

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 580-80981-1

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM  
1111 Third Ave  
Suite 1600  
Seattle, Washington 98101

Attn: Amy Dahl

*M. Elaine Walker*

Authorized for release by:  
10/22/2018 3:52:51 PM

Elaine Walker, Project Manager II  
(253)248-4972

[elaine.walker@testamericainc.com](mailto:elaine.walker@testamericainc.com)

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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.*

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# Case Narrative

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

TestAmerica Job ID: 580-80981-1

**Job ID: 580-80981-1**

**Laboratory: TestAmerica Seattle**

## Narrative

### CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-80981-1

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

Two samples were received on 10/10/2018 12:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was -3.3° C.

Containers for the following samples were received at TA-Seattle on dry ice (-3.3°C) on 10/11/18 @ 0930 and placed in a freezer storage unit @1015: PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2).

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

This report contains results of all analyses performed by TestAmerica Seattle.

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.

#### SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with SW846 8270D\_SIM.** The samples were prepared on 10/12/2018 and analyzed on 10/17/2018.

Anthracene failed the recovery criteria high for LCS 580-286335/2-A. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

Samples PDI-SC-S088-0to2 (580-80981-1)[50X] and PDI-SC-S088-2to3.3 (580-80981-2)[50X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

Samples were frozen in hold. Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were removed from freezer on 10/11/18 at 19:00 and thawed.

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

#### POLYCHLORINATED BIPHENYLS (PCBS)

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for polychlorinated biphenyls (PCBs)**

# Case Narrative

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

TestAmerica Job ID: 580-80981-1

## Job ID: 580-80981-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

in accordance with EPA sw-846 method 8082A. The samples were prepared on 10/16/2018 and analyzed on 10/18/2018.

Surrogate recovery for the following samples were outside control limits: PDI-SC-S088-0to2 (580-80981-1), PDI-SC-S088-2to3.3 (580-80981-2), (580-80981-A-2-B MS) and (580-80981-A-2-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

PCB-1016 failed the recovery criteria low for the MS of sample PDI-SC-S088-2to3.3MS (580-80981-2) in batch 580-286910. PCB-1016 failed the recovery criteria low for the MSD of sample PDI-SC-S088-2to3.3MSD (580-80981-2) in batch 580-286910. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The continuing calibration verification (CCV) associated with 580-286910 recovered low and outside the control limits for PCB-1232, PCB-1221 and PCB-1254 on the confirmation column. Results are confirmed on both columns and reported from the passing column. The following samples are impacted: PDI-SC-S088-0to2 (580-80981-1), PDI-SC-S088-2to3.3 (580-80981-2), (CCV 580-286910/3) and (CCV 580-286910/6).

The continuing calibration verification (CCV) associated with 580-286719 recovered low and outside the control limits for PCB-1232 and PCB-1221 on the confirmation column. Results are confirmed on both columns and reported from the passing column. The following samples are impacted: MB 580-286602/1-A, LCS 580-286602/2-A, (CCV 580-286719/3) and (CCV 580-286719/6).

The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: PDI-SC-S088-0to2 (580-80981-1), PDI-SC-S088-2to3.3 (580-80981-2), PDI-SC-S088-2to3.3 MS (580-80981-2 MS) and PDI-SC-S088-2to3.3 MSD (580-80981-2 MSD).

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

### **TOTAL ORGANIC CARBON**

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060.** The samples were analyzed on 10/14/2018.

The following samples were removed from the freezer on 10/11/18 at 19:00 and thawed: PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2).

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

### **GRAIN SIZE**

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for grain size in accordance with ASTM D7928/D6913.** The samples were analyzed on 10/12/2018.

Clay, Coarse Sand and Gravel exceeded the RPD limit for the duplicate of sample PDI-SC-S088-0to2DU (580-80981-1).

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

### **PERCENT SOLIDS**

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for percent solids in accordance with ASTM D2216.** The samples were analyzed on 10/12/2018.

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

### **TOTAL SOLIDS @ 70C**

**Samples PDI-SC-S088-0to2 (580-80981-1) and PDI-SC-S088-2to3.3 (580-80981-2) were analyzed for Total Solids @ 70C.** The samples were analyzed on 10/12/2018.

