

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 580-78604-2

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM 1111 Third Ave Suite 1600 Seattle, Washington 98101

Attn: Amy Dahl

M. Elains Walker

Authorized for release by: 7/31/2018 6:24:57 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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

Client: AECOM

TestAmerica Job ID: 580-78604-2 Project/Site: Portland Harbor Pre-Remedial Design

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Case Narrative

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

Job ID: 580-78604-2

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE Client: AECOM

Project: Portland Harbor Pre-Remedial Design Report Number: 580-78604-2

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

The samples were received on 7/5/2018 3:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.3° C, 0.7° C and 2.2° C.

Client changed sample ID for the RB from RB-VV-180703-1720 should be PDI-RB-VV-180703

This report contains results of the Dioxins rinse blank sample only, performed at TestAmerica Sacramento. All other analyses are currently on hold.

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-180703 (580-78604-11) was analyzed for Dioxin/ Furan in accordance with 1613B. The samples were prepared on 07/09/2018 and analyzed on 07/15/2018.

Several analytes were detected in method blank MB 320-232980/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

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Definitions/Glossary

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

Qualifiers

Dioxin

Qualifier	Qualifier Description
В	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

QC

RER

RPD

TEF

TEQ

RL

Quality Control

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

Ciossary	
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)
_OD	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

TestAmerica Seattle

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Client Sample Results

Client: AECOM TestAmerica Job ID: 580-78604-2 Project/Site: Portland Harbor Pre-Remedial Design

Client Sample ID: PDI-RB-VV-180703

Lab Sample ID: 580-78604-11 Date Collected: 07/03/18 17:20 **Matrix: Water**

Date Received: 07/05/18 14:59

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	2.7	JB	48	0.19	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,4,6,7,8-HpCDF	1.0	JqB	48	0.34	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,4,7,8,9-HpCDF	ND		48	0.42	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,4,7,8-HxCDD	1.7	JB	48	0.29	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,4,7,8-HxCDF	0.67	Jq	48	0.19	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,6,7,8-HxCDD	0.70	JB	48	0.28	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,6,7,8-HxCDF	0.47	J	48	0.18	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,7,8,9-HxCDD	1.0	JB	48	0.25	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,7,8,9-HxCDF	1.6	JB	48	0.16	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,7,8-PeCDD	ND		48	0.41	pg/L		07/09/18 09:34	07/15/18 22:51	1
1,2,3,7,8-PeCDF	0.96	JB	48	0.28	pg/L		07/09/18 09:34	07/15/18 22:51	1
2,3,4,6,7,8-HxCDF	0.62	Jq	48	0.15	pg/L		07/09/18 09:34	07/15/18 22:51	1
2,3,4,7,8-PeCDF	ND		48	0.31	pg/L		07/09/18 09:34	07/15/18 22:51	1
2,3,7,8-TCDD	3.5	JqB	9.5	0.20	pg/L		07/09/18 09:34	07/15/18 22:51	1
2,3,7,8-TCDF	0.72	JB	9.5	0.14	pg/L		07/09/18 09:34	07/15/18 22:51	1
OCDD	23	JB	95	0.35	pg/L		07/09/18 09:34	07/15/18 22:51	1
OCDF	2.5	JB	95	0.20	pg/L		07/09/18 09:34	07/15/18 22:51	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	99		23 - 140				07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,4,6,7,8-HpCDF	92		28 - 143				07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,4,7,8,9-HpCDF	93		26 - 138				07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141				07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,4,7,8-HxCDF	87		26 - 152				07/09/18 09:34	07/15/18 22:51	1
	00		28 - 130				07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,6,7,8-HxCDD	88		20 - 100						1
13C-1,2,3,6,7,8-HxCDD 13C-1,2,3,6,7,8-HxCDF	88		26 - 123				07/09/18 09:34	07/15/18 22:51	,
								07/15/18 22:51 07/15/18 22:51	1
13C-1,2,3,6,7,8-HxCDF	88		26 - 123				07/09/18 09:34		
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD	88 87		26 - 123 29 - 147				07/09/18 09:34 07/09/18 09:34	07/15/18 22:51	1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF	88 87 84		26 - 123 29 - 147 25 - 181				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51	1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF 13C-2,3,4,6,7,8-HxCDF	88 87 84 82		26 - 123 29 - 147 25 - 181 24 - 185				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51 07/15/18 22:51	1 1 1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF	88 87 84 82 89		26 - 123 29 - 147 25 - 181 24 - 185 28 - 136				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51	1 1 1 1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF 13C-2,3,4,6,7,8-HxCDF 13C-2,3,4,7,8-PeCDF 13C-2,3,7,8-TCDD	88 87 84 82 89		26 - 123 29 - 147 25 - 181 24 - 185 28 - 136 21 - 178				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51	1 1 1 1 1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF 13C-2,3,4,6,7,8-HxCDF 13C-2,3,4,7,8-PeCDF 13C-2,3,7,8-TCDD	88 87 84 82 89 81		26 - 123 29 - 147 25 - 181 24 - 185 28 - 136 21 - 178 25 - 164				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51	1 1 1 1 1
13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 13C-1,2,3,7,8-PeCDD 13C-1,2,3,7,8-PeCDF 13C-2,3,4,6,7,8-HxCDF 13C-2,3,4,7,8-PeCDF 13C-2,3,7,8-TCDD 13C-2,3,7,8-TCDD	88 87 84 82 89 81 86	Outlitte	26 - 123 29 - 147 25 - 181 24 - 185 28 - 136 21 - 178 25 - 164 24 - 169				07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34 07/09/18 09:34	07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51 07/15/18 22:51	

