

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

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TestAmerica Job ID: 580-79278-1

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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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: 580-79278-1

**Job ID: 580-79278-1**

**Laboratory: TestAmerica Seattle**

**Narrative**

## **CASE NARRATIVE Client: AECOM Project: Portland Harbor Pre-Remedial Design Report Number: 580-79278-1**

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**

Five samples were received on 08/01/2018; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -2.9 C.

The Grain Size containers for the following samples were received frozen: PDI-SG-B420-BL1 (580-79278-1), PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3), PDI-SG-S155 (580-79278-4) and PDI-SG-S228 (580-79278-5).

The following sample was collected in an improper container for all analysis required: PDI-SG-B420-BL1 (580-79278-1). The client was contacted and confirmed that sub sampling would be required for this sample as only 1 container was available.

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 (GC-MS)**

**Sample PDI-SG-B423-BL1 (580-79278-2) was analyzed for semivolatile organic compounds (GC-MS) in accordance with 8270D.** The samples were prepared on 08/06/2018 and analyzed on 08/07/2018.

Sample PDI-SG-B423-BL1 (580-79278-2)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

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

**Samples PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3) and PDI-SG-S228 (580-79278-5) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with SW846 8270D\_SIM.** The samples were prