

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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TestAmerica Job ID: 580-80213-7

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM
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Authorized for release by:
9/26/2018 5:05:06 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: 580-80213-7

Job ID: 580-80213-7

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-80213-7

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

Three samples were received on 9/10/2018 12:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

This report only contains results for the Rinse Blank water sample.

This report contains results for 1613B Dioxins / Furans, 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

Sample PDI-RB-VV-090718 (580-80213-3) was analyzed for Dioxin/ Furan in accordance with 1613B. The sample was prepared on 09/13/2018 and analyzed on 09/22/2018.

Several analytes were detected in method blank MB 320-245399/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and/or 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 10D5 exceeded this criteria: PDI-RB-VV-090718 (580-80213-3), (CCV 320-247160/16), (LCS 320-245399/2-A), (LCSD 320-245399/3-A) and (MB 320-245399/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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: 580-80213-7

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.

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: 580-80213-7

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

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	53	B	48	0.77	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,4,6,7,8-HpCDF	5.7	J B	48	0.17	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,4,7,8,9-HpCDF	2.7	J q B	48	0.23	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,4,7,8-HxCDD	1.5	J B	48	0.095	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,4,7,8-HxCDF	1.0	J B	48	0.21	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,6,7,8-HxCDD	0.85	J B	48	0.091	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,6,7,8-HxCDF	0.83	J B	48	0.20	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,7,8,9-HxCDD	0.73	J q B	48	0.085	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,7,8,9-HxCDF	9.4	J B	48	0.15	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,7,8-PeCDD	0.41	J B	48	0.11	pg/L		09/13/18 07:53	09/22/18 11:03	1
1,2,3,7,8-PeCDF	2.6	J B	48	0.13	pg/L		09/13/18 07:53	09/22/18 11:03	1
2,3,4,6,7,8-HxCDF	0.34	J q B	48	0.16	pg/L		09/13/18 07:53	09/22/18 11:03	1
2,3,4,7,8-PeCDF	0.87	J q B	48	0.14	pg/L		09/13/18 07:53	09/22/18 11:03	1
2,3,7,8-TCDD	ND		9.6	0.13	pg/L		09/13/18 07:53	09/22/18 11:03	1
2,3,7,8-TCDF	2.7	J q B	9.6	0.073	pg/L		09/13/18 07:53	09/22/18 11:03	1
OCDD	2300	B	96	1.3	pg/L		09/13/18 07:53	09/22/18 11:03	1
OCDF	71	J B	96	0.22	pg/L		09/13/18 07:53	09/22/18 11:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	103		23 - 140	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,4,6,7,8-HpCDF	90		28 - 143	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,4,7,8,9-HpCDF	91		26 - 138	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,4,7,8-HxCDD	81		32 - 141	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,4,7,8-HxCDF	84		26 - 152	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,6,7,8-HxCDD	85		28 - 130	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,6,7,8-HxCDF	86		26 - 123	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,7,8,9-HxCDF	84		29 - 147	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,7,8-PeCDD	76		25 - 181	09/13/18 07:53	09/22/18 11:03	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	09/13/18 07:53	09/22/18 11:03	1
13C-2,3,4,6,7,8-HxCDF	85		28 - 136	09/13/18 07:53	09/22/18 11:03	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	09/13/18 07:53	09/22/18 11:03	1
13C-2,3,7,8-TCDD	84		25 - 164	09/13/18 07:53	09/22/18 11:03	1
13C-2,3,7,8-TCDF	75		24 - 169	09/13/18 07:53	09/22/18 11:03	1
13C-OCDD	88		17 - 157	09/13/18 07:53	09/22/18 11:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	75		35 - 197	09/13/18 07:53	09/22/18 11:03	1

QC Sample Results

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

TestAmerica Job ID: 580-80213-7

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

Lab Sample ID: MB 320-245399/1-A
Matrix: Water
Analysis Batch: 247160

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 245399

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	2.06	J	50	0.13	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,4,6,7,8-HpCDF	1.91	J	50	0.17	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,4,7,8,9-HpCDF	3.49	J	50	0.21	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,4,7,8-HxCDD	2.03	J	50	0.15	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,4,7,8-HxCDF	1.26	J	50	0.23	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,6,7,8-HxCDD	0.799	J q	50	0.14	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,6,7,8-HxCDF	1.11	J q	50	0.23	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,7,8,9-HxCDD	1.15	J	50	0.13	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,7,8,9-HxCDF	10.3	J	50	0.17	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,7,8-PeCDD	0.639	J	50	0.15	pg/L		09/13/18 07:53	09/22/18 13:21	1
1,2,3,7,8-PeCDF	2.97	J	50	0.20	pg/L		09/13/18 07:53	09/22/18 13:21	1
2,3,4,6,7,8-HxCDF	0.846	J	50	0.17	pg/L		09/13/18 07:53	09/22/18 13:21	1
2,3,4,7,8-PeCDF	1.38	J	50	0.21	pg/L		09/13/18 07:53	09/22/18 13:21	1
2,3,7,8-TCDD	ND		10	0.15	pg/L		09/13/18 07:53	09/22/18 13:21	1
2,3,7,8-TCDF	3.01	J	10	0.095	pg/L		09/13/18 07:53	09/22/18 13:21	1
OCDD	10.1	J	100	0.18	pg/L		09/13/18 07:53	09/22/18 13:21	1
OCDF	4.71	J	100	0.20	pg/L		09/13/18 07:53	09/22/18 13:21	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,4,6,7,8-HpCDF	77		28 - 143	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	09/13/18 07:53	09/22/18 13:21	1
13C-1,2,3,7,8-PeCDF	66		24 - 185	09/13/18 07:53	09/22/18 13:21	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136	09/13/18 07:53	09/22/18 13:21	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	09/13/18 07:53	09/22/18 13:21	1
13C-2,3,7,8-TCDD	80		25 - 164	09/13/18 07:53	09/22/18 13:21	1
13C-2,3,7,8-TCDF	72		24 - 169	09/13/18 07:53	09/22/18 13:21	1
13C-OCDD	76		17 - 157	09/13/18 07:53	09/22/18 13:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	73		35 - 197	09/13/18 07:53	09/22/18 13:21	1

Lab Sample ID: LCS 320-245399/2-A
Matrix: Water
Analysis Batch: 247160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	975		pg/L		98	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	1030		pg/L		103	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1070		pg/L		107	78 - 138
1,2,3,4,7,8-HxCDD	1000	1060		pg/L		106	70 - 164
1,2,3,4,7,8-HxCDF	1000	1040		pg/L		104	72 - 134

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-7

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

Lab Sample ID: LCS 320-245399/2-A
Matrix: Water
Analysis Batch: 247160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 245399

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,6,7,8-HxCDD	1000	1070		pg/L		107	76 - 134
1,2,3,6,7,8-HxCDF	1000	1070		pg/L		107	84 - 130
1,2,3,7,8,9-HxCDD	1000	1130		pg/L		113	64 - 162
1,2,3,7,8,9-HxCDF	1000	1070		pg/L		107	78 - 130
1,2,3,7,8-PeCDD	1000	1010		pg/L		101	70 - 142
1,2,3,7,8-PeCDF	1000	1050		pg/L		105	80 - 134
2,3,4,6,7,8-HxCDF	1000	1060		pg/L		106	70 - 156
2,3,4,7,8-PeCDF	1000	1040		pg/L		104	68 - 160
2,3,7,8-TCDD	200	183		pg/L		92	67 - 158
2,3,7,8-TCDF	200	216		pg/L		108	75 - 158
OCDD	2000	1980		pg/L		99	78 - 144
OCDF	2000	2170		pg/L		109	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	78		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,4,7,8-HxCDF	74		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	74		17 - 205
13C-1,2,3,7,8-PeCDD	70		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,6,7,8-HxCDF	75		22 - 176
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-2,3,7,8-TCDD	75		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	76		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	71		31 - 191

Lab Sample ID: LCSD 320-245399/3-A
Matrix: Water
Analysis Batch: 247160

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 245399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits		
							RPD	Limit	
1,2,3,4,6,7,8-HpCDD	1000	927		pg/L		93	70 - 140	5	50
1,2,3,4,6,7,8-HpCDF	1000	981		pg/L		98	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	1000	1000		pg/L		100	78 - 138	6	50
1,2,3,4,7,8-HxCDD	1000	995		pg/L		100	70 - 164	7	50
1,2,3,4,7,8-HxCDF	1000	1000		pg/L		100	72 - 134	4	50
1,2,3,6,7,8-HxCDD	1000	1020		pg/L		102	76 - 134	5	50
1,2,3,6,7,8-HxCDF	1000	1000		pg/L		100	84 - 130	7	50
1,2,3,7,8,9-HxCDD	1000	1090		pg/L		109	64 - 162	4	50
1,2,3,7,8,9-HxCDF	1000	1020		pg/L		102	78 - 130	5	50
1,2,3,7,8-PeCDD	1000	955		pg/L		95	70 - 142	6	50