No 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: 580-80981-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

### GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
F1	MS and/or MSD Recovery is outside acceptance limits.

### General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

### Geotechnical

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

## 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: 580-80981-1

**Client Sample ID: PDI-SC-S088-0to2**

**Lab Sample ID: 580-80981-1**

Date Collected: 08/01/18 10:30

Matrix: Solid

Date Received: 10/10/18 12:10

Percent Solids: 52.6

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	3200		94	8.5	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Acenaphthene	19000		94	11	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Acenaphthylene	750		94	9.4	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Anthracene	9000 *		94	11	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Benzo[a]anthracene	8200		94	14	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Benzo[a]pyrene	9700		94	7.5	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Benzo[b]fluoranthene	9400		94	11	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Benzo[g,h,i]perylene	7800		94	9.4	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Benzo[k]fluoranthene	3300		94	11	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Chrysene	9300		94	28	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Dibenz(a,h)anthracene	790		94	14	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Fluoranthene	31000		94	26	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Fluorene	7600		94	9.4	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Indeno[1,2,3-cd]pyrene	7700		94	11	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Naphthalene	9700		94	15	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Phenanthrene	43000		94	13	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Pyrene	44000		94	18	ug/Kg	☼	10/12/18 10:39	10/17/18 14:39	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14	89		57 - 120				10/12/18 10:39	10/17/18 14:39	50

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		3.8	0.65	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1221	ND		3.8	1.8	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1232	ND		3.8	0.89	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1242	ND		3.8	0.93	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1248	ND		3.8	0.30	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1254	ND		3.8	1.5	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
PCB-1260	ND		3.8	0.65	ug/Kg	☼	10/16/18 09:44	10/18/18 22:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	898	X	54 - 142				10/16/18 09:44	10/18/18 22:49	1
Tetrachloro-m-xylene	72		58 - 122				10/16/18 09:44	10/18/18 22:49	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	57000		2000	44	mg/Kg			10/14/18 18:04	1
Total Solids	52.6		0.1	0.1	%			10/12/18 09:15	1
Total Solids @ 70°C	56	H	0.10	0.10	%			10/12/18 16:56	1

## Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	1.5				%			10/12/18 09:35	1
Coarse Sand	0.2				%			10/12/18 09:35	1
Medium Sand	1.2				%			10/12/18 09:35	1
Fine Sand	24.5				%			10/12/18 09:35	1
Silt	51.4				%			10/12/18 09:35	1
Clay	21.2				%			10/12/18 09:35	1

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-80981-1

**Client Sample ID: PDI-SC-S088-2to3.3**

**Lab Sample ID: 580-80981-2**

Date Collected: 08/01/18 10:35

Matrix: Solid

Date Received: 10/10/18 12:10

Percent Solids: 60.9

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	420		76	6.9	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Acenaphthene	610		76	9.2	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Acenaphthylene	250		76	7.6	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Anthracene	680 *		76	9.2	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Benzo[a]anthracene	910		76	12	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Benzo[a]pyrene	1000		76	6.1	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Benzo[b]fluoranthene	1000		76	9.0	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Benzo[g,h,i]perylene	880		76	7.6	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Benzo[k]fluoranthene	370		76	9.2	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Chrysene	1200		76	23	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Dibenz(a,h)anthracene	83		76	11	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Fluoranthene	3800		76	21	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Fluorene	560		76	7.6	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Indeno[1,2,3-cd]pyrene	820		76	9.2	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Naphthalene	2300		76	12	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Phenanthrene	3700		76	11	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50
Pyrene	5400		76	15	ug/Kg	☼	10/12/18 10:39	10/17/18 15:05	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	71		57 - 120	10/12/18 10:39	10/17/18 15:05	50

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND	F1	3.2	0.55	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1221	ND		3.2	1.5	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1232	ND		3.2	0.75	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1242	ND		3.2	0.79	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1248	ND		3.2	0.26	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1254	ND		3.2	1.3	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1
PCB-1260	24		3.2	0.55	ug/Kg	☼	10/16/18 09:44	10/18/18 23:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	1364	X	54 - 142	10/16/18 09:44	10/18/18 23:06	1
Tetrachloro-m-xylene	60		58 - 122	10/16/18 09:44	10/18/18 23:06	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	35000		2000	44	mg/Kg			10/14/18 18:09	1
Total Solids	60.9		0.1	0.1	%			10/12/18 09:15	1
Total Solids @ 70°C	60	H	0.10	0.10	%			10/12/18 16:56	1

## Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			10/12/18 09:35	1
Coarse Sand	0.7				%			10/12/18 09:35	1
Medium Sand	2.3				%			10/12/18 09:35	1
Fine Sand	57.2				%			10/12/18 09:35	1
Silt	29.2				%			10/12/18 09:35	1
Clay	10.7				%			10/12/18 09:35	1

TestAmerica Seattle



# QC Sample Results

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

TestAmerica Job ID: 580-80981-1

## Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 580-286335/1-A**  
**Matrix: Solid**  
**Analysis Batch: 286695**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 286335**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		1.0	0.090	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Acenaphthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Acenaphthylene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Anthracene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Chrysene	ND		1.0	0.30	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Fluoranthene	ND		1.0	0.28	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Fluorene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Naphthalene	ND		1.0	0.16	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Phenanthrene	ND		1.0	0.14	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Pyrene	ND		1.0	0.19	ug/Kg		10/12/18 10:39	10/17/18 08:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	91		57 - 120	10/12/18 10:39	10/17/18 08:48	1

**Lab Sample ID: LCS 580-286335/2-A**  
**Matrix: Solid**  
**Analysis Batch: 286695**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 286335**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-Methylnaphthalene	200	164		ug/Kg		82	68 - 120
Acenaphthene	200	156		ug/Kg		78	68 - 120
Acenaphthylene	200	151		ug/Kg		75	68 - 120
Anthracene	200	141	*	ug/Kg		71	73 - 125
Benzo[a]anthracene	200	178		ug/Kg		89	66 - 120
Benzo[a]pyrene	200	145		ug/Kg		72	72 - 124
Benzo[b]fluoranthene	200	193		ug/Kg		96	63 - 121
Benzo[g,h,i]perylene	200	164		ug/Kg		82	63 - 120
Benzo[k]fluoranthene	200	184		ug/Kg		92	63 - 123
Chrysene	200	182		ug/Kg		91	69 - 120
Dibenz(a,h)anthracene	200	170		ug/Kg		85	70 - 125
Fluoranthene	200	191		ug/Kg		95	74 - 125
Fluorene	200	178		ug/Kg		89	73 - 120
Indeno[1,2,3-cd]pyrene	200	183		ug/Kg		92	65 - 121
Naphthalene	200	158		ug/Kg		79	70 - 120
Phenanthrene	200	171		ug/Kg		86	73 - 120
Pyrene	200	190		ug/Kg		95	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	78		57 - 120

TestAmerica Seattle



# QC Sample Results

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

TestAmerica Job ID: 580-80981-1

## Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

**Lab Sample ID: MB 580-286602/1-A**  
**Matrix: Solid**  
**Analysis Batch: 286719**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 286602**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		2.0	0.34	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1221	ND		2.0	0.95	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1232	ND		2.0	0.47	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1242	ND		2.0	0.49	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1248	ND		2.0	0.16	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1254	ND		2.0	0.79	ug/Kg		10/16/18 09:44	10/17/18 14:08	1
PCB-1260	ND		2.0	0.34	ug/Kg		10/16/18 09:44	10/17/18 14:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	81		54 - 142	10/16/18 09:44	10/17/18 14:08	1
Tetrachloro-m-xylene	64		58 - 122	10/16/18 09:44	10/17/18 14:08	1

**Lab Sample ID: LCS 580-286602/2-A**  
**Matrix: Solid**  
**Analysis Batch: 286719**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 286602**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
PCB-1016	10.0	8.01		ug/Kg		80	64 - 120
PCB-1260	10.0	9.18		ug/Kg		92	63 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	83		54 - 142
Tetrachloro-m-xylene	64		58 - 122

**Lab Sample ID: 580-80981-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 286910**

**Client Sample ID: PDI-SC-S088-2to3.3**  
**Prep Type: Total/NA**  
**Prep Batch: 286602**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
PCB-1016	ND	F1	16.1	9.68	F1	ug/Kg	☼	60	64 - 120
PCB-1260	24		16.1	35.9		ug/Kg	☼	73	63 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl	1568	X	54 - 142
Tetrachloro-m-xylene	54	X	58 - 122