TestAmerica Job ID: 580-78604-2

Client Sample ID: Method Blank

Project/Site: Portland Harbor Pre-Remedial Design

Client: AECOM

Lab Sample ID: MB 320-232980/1-A

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

Matrix: Water Prep Type: Total/NA **Analysis Batch: 234157 Prep Batch: 232980** MB MB Analyte Result Qualifier RL **EDL** Unit Prepared Analyzed Dil Fac 50 0.25 pg/L 07/09/18 09:34 07/15/18 19:04 1,2,3,4,6,7,8-HpCDD 1.83 J 50 1,2,3,4,6,7,8-HpCDF 0.936 Jq 0.22 pg/L 07/09/18 09:34 07/15/18 19:04 1 0.28 pg/L 0.465 J 50 07/09/18 09:34 07/15/18 19:04 1,2,3,4,7,8,9-HpCDF 50 07/09/18 09:34 07/15/18 19:04 1,2,3,4,7,8-HxCDD 1.02 J q 0.29 pg/L 1,2,3,4,7,8-HxCDF ND 50 0.28 pg/L 07/09/18 09:34 07/15/18 19:04 1,2,3,6,7,8-HxCDD 0.603 Jq 50 0.28 pg/L 07/09/18 09:34 07/15/18 19:04 50 07/09/18 09:34 07/15/18 19:04 1,2,3,6,7,8-HxCDF ND 0.27 pg/L 0.868 Jq 50 0.24 pg/L 07/09/18 09:34 07/15/18 19:04 1,2,3,7,8,9-HxCDD 50 0.24 pg/L 07/09/18 09:34 07/15/18 19:04 1,2,3,7,8,9-HxCDF 1.31 J 1,2,3,7,8-PeCDD ND 50 0.46 pg/L 07/09/18 09:34 07/15/18 19:04 07/09/18 09:34 07/15/18 19:04 0.665 Jq 50 0.33 pg/L 1,2,3,7,8-PeCDF 2,3,4,6,7,8-HxCDF ND 50 0.23 pg/L 07/09/18 09:34 07/15/18 19:04 2,3,4,7,8-PeCDF ND 50 0.36 pg/L 07/09/18 09:34 07/15/18 19:04 10 2,3,7,8-TCDD 2.98 Jq 0.24 pg/L 07/09/18 09:34 07/15/18 19:04 2,3,7,8-TCDF 1.33 J 10 0.22 pg/L 07/09/18 09:34 07/15/18 19:04 1 OCDD 21.2 J 100 0.42 pg/L 07/09/18 09:34 07/15/18 19:04

OCDF	1.96	J	100	0.24 pg/L	07/09/18 09:34	07/15/18 19:04	1
	MB	MB					
Isotope Dilution	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	87		23 - 140		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,4,7,8-HxCDD	77		32 - 141		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,4,7,8-HxCDF	80		26 - 152		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,6,7,8-HxCDD	80		28 - 130		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,6,7,8-HxCDF	80		26 - 123		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,7,8-PeCDD	72		25 - 181		07/09/18 09:34	07/15/18 19:04	1
13C-1,2,3,7,8-PeCDF	71		24 - 185		07/09/18 09:34	07/15/18 19:04	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136		07/09/18 09:34	07/15/18 19:04	1
13C-2,3,4,7,8-PeCDF	72		21 - 178		07/09/18 09:34	07/15/18 19:04	1
13C-2,3,7,8-TCDD	74		25 - 164		07/09/18 09:34	07/15/18 19:04	1
13C-2,3,7,8-TCDF	75		24 - 169		07/09/18 09:34	07/15/18 19:04	1
13C-OCDD	88		17 - 157		07/09/18 09:34	07/15/18 19:04	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	95		35 - 197	07/09/18 09:34	07/15/18 19:04	1

Lab Sample ID: LCS 320-232980/2-A

Matrix: Water

Analysis Batch: 234157							Prep Batch: 232980
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	1000	847		pg/L		85	70 - 140
1,2,3,4,6,7,8-HpCDF	1000	863		pg/L		86	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	845		pg/L		84	78 ₋ 138
1,2,3,4,7,8-HxCDD	1000	881		pg/L		88	70 - 164
1,2,3,4,7,8-HxCDF	1000	901		pg/L		90	72 - 134

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Prep Type: Total/NA

Client Sample ID: Lab Control Sample

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QC Sample Results

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

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

Lab Sample ID: LCS 320-232980/2-A Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 234157** Prep Batch: 232980

LCS LCS Spike %Rec. Result Qualifier Analyte Added Unit D %Rec Limits 1,2,3,6,7,8-HxCDD 1000 859 86 76 - 134 pg/L 1,2,3,6,7,8-HxCDF 1000 878 pg/L 88 84 - 130 1000 871 87 1,2,3,7,8,9-HxCDD pg/L 64 - 1621,2,3,7,8,9-HxCDF 1000 900 pg/L 90 78 - 130 1,2,3,7,8-PeCDD 1000 915 92 70 - 142 pg/L 1,2,3,7,8-PeCDF 1000 926 93 80 - 134 pg/L 89 70 - 156 2,3,4,6,7,8-HxCDF 1000 890 pg/L 94 2,3,4,7,8-PeCDF 1000 936 pg/L 68 - 160pg/L 2,3,7,8-TCDD 200 174 87 67 - 158200 75 - 158 2,3,7,8-TCDF 187 pg/L 93 OCDD 2000 1610 pg/L 80 78 - 144 1560 78 63 - 170pg/L

OCDF 2000 LCS LCS Isotope Dilution %Recovery Qualifier Limits 13C-1,2,3,4,6,7,8-HpCDD 80 26 - 166 13C-1,2,3,4,6,7,8-HpCDF 77 21 - 158 13C-1,2,3,4,7,8,9-HpCDF 78 20 - 186 13C-1,2,3,4,7,8-HxCDD 72 21 - 193 13C-1,2,3,4,7,8-HxCDF 74 19 - 202 75 25 - 163 13C-1,2,3,6,7,8-HxCDD 75 13C-1,2,3,6,7,8-HxCDF 21 - 159 13C-1.2.3.7.8.9-HxCDF 75 17 - 205 13C-1,2,3,7,8-PeCDD 71 21 - 227 13C-1,2,3,7,8-PeCDF 71 21 - 192 78 13C-2,3,4,6,7,8-HxCDF 22 - 176 13C-2,3,4,7,8-PeCDF 71 13 - 328 76 20 - 175 13C-2,3,7,8-TCDD 13C-2,3,7,8-TCDF 76 22 - 152

LCS LCS Limits Surrogate %Recovery Qualifier 37CI4-2,3,7,8-TCDD 97 31 - 191

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Lab Sample ID: LCSD 320-232980/3-A

Analysis Batch: 234157

13C-OCDD

Matrix: Water

Prep Batch: 232980 LCSD LCSD **RPD** Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits **RPD** Limit 1,2,3,4,6,7,8-HpCDD 1000 966 97 70 - 140 13 50 pg/L 1,2,3,4,6,7,8-HpCDF 1000 981 pg/L 98 82 - 12213 50 1,2,3,4,7,8,9-HpCDF 1000 975 pg/L 98 78 - 138 14 50 1,2,3,4,7,8-HxCDD 1000 985 99 70 - 164 11 50 pg/L 97 1,2,3,4,7,8-HxCDF 1000 973 pg/L 72 - 134 8 50 95 1000 951 76 - 13410 50 1,2,3,6,7,8-HxCDD pg/L 1,2,3,6,7,8-HxCDF 1000 998 100 84 - 130 13 50 pg/L 1000 977 98 64 - 16212 50 1,2,3,7,8,9-HxCDD pg/L 1,2,3,7,8,9-HxCDF 1000 975 pg/L 97 78 - 1308 50 1,2,3,7,8-PeCDD 1000 980 pg/L 98 70 - 14250

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TestAmerica Seattle

Prep Type: Total/NA

Client Sample ID: Lab Control Sample Dup

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QC Sample Results

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID: LCSD 320-232980/3-A

Matrix: Water

Surrogate

37CI4-2,3,7,8-TCDD

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

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232980

Analysis Batch: 234157							Prep Ba	tch: 23	32980
•	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,2,3,7,8-PeCDF	1000	983		pg/L		98	80 - 134	6	50
2,3,4,6,7,8-HxCDF	1000	985		pg/L		99	70 - 156	10	50
2,3,4,7,8-PeCDF	1000	993		pg/L		99	68 - 160	6	50
2,3,7,8-TCDD	200	190		pg/L		95	67 - 158	9	50
2,3,7,8-TCDF	200	197		pg/L		98	75 - 158	5	50
OCDD	2000	1850		pg/L		93	78 - 144	14	50
OCDF	2000	1830		pg/L		92	63 - 170	16	50

