walker, Elaine M		Walker, Elaine M				580-55347.2	
Shipping/Receiving		Phone:		E-Mail:		State of Origin:		Page:	
Company:				elaine.walker@testamericainc.com		Oregon		Page 2 of 2	
TestAmerica Laboratories, Inc.		Due Date Requested:		TAT Requested (days):		Job #:		580-77233-1	
Address:		880 Riverside Parkway,				Preservation Codes:			
City:		West Sacramento				A - HCL		M - Hexane	
State, Zip:		CA, 95605				B - NaOH		N - None	
Phone:		916-373-5600(Tel) 916-372-1059(Fax)				C - Zn Acetate		O - AsNaO2	
Email:						D - Nitric Acid		P - Na2O4S	
Project Name:		Portland Harbor Pre-Remedial Design				E - NaHSO4		Q - Na2SO3	
Site:						F - MeOH		R - Na2SO3	
						G - Amchlor		S - H2SO4	
						H - Ascorbic Acid		T - TSP Dodecylhydrate	
						I - Ice		U - Acetone	
						J - DI Water		V - NCA	
						K - EDTA		W - pH 4-5	
						L - EDA		Z - other (specify)	
						Other:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, B=solid, O=other)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/HRMS_Sox_P Full List w/o Totals	AutoCP/PH Frozen Archive Container billed @ \$0.	Analysis Requested										Total Number of Containers	Special Instructions/Note:
									Preservation Codes:											
PDI-SG-S024 (580-77233-10)	5/10/18	09:40 Pacific		Solid			X	X									2			
PDI-SG-S025 (580-77233-11)	5/10/18	10:45 Pacific		Solid			X	X									2			
PDI-SG-S027 (580-77233-12)	5/10/18	11:33 Pacific		Solid			X	X									2			
PDI-SG-S026 (580-77233-13)	5/10/18	12:24 Pacific		Solid			X	X									2			
PDI-SG-S007 (580-77233-14)	5/10/18	14:48 Pacific		Solid			X	X									2			
PDI-SG-S012 (580-77233-15)	5/10/18	15:41 Pacific		Solid			X	X									2			
PDI-SG-S086 (580-77233-16)	5/9/18	10:30 Pacific		Solid			X	X									2			

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

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Primary Deliverable Rank: 2		Method of Shipment:	
Empty Kit Relinquished by:		Time:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Relinquished by:		Date:	
Custody Seals Intact:		Custody Seal No.:	
Δ Yes Δ No			

Received by:	Company:	Received by:	Company:	Received by:	Company:	Received by:	Company:
5/11/18 1700	TAQA	5/12/18 09:25	ASAC				

Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77233-2

Login Number: 77233

List Source: TestAmerica Seattle

List Number: 1

Creator: Gonzales, Steve

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

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-77233-2

Login Number: 77233

List Number: 3

Creator: Gooch, Mayce

List Source: TestAmerica Sacramento

List Creation: 05/15/18 08:52 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



580-77233 Field Sheet

Job: _____

Tracking # 442397502899 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:

Placed in freezer
on 5/12/18 @ 17:20

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

Ice _____ Wet ☒ Gel _____ Other _____

Cooler Custody Seal: See 1

Sample Custody Seal: _____

Cooler ID: _____

Temp: Observed 2.1

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: AZ Date: 5/12/18 Time: 9:25