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-80213-7

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

Lab Sample ID: LCSD 320-245399/3-A
 Matrix: Water
 Analysis Batch: 247160

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 245399

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	1000	988		pg/L		99	80 - 134	6	50
2,3,4,6,7,8-HxCDF	1000	1000		pg/L		100	70 - 156	6	50
2,3,4,7,8-PeCDF	1000	999		pg/L		100	68 - 160	4	50
2,3,7,8-TCDD	200	172		pg/L		86	67 - 158	6	50
2,3,7,8-TCDF	200	203		pg/L		101	75 - 158	6	50
OCDD	2000	1900		pg/L		95	78 - 144	4	50
OCDF	2000	2080		pg/L		104	63 - 170	4	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	77		20 - 186
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,6,7,8-HxCDF	71		21 - 159
13C-1,2,3,7,8,9-HxCDF	72		17 - 205
13C-1,2,3,7,8-PeCDD	68		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,6,7,8-HxCDF	72		22 - 176
13C-2,3,4,7,8-PeCDF	62		13 - 328
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-OCDD	70		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	72		31 - 191

Lab Chronicle

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

TestAmerica Job ID: 580-80213-7

Client Sample ID: PDI-RB-VV-090718

Lab Sample ID: 580-80213-3

Date Collected: 09/07/18 14:50

Matrix: Water

Date Received: 09/10/18 12:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			245399	09/13/18 07:53	ITH	TAL SAC
Total/NA	Analysis	1613B		1	247160	09/22/18 11:03	AS	TAL SAC

Laboratory References:

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

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Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-80213-7

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
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

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

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

TestAmerica Seattle

Sample Summary

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

TestAmerica Job ID: 580-80213-7

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80213-3	PDI-RB-VV-090718	Water	09/07/18 14:50	09/10/18 12:40