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,4,6,7,8-HpCDD	90		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	87		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	88		20 - 186
13C-1,2,3,4,7,8-HxCDD	83		21 - 193
13C-1,2,3,4,7,8-HxCDF	86		19 - 202
13C-1,2,3,6,7,8-HxCDD	83		25 - 163
13C-1,2,3,6,7,8-HxCDF	84		21 - 159
13C-1,2,3,7,8,9-HxCDF	86		17 - 205
13C-1,2,3,7,8-PeCDD	78		21 - 227
13C-1,2,3,7,8-PeCDF	79		21 - 192
13C-2,3,4,6,7,8-HxCDF	87		22 - 176
13C-2,3,4,7,8-PeCDF	79		13 - 328
13C-2,3,7,8-TCDD	84		20 - 175
13C-2,3,7,8-TCDF	84		22 - 152
13C-OCDD	90		13 - 199

84 90	22 - 152 13 - 199
LCSD %Recovery	 Limits 31 - 191

7/31/2018

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Lab Chronicle

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

Client Sample ID: PDI-RB-VV-180703 Lab Sample ID: 580-78604-11

Date Collected: 07/03/18 17:20 Matrix: Water

Date Received: 07/05/18 14:59

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			232980	07/09/18 09:34	ITH	TAL SAC
Total/NA	Analysis	1613B		1	234157	07/15/18 22:51	KSS	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: AECOM TestAmerica Job ID: 580-78604-2

Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
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

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Sample Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78604-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-78604-11	PDI-RB-VV-180703	Water	07/03/18 17:20	07/05/18 14:59