**Lab Sample ID: 580-80981-2 MSD**  
**Matrix: Solid**  
**Analysis Batch: 286910**

**Client Sample ID: PDI-SC-S088-2to3.3**  
**Prep Type: Total/NA**  
**Prep Batch: 286602**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
PCB-1016	ND	F1	15.7	9.80	F1	ug/Kg	☼	63	64 - 120	1	21
PCB-1260	24		15.7	36.9		ug/Kg	☼	82	63 - 130	3	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl	1708	X	54 - 142
Tetrachloro-m-xylene	56	X	58 - 122

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-80981-1

## Method: 9060\_PSEP - TOC (Puget Sound)

**Lab Sample ID: MB 580-286515/5**  
**Matrix: Solid**  
**Analysis Batch: 286515**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		2000	44	mg/Kg			10/14/18 13:28	1

**Lab Sample ID: LCS 580-286515/6**  
**Matrix: Solid**  
**Analysis Batch: 286515**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	4270	4300		mg/Kg		101	68 - 149

**Lab Sample ID: LCSD 580-286515/7**  
**Matrix: Solid**  
**Analysis Batch: 286515**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	4270	3350		mg/Kg		79	68 - 149	25	32

## Method: Moisture 70C - Percent Moisture, 70 C

**Lab Sample ID: 580-80981-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 286405**

**Client Sample ID: PDI-SC-S088-0to2**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Solids @ 70°C	56	H	57		%		1	20

## Method: D7928/D6913 - ASTM D7928/D6913

**Lab Sample ID: 580-80981-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 286315**

**Client Sample ID: PDI-SC-S088-0to2**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Gravel	1.5		0.0	F3	%		200	20
Coarse Sand	0.2		0.9	F3	%		127	20
Medium Sand	1.2		1.2		%		0	20
Fine Sand	24.5		24.5		%		0	20
Silt	51.4		53.7		%		4	20
Clay	21.2		19.7	F3	%		166	20

# Lab Chronicle

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

TestAmerica Job ID: 580-80981-1

**Client Sample ID: PDI-SC-S088-0to2**

**Date Collected: 08/01/18 10:30**

**Date Received: 10/10/18 12:10**

**Lab Sample ID: 580-80981-1**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	286515	10/14/18 18:04	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	286311	10/12/18 09:15	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	286405	10/12/18 16:56	BAH	TAL SEA
Total/NA	Analysis	D7928/D6913		1	286315	10/12/18 09:35	JKM	TAL SEA

**Client Sample ID: PDI-SC-S088-0to2**

**Date Collected: 08/01/18 10:30**

**Date Received: 10/10/18 12:10**

**Lab Sample ID: 580-80981-1**

**Matrix: Solid**

**Percent Solids: 52.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			286335	10/12/18 10:39	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		50	286695	10/17/18 14:39	CJ	TAL SEA
Total/NA	Prep	3550B			286602	10/16/18 09:44	BAH	TAL SEA
Total/NA	Analysis	8082A		1	286910	10/18/18 22:49	TL1	TAL SEA

**Client Sample ID: PDI-SC-S088-2to3.3**

**Date Collected: 08/01/18 10:35**

**Date Received: 10/10/18 12:10**

**Lab Sample ID: 580-80981-2**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	286515	10/14/18 18:09	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	286311	10/12/18 09:15	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	286405	10/12/18 16:56	BAH	TAL SEA
Total/NA	Analysis	D7928/D6913		1	286315	10/12/18 09:35	JKM	TAL SEA

**Client Sample ID: PDI-SC-S088-2to3.3**

**Date Collected: 08/01/18 10:35**

**Date Received: 10/10/18 12:10**

**Lab Sample ID: 580-80981-2**

**Matrix: Solid**

**Percent Solids: 60.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			286335	10/12/18 10:39	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		50	286695	10/17/18 15:05	CJ	TAL SEA
Total/NA	Prep	3550B			286602	10/16/18 09:44	BAH	TAL SEA
Total/NA	Analysis	8082A		1	286910	10/18/18 23:06	TL1	TAL SEA

**Laboratory References:**

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-80981-1

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

# Sample Summary

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

TestAmerica Job ID: 580-80981-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80981-1	PDI-SC-S088-0to2	Solid	08/01/18 10:30	10/10/18 12:10
580-80981-2	PDI-SC-S088-2to3.3	Solid	08/01/18 10:35	10/10/18 12:10

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11









# Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80981-1

**Login Number: 80981**

**List Number: 1**

**Creator: Antonson, Angeline D**

**List Source: TestAmerica Seattle**

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.	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	