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580-80213 Chain of Custody

SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SURFACE SEDIMENT CHAIN OF CUSTODY										9/10/2018 COC No. 1																																																																																																							
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker				Carrier: Courier 1 of 1 pages																																																																																																									
Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> 21 days (water) <input checked="" type="checkbox"/> Other ASAP (GS only)		<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th>Sample Identification</th> <th>Sample Date</th> <th>Sample Time</th> <th>Matrix</th> <th>QC Sample</th> <th>Sampler's Initials</th> <th>Total No. of Cont.</th> <th>Fraction</th> <th>PCB Congeners 1668A</th> <th>PCDD/Fs 1613B</th> <th>TPH Diesel, Metal, Mercury NWT/PH-Dx 6020B, 7471A</th> <th>Grain size ASTM D7928/D6913</th> <th>Total organic carbon, Total solids 9060 (104C & 70C)</th> <th>Archive Archive -20 C</th> <th>PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger</th> <th>WQ - PCB Congeners 1668A</th> <th>WQ - PCDD/Fs 1613B</th> <th>WQ - TPH Diesel NWT/PH-Dx</th> <th>WQ - Metals, Mercury 6020B, 7470</th> <th>WQ - Total Organic Carbon SM4310B</th> <th>WQ - PAHs 8270-SIM</th> <th>WQ - Pesticides 1669M</th> <th>WQ - BEHP EPA 8270B-1-L</th> <th>WQ - Tributyltin Kron/Unger</th> <th>Sample Specific Notes:</th> </tr> </thead> <tbody> <tr> <td>PDI-SG-B431</td> <td>9/7/2018</td> <td>12:08</td> <td>SS</td> <td></td> <td>MSH</td> <td>7</td> <td></td> <td>H</td> <td>H</td> <td>H</td> <td>x</td> <td>H</td> <td>H</td> <td>H</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PDI-SG-B479</td> <td>9/7/2018</td> <td>9:58</td> <td>SS</td> <td></td> <td>MSH</td> <td>7</td> <td></td> <td>H</td> <td>H</td> <td>H</td> <td>x</td> <td>H</td> <td>H</td> <td>H</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PDI-RB-VV-090718</td> <td>9/7/2018</td> <td>14:50</td> <td>W</td> <td></td> <td>JH</td> <td>14</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> <td></td> <td>x</td> <td>x</td> <td></td> </tr> </tbody> </table>												Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metal, Mercury NWT/PH-Dx 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWT/PH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM4310B	WQ - PAHs 8270-SIM	WQ - Pesticides 1669M	WQ - BEHP EPA 8270B-1-L	WQ - Tributyltin Kron/Unger	Sample Specific Notes:	PDI-SG-B431	9/7/2018	12:08	SS		MSH	7		H	H	H	x	H	H	H												PDI-SG-B479	9/7/2018	9:58	SS		MSH	7		H	H	H	x	H	H	H												PDI-RB-VV-090718	9/7/2018	14:50	W		JH	14									x	x	x	x	x	x		x	x	
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metal, Mercury NWT/PH-Dx 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	WQ - PCB Congeners 1668A	WQ - PCDD/Fs 1613B	WQ - TPH Diesel NWT/PH-Dx	WQ - Metals, Mercury 6020B, 7470	WQ - Total Organic Carbon SM4310B	WQ - PAHs 8270-SIM	WQ - Pesticides 1669M	WQ - BEHP EPA 8270B-1-L	WQ - Tributyltin Kron/Unger	Sample Specific Notes:																																																																																											
PDI-SG-B431	9/7/2018	12:08	SS		MSH	7		H	H	H	x	H	H	H																																																																																																					
PDI-SG-B479	9/7/2018	9:58	SS		MSH	7		H	H	H	x	H	H	H																																																																																																					
PDI-RB-VV-090718	9/7/2018	14:50	W		JH	14									x	x	x	x	x	x		x	x																																																																																												
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)														Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months																																																																																																					
Special Instructions/QC Requirements & Comments: Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction. Separate reports for each lab.														1.3																																																																																																					
Relinquished by: <i>[Signature]</i> Company: AECOM		Date/Time: 9/10/18 1204		Relinquished by: <i>[Signature]</i> Company: M.E.		Date/Time: 9/10/18 1240		Received by: <i>[Signature]</i> Company: T.A. Sen		Date/Time: 9/11/18 0950		Relinquished by: <i>[Signature]</i> Company: TAYOR		Date/Time: 9/10/18 1700																																																																																																					

RS 1.6/1.6

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80213-7

Login Number: 80213

List Source: TestAmerica Seattle

List Number: 1

Creator: Antonson, Angeline D

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

Isotope Dilution Summary

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

TestAmerica Job ID: 580-80213-7

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (23-140)	HpCDF (28-143)	HpCDF2 (26-138)	HxCDD (32-141)	HxCDF (26-152)	HxDD (28-130)	HxDF (26-123)	HxCF (29-147)
580-80213-3	PDI-RB-VV-090718	103	90	91	81	84	85	86	84
MB 320-245399/1-A	Method Blank	88	77	80	71	74	71	73	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (25-181)	PeCDF (24-185)	13CHxCF (28-136)	PeCF (21-178)	TCDD (25-164)	TCDF (24-169)	OCDD (17-157)
580-80213-3	PDI-RB-VV-090718	76	71	85	70	84	75	88
MB 320-245399/1-A	Method Blank	72	66	74	66	80	72	76

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDD (26-166)	HpCDF (21-158)	HpCDF2 (20-186)	HxCDD (21-193)	HxCDF (19-202)	HxDD (25-163)	HxDF (21-159)	HxCF (17-205)
LCS 320-245399/2-A	Lab Control Sample	88	78	80	70	74	74	73	74
LCSD 320-245399/3-A	Lab Control Sample Dup	82	73	77	67	70	69	71	72

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDD (21-227)	PeCDF (21-192)	13CHxCF (22-176)	PeCF (13-328)	TCDD (20-175)	TCDF (22-152)	OCDD (13-199)
LCS 320-245399/2-A	Lab Control Sample	70	64	75	64	75	68	76
LCSD 320-245399/3-A	Lab Control Sample Dup	68	64	72	62	74	68	70

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

TestAmerica Seattle

Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-80213-7

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

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