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735-6th-Street-East Tacoma, WA 98424-1317	ł																						1	1		
Ph: 253-922-2310 Fax: 253-922-5047							CI	IAI	N O	FC	UST	OD	\mathbf{Y}											ĺ		
Client Contact		Project	Contact: A	ny Dahl / Ch	elsev Cook		Site	Conta	ct: Je	nnifer F	av								*			7/	5/2018	COC No: 1		
AECOM		<u>·</u> _		261 / (206) 43						act: El		alker				Carrie	r: Cou	rier						l of l	pages	
1111 3rd Ave Suite 1600			Analysis Tu	rnarouad Ti	nie				T]		T		占	T						T				pugeo	
Seattle, WA 98101		Calendar	(C) or Wor	k Days (W)		,				١.		0		827				t-Dx						ĺ		
Phone: (206) 438-2700 Fax: 1+(866) 495-5288				W-200-1100-1						Ę		0906		ž	ĺ			Ĕ.	3101							
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		21	days							Mercury NWTPH-Dx,	6913	Total solids		Tributyltin, 8270-SIM, 8270-	4318	¥.		ıry NW	a SM5		بد	ıger				
Portland, OR	x	Other AS.	AP_(sedimer	its only)						t a	28/D	Tota		ű	N O	99		ercu	<u>ئ</u> ا		<u> </u>	(1) ie				
Project #: 60566335 Study: Surface Sediment				,				≨	l	Mer	D79	œu,	-20 C	Î,	ST	iers.	1613B	<u>Σ</u>	- 5	Ξ	827(Krone/Unge		i I		
Sample Type: D/U 159 A TANA A HANA A								евегя 1668А	16138	l. Metals. 1A	ASTM D7928/D6913	inic carb 10C)		BEHP, Tril ron/Unger	Limits /	3 Conger	OD/Fs 16	Diesel, Metals, Mercury NWTPH-Dx, 3, 7471A	4 Organ	4s 8270-	4P EPA	Tributykin l		 		
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Cong	PCDD/Fs (TPH Diesel, Metals, 69298, 7471A	Grain size	Total orga (104C & 7	Archive Archive	PAHS, BF	Atterberg Limits ASTM D4318	WQ - PCB Congeners 1668A	WQ - PCDD/Fs	TPH Dies 6020B, 74	WQ - Total Organic Carbon SM5310B	WQ - PAHS 8270-SIM	WQ - BEHP EPA 8270D-1.1.	WQ - Yril		: Samule St	ecific Notes:	
PDI-SG-B458	7/2/2018	11:00	SS		AC	7	NEX (SPE)	н	11	Н	x	н	H	H			**********			-				Dimpie Op	ceme mores.	
PDI-SG-B470	7/2/2018	15:20	SS	<u> </u>	AC	8	Н	н	н	Н	X	н	н		Н											-
PDI-SG-B469	7/2/2018	16:30	SS		AC	8	-	Н	Н	н	x	н	ii	Н	H									***************************************		-
PDI-SG-B456	7/2/2018	10 19	SS		SH	7	╁	11 H		17 H		В	H	13 13									-+		***************************************	
PDI-SG-B462	7/2/2018	11.56	SS		SH	8		- <u>''</u> -	Н	Я	x x	н	H		Ħ											
PDI-SG-B463	7/2/2018	12:58	SS	MS/MSD	SH	14		-12 -13	H	н	x	н	В	n H	Н	-								-		-
PDI-SG-B464	7/2/2018	14:39	SS		SH	8		H	H	н	x	н	11	H H	Д Н										····	-
PDI-SG-B466	7/2/2018	15:34	SS		SH	8		н	11	x*	x*	x*	н	н	н											
PDI-SG-B468	7/2/2018	14.02/4	∷ <i>Iý</i> ss		SH	8		н	н	н	x	н	13	H	н											\neg
PDI-SG-B429	7/3/2018	10:15	SS		SH	7		Н	Н	11	x	н	H	11											***************************************	
RB-VV-180703-1720	7/3/2018	17:20	w		SH	14											×	х	<u>,</u>	x	x	x				
																										\dashv
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE,	PP=Polypre	opylene, A	G=amber g	lass, G≃gla	ss, RC=Res	sin Column							$\neg \uparrow$												······································	
Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosph	oric Acid, F	INO3 = Nit	ric Acid																***************************************				\neg			
Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered	d)							Sampl		o sal To Clie	nt	Γx	ispo:	sal By	Lab	7	rchi	ve For	12 Mc	onths						
Special Instructions/QC Requirements & Comments: Separate reports for each lab.																								<u> </u>		
x*- Analyze for grain size, metals (6020B analytes on H - Hold analyses pending further instruction.	y), and TO	C (9060 @	104C & 70	C) ASAP. Ru	ish TAT for	these take	prec	edent	over r	emaini	ng rus	h grair	n size :	analys	es req	uested	I ASAF	٠.	01	7,	Lo	2	, O.	.3		
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~	Jacoma, WA 98424-1317 Ph: 153-922-2316 Fax: 253-922-5047							CHA	NIN O	FCU	CHAIN OF CUSTODY	X										
	Chent Contact		Projec	Project Contact: Amy Dahl / Chel	my Dahl / Ch	elsey Cook		Site Co	ofact: Je	Site Captact: Jennifor Res				-	ĺ							1
	AECOM		12	Tet: (206) 438-2261 / (206) 438	261 / (206) 4	8-2010			Tool work	I shoredowy Contract. Director	W. With Heart			,					7/5/2018	COC No: 1		
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	Seatte, WA 98101		Calenda	Calendar (C) or Work Days (W)	k Dava (W)								0/2		*0		_					
	Phone: (205) 438-2700 Fax: 1+(865) 495-5288									'ra-	0906		8 'W		*14d.							_
	Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		e,	2) days											LAAN							
	Portland, OR	E	Other	TATA Anadian	-				_	_	7,00				i i i	_		_	4			_
	Project #: 60566335 Study: Surface Sediment		ξ, 2	Cure _ASAC_(Sediments only)_	like outh						~					_	M	_				
	Sample Type: DAU ROLV DA CA DAVARDACED									,	oghara pi	E- 9vid	Ja36				IS-0228					
	Sample Identification	Sample	Sample Time	Mateix	OC Samole	Sampler's Initials	Total No.	January Managary	CDONE 14	1508, 747 I.) PH Diesel, I	A soit mikr nagyo labo OT & DAO	nA svida	AHA, BEH I., Kron/li Aerberg I.	б-кев	Q - PC:DU	168, 7471. Q - Total	erian - Ç	41138 - Q padirY - Q				
	PDI-SG-B458	7/2/2018	11.00	SS		1.	1		+	,	4	v =	╣.	╫	_	09	"	╁		Sample Sp	Sample Specific Notes:	_
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	AND THE PROPERTY OF THE PROPERTY OF										-		+	-	*	*	art	K	1			
	Container Type: WMG=Wide Mouth Glass Jan, P-HDPE, PP=Polypropytene, AG=amber glass, G=glass	and/log=do	Dylene, /	G=ember g	fens, Gagla		s, RC=Resin Column									-	\dagger	+	1			_
	Frechon: It = Distributed PRT = Particulate T = Total functioned	ME ACKO, MI	20 = W	unc Acid				-	\exists		-					_		H				_
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	Special Instructions/QC Requirements & Comments: Separate renorts for each tab.										1				1	2	a mile					
•	X* Analyze for grain size, metals (60208 analytes only), and TOC (9060 @ 104C & 70C) ASAP. Rush TAT for these take precedent over remaining rush grain size analyses requested ASAP. H. Hold analyses pending further instruction.	y), and TOC	D 0906) ;	104C & 704	C) ASAP. Ru	sh TAT for	these take	precede	int over n	emaining	rush grai	in size an	alyses n	adsanba	ASAP.	Ċ	4	13	72 00	2		
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Chain of Custody Record