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

W200 boxed

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77233-2

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								
580-77233-1	PDI-SG-S004	33	29	34	45	48	48	46	50
580-77233-1 - RA	PDI-SG-S004								
580-77233-2	PDI-SG-S003	27	22 *	30	39	40	39	38	45
580-77233-3	PDI-SG-S028	28	22 *	30	38	38	38	38	43
580-77233-4	PDI-SG-S087	47	45	51	57	68	49	65	49
580-77233-4 - RA	PDI-SG-S087								
580-77233-5	PDI-SG-S088	43	33	41	57	55	54	54	61
580-77233-5 - RA	PDI-SG-S088								
580-77233-6	PDI-SG-S091	29	33	36	41	44	41	42	51
580-77233-7	PDI-SG-S021	44	37	43	56	59	50	60	59
580-77233-7 - RA	PDI-SG-S021								
580-77233-8	PDI-SG-S094	50	42	47	59	61	60	58	64
580-77233-8 - RA	PDI-SG-S094								
580-77233-9	PDI-SG-S101	43	35	45	56	55	57	54	60
580-77233-9 - RA	PDI-SG-S101								
580-77233-10	PDI-SG-S024	47	37	48	55	56	57	55	60
580-77233-11	PDI-SG-S025	37	29	38	47	48	49	47	53
580-77233-11 - RA	PDI-SG-S025								
580-77233-12	PDI-SG-S027	36	27 *	38	47	48	49	48	57
580-77233-12 - RA	PDI-SG-S027								
580-77233-13	PDI-SG-S026	41	32	42	45	49	50	49	57
580-77233-13 - RA	PDI-SG-S026								
580-77233-14	PDI-SG-S007	51	45	48	55	63	61	61	64
580-77233-14 - RA	PDI-SG-S007								
580-77233-15	PDI-SG-S012	41	30	41	44	47	46	47	55
580-77233-15 - RA	PDI-SG-S012								
580-77233-16	PDI-SG-S086	38	32	39	45	47	47	46	51
580-77233-16 - RA	PDI-SG-S086								
MB 320-224251/1-A	Method Blank	62	61	59	66	72	76	73	73
		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)	
Lab Sample ID	Client Sample ID								
580-77233-1	PDI-SG-S004	55	53	51	58	55		29	
580-77233-1 - RA	PDI-SG-S004						68		
580-77233-2	PDI-SG-S003	49	47	45	50	49	55	22	
580-77233-3	PDI-SG-S028	47	46	45	46	48	58	23	
580-77233-4	PDI-SG-S087	105	52	59	62	28		39	
580-77233-4 - RA	PDI-SG-S087						231 *		
580-77233-5	PDI-SG-S088	64	62	60	65	59		42	
580-77233-5 - RA	PDI-SG-S088						73		
580-77233-6	PDI-SG-S091	69	64	42	61	64	60	19	
580-77233-7	PDI-SG-S021	62	63	59	61	57		45	
580-77233-7 - RA	PDI-SG-S021						66		
580-77233-8	PDI-SG-S094	70	66	65	67	61		45	
580-77233-8 - RA	PDI-SG-S094						70		
580-77233-9	PDI-SG-S101	66	65	61	68	62		36	
580-77233-9 - RA	PDI-SG-S101						76		
580-77233-10	PDI-SG-S024	64	63	60	60	60	65	43	
580-77233-11	PDI-SG-S025	59	59	52	58	58		31	

TestAmerica Seattle

Isotope Dilution Summary

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

TestAmerica Job ID: 580-77233-2

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)
580-77233-11 - RA	PDI-SG-S025						66	
580-77233-12	PDI-SG-S027	60	59	52	59	58		29
580-77233-12 - RA	PDI-SG-S027						73	
580-77233-13	PDI-SG-S026	61	60	58	58	58		36
580-77233-13 - RA	PDI-SG-S026						70	
580-77233-14	PDI-SG-S007	65	63	65	60	59		49
580-77233-14 - RA	PDI-SG-S007						67	
580-77233-15	PDI-SG-S012	59	58	55	54	57		37
580-77233-15 - RA	PDI-SG-S012						73	
580-77233-16	PDI-SG-S086	54	54	50	58	52		33
580-77233-16 - RA	PDI-SG-S086						71	
MB 320-224251/1-A	Method Blank	76	74	79	69	69	72	63

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 320-224251/2-A	Lab Control Sample	58	55	54	61	68	66	67	68
LCSD 320-224251/3-A	Lab Control Sample Dup	61	59	58	71	73	74	73	69

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 320-224251/2-A	Lab Control Sample	70	66	73	63	63	65	60
LCSD 320-224251/3-A	Lab Control Sample Dup	74	70	74	68	65	68	59

Surrogate Legend

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 HxCDD = 13C-1,2,3,4,7,8-HxCDD
 HxCDF = 13C-1,2,3,4,7,8-HxCDF

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-77233-2

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

1

2

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