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## Control Design Proper P	Clear Information (Sub Contract Lab)	Sampler			Lab PM: Walker	Lab PM: Walker, Elaine M	2		Cam	Carrier Tracking No(s):		COC No: 580-56927.1	
Control of the Cont	5	Phone:			E-Mail:					of Origin:		Page:	
Control Cont	Shipping/Receiving				elaine.	walker@	testame	ricainc.com		don		Page 1 of 2	
March Marc	Company: TestAmerica Laboratories, Inc.				Ac	creditation	s Require	d (See note):			<u>, u,</u>	Job #: 580-78604-1	
Fig. 25 Fig. 26 Fig.	Address: 880 Riverside Parkway.	Due Date Requested 7/23/2018	22					Analy	sis Reques	sted		Preservation Cor	des:
Ch. 60-650	City: West Sacramento	TAT Requested (day	:(s		(03)	C. P.						A - HCL B - NaOH C - Zn Acetate	N - Hexane N - None O - AsNaO2
Figure 1916-372-5000(fel) 516-372-5000(fel) 516-372-5000(f	State, Zip: CA, 95605					sisto		201.0/4			100	D - Nitric Acid E - NaHSO4	P - Na204S Q - Na2SO3
Control Cont	Phone: 916-373-5600(Tel) 916-372-1059(Fax)	# Od			(0	700		1617 111				G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydral
Sample Chemistration - Client Clash Client Clash C	Email:	WO#:			N 10	(0)		n i lai				I - Ice J - DI Water	U - Acetone V - MCAA
Sample George G	Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120			89X) 0	M 10 29		Om/ 1_c			_	K-EDTA L-EDA	W - pH 4-5 Z - other (specify)
Sample Identification - Client D (Lab ID) Sample Date Time Gregoral Time	Site:	SSOW#:			dweg	A) as		lac_ve			CATE COLUMN	Other:	
POISG-B468 (5807-8604-1)	Sample Identification - Client ID (Lab ID)	Sample Date	3			M/SM moha9		00_20101/20101			redmuM lstoT	Special In	structions/Note:
PDI-SG-8468 (580-78604-3) 77216		X	1		n Code:	X							
PDI-SG-8670 (560-78604-2) 7121/8 16.20 Solid X X X	PDI-SG-B458 (580-78604-1)	7/2/18	11:00 Pacific		Solid	×	×				2		
PDI-SG-8469 (890-78604-3) 772/18 Pacific Solid X X X	PDI-SG-B470 (580-78604-2)	7/2/18	15:20 Pacific		Solid	×	×				2		
PDI-SG-846 (580-78604-4) 71216 1156 Solid So	PDI-SG-B469 (580-78604-3)	7/2/18	16:30 Pacific		Solid	×	×				2		
PDI-SG-8462 (580-78604-5) 71216 11256 Solid X X X X X X X X X X	PDI-SG-B456 (580-78604-4)	7/2/18	10:19 Pacific		Solid	×	×				2		
PDI-SG-8464 (580-78604-6)	PDI-SG-B462 (580-78604-5)	7/2/18	11:56 Pacific		Solid	×	×				2		
PDI-SG-8464 (580-78604-3) 71/218 14:39 14:30 15:34 16:34	PDI-SG-B463 (580-78604-6)	7/2/18	12:58 Pacific		Solid	×	×				2		
PDI-SG-8466 (580-78604-8) PDI-SG-8466 (580-78604-9) PDI-SG-8466 (580-78604-9) PDI-SG-8466 (580-78604-9) PDI-SG-8466 (580-78604-9) PDI-SG-8468 (580-7	PDI-SG-B464 (580-78604-7)	7/2/18	14:39 Pacific		Solid	×	×				2		
PDI-SG-8468 (580-78604-9) PRI-SG-8468 (580-7860	PDI-SG-B466 (580-78604-8)	7/2/18	15:34 Pacific		Solid	×	×				2		
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ewinership of method, analyte & accreditation compliance upon out subcontract laboratory or other instructions. This sample showled. Any changes to accreditations are current to date, return the signed Chain of Custody attesting to said compliance upon out subcontract 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. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance 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. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Unconfirmed Date: Time: T	PDI-SG-B468 (580-78604-9)	7/2/18	16:33 Pacific		Solid	×	×				2		
Sample Disposal (A fee may be assessed if samples are retained longer than 1 mc	Note: Since laboratory accreditations are subject to change, TestAmerics currently maintain accreditation in the State of Origin listed above for ana Laboratories, inc. attention immediately. If all requested accreditations a	a Laboratories, Inc. places the ovalysis/tests/matrix being analyzed re current to date, return the sign	vnership of me 1, the samples ned Chain of C	thod, analyte & must be shippe ustody attesting	accreditation co d back to the Te to said complic	mpliance or stAmerica ance to Te	pon out s laboratory stAmerica	ubcontract labor or other instru Laboratories,	ratories. This sa ctions will be pro inc.	mple shipment i vided. Any chan	s forwarded under c iges to accreditation	chain-of-custody. If	the laboratory does not rought to TestAmerica
equested: I. II, III, IV, Other (specify) Primary Deliverable Rank: 2 Special Instructions/QC Requirements: Inquished by: Primary Deliverable Rank: 2 Special Instructions/QC Requirements: Date:	Possible Hazard Identification					Sampl	Dispo	sal (A fee I	nay be asses	sed if samp	les are retained	d longer than 1	month)
Inquished by: Machine of Shipment: Date: Time: Method of Shipment: Company Received by: Machine of Shipment: Company Received by: Date/Time: Company Received by: Date/Time: Company Received by: Cooler Temperature(s) "C and Other Remarks: W S S S S S S S S S	Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverab	ole Rank: 2			Specia	Return T	o Client ions/QC Re	duirements:	sal By Lab	Archiv	re For	Months
Date/Time: Date/Time: April 18 Company Received by: April 18 Company Received by: Date/Time: Company Received by: Date/Time: Company Received by: Configuration	Empty Kit Relinquished by:		Jate:		T	me:	ŀ			Method of Ship	ment		
Tals Intact: Custody Seal No.: DaterTime: Company Received by: Company Received by: Cooler Temperature(s) "C and Other Remarks: Cooler Temperature(s) "C and Other Remarks:	Relinquished by: UM ASS NW	Date/Time:	11	16/18	1 APX	7 Rec	sived by:	1/1/	111111	Dat	PC-C	9	Company RA
Talls Intact: Custody Seal No.: Date/Time: Company Received by:	Relinquished by:	bate/Time:		00 //	mpany	Rec	eived b	an	1	Dat	e/Time:		Сотрапу
Custody Seal No:	Relinquished by:	Date/Time:		ဝိ	трапу	Rec	sived by:			Date	e/Time:		Company
						ő	er Tempe	rature(s) °C an	d Other Remarks		4.3		

Chain of Custody Record

Client Information (Sub Contract Lab)	sampier.			Walker	Walker, Elaine M	5		Carrier Tracking nots)	36	580-56927.2	
Client Contact:	Phone:			E-Mait:				State of Origin:		Page:	
Shipping/Receiving				elaine	.walker@t	estamer	elaine.walker@testamericainc.com	Oregon		Page 2 of 2	
Company: TestAmerica Laboratories, Inc.				4	ccreditations	s Kequired	Accreditations Required (See note):			580-78604-1	
Address: 880 Riverside Parkway.	Due Date Requested 7/23/2018	.p.					Analysis Requested	eduested		Preservation Codes:	:sapoC
City: West Sacramento	TAT Requested (days):	ys):					-			B - NaOH C - Zn Acetate	N - Hexane N - None O - AsNaO2
State, Zip: CA, 95605					slato					D - Nitric Acid	P - Na2O4S Q - Na2SO3
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO#:									G - Amchlor H - Ascorbic Acid	
Email:	WO#.			N 20	(o)	Chickens					U - Acetane V - MCAA
Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120				JO 58	and the same				L-EDA	W - pH 4-5 Z - other (specify)
Site:	SSOW#:				A) ds					of coi	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wewater, Sasold, Ownstabol, BT=Tesue, A-Ar)	Field Filtered S MSM mofaeq Perform MS/M S_SMAH\BE131	ond Hq \qOotuA b2_8Efat\8Efat				Total Number Special	Special Instructions/Note:
		\bigvee	Preserva	Preservation Code:	\otimes						
PDI-SG-B429 (580-78604-10)	7/3/18	10:15 Pacific		Solid	×	×				2	
RB-VV-180703-1720 (580-78604-11)	7/3/18	17:20 Pacific		Water		×				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.	Laboratories, Inc. places the	ownership of m	nethod, analyte	& accreditation o	ompliance u	pon out su	bcontract laboratories	This sample shipment	is forwarded	under chain-of-custody.	
Possible Hazard Identification					Sample	Dispos	al (A fee may be	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	les are re	stained longer than	1 month)
Unconfirmed	6]	Return To Client	Client	Disposal By Lab		Archive For	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliveral	ible Kank: 2	,		Special	Instruction	special Instructions/QC Requirements				
Empty Kit Relinquished by:		Date:			Time:			Method of Shipment:	ment		
Relinquished by:	Date/Time:/8	/	300	Company	Rece	Received by:	Chille	Dat Dat	Date/Time:	1-18 93	7
Reinquished by: 7	Date/Tyne:			Company	Kece	Received by:		Dat	Date/Time:		Company
Relinquished by:	Date/Time:			Company	Rece	Received by:		Dat	Date/Time:		Company
Custody Seals Intact: Custody Seal No.:					Cook	or Tempera	Cooler Temperature(s) °C and Other Remarks		4.3		
											Ver. 09/20/2016

Login Sample Receipt Checklist

Client: AECOM Job Number: 580-78604-2

Login Number: 78604 List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

ordator. o connen, dason r		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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 ampered with.	True	
camples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
OC is present.	True	
OC is filled out in ink and legible.	True	
OC is filled out with all pertinent information.	True	
the Field Sampler's name present on COC?	True	
nere are no discrepancies between the containers received and the COC.	True	
amples are received within Holding Time (excluding tests with immediate Ts)	True	
ample containers have legible labels.	True	
ontainers are not broken or leaking.	True	
ample collection date/times are provided.	True	
ppropriate sample containers are used.	True	
ample bottles are completely filled.	True	
ample Preservation Verified.	True	
here is sufficient vol. for all requested analyses, incl. any requested IS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	True	
fultiphasic samples are not present.	True	
amples do not require splitting or compositing.	True	
esidual Chlorine Checked.	N/A	

4

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3

11

12

Login Sample Receipt Checklist

Client: AECOM Job Number: 580-78604-2

Login Number: 78604 List Source: TestAmerica Sacramento
List Number: 5 List Creation: 07/07/18 05:08 PM

Creator: Hytrek, Cheryl

Creator: Hytrek, Cheryi		
Question	Answer	Comment
Radioactivity wasn't checked or is $<$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Seattle

Client: AECOM Job Number: 580-78604-2

Login Number: 78604
List Source: TestAmerica Sacramento
List Number: 6
List Creation: 07/07/18 05:10 PM

Creator: Hytrek, Cheryl

oreator. Trytrek, orietyr		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Seattle

Job:___

lotes:	Therm. ID: AK-2 / AK-3 / AK-5 / AK-6 / H			
0.00.	IceWetGel	Other		
	Cooler Custody Seal:			
		_		
	Sample Custody Seal:	1		
	Cooler ID:	3		
	Temp: Observed 4, 3			
	From: Temp Blank D Sample	Ø		
	_	Yes	No	NA
	Perchlorate has headspace?			N
	Alkalinity has no headspace?			P
	CoC is complete w/o discrepancies?	P		0
	Samples received within holding time?	D		
	Sample preservatives verified?	6		Ø
	Cooler compromised/tampered with?		P	0
	Samples compromised/tampered with?		D	D
	Samples w/o discrepancies?	D		
	Sample containers have legible labels?	Ø		
	Containers are not broken or leaking?	é		П
	Sample date/times are provided.	D		
	Appropriate containers are used?	Ø		
	Sample bottles are completely filled?	×		
	Zero headspace?*			P
	Multiphasic samples are not present?			N
	Sample temp OK?	D	ο,	
	Sample out of temp?		9	
	Initials:Date:	me_ or bubble	e < 6 mn	1 (1/4")

QA-812 RKE 05/24/2018

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-78604-2

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

Matrix: Water Prep Type: Total/NA

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		HpCDD	HpCDF	HpCDF2	HxCDD	HxCDF	HxDD	HxDF	HxCF
Lab Sample ID	Client Sample ID	(23-140)	(28-143)	(26-138)	(32-141)	(26-152)	(28-130)	(26-123)	(29-147)
580-78604-11	PDI-RB-VV-180703	99	92	93	84	87	88	88	87
MB 320-232980/1-A	Method Blank	87	84	85	77	80	80	80	80
			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		PeCDD	PeCDF	13CHxCF	PeCF	TCDD	TCDF	OCDD	
Lab Sample ID	Client Sample ID	(25-181)	(24-185)	(28-136)	(21-178)	(25-164)	(24-169)	(17-157)	
580-78604-11	PDI-RB-VV-180703	84	82	89	81	86	86	98	
MB 320-232980/1-A	Method Blank	72	71	83	72	74	75	88	

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)							
		HpCDD	HpCDF	HpCDF2	HxCDD	HxCDF	HxDD	HxDF	HxCF
Lab Sample ID	Client Sample ID	(26-166)	(21-158)	(20-186)	(21-193)	(19-202)	(25-163)	(21-159)	(17-205)
LCS 320-232980/2-A	Lab Control Sample	80	77	78	72	74	75	75	75
LCSD 320-232980/3-A	Lab Control Sample Dup	90	87	88	83	86	83	84	86
			Percent Isotope Dilution Recovery (Acceptance Limits)						
		PeCDD	PeCDF	13CHxCF	PeCF	TCDD	TCDF	OCDD	
Lab Sample ID	Client Sample ID	(21-227)	(21-192)	(22-176)	(13-328)	(20-175)	(22-152)	(13-199)	
LCS 320-232980/2-A	Lab Control Sample	71	71	78	71	76	76	81	
LCSD 320-232980/3-A	Lab Control Sample Dup	78	79	87	79	84	84	90	

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

7/31/2018

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Isotope Dilution Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

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-TCDFOCDD = 13C-OCDD

TestAmerica Job ID: 580-78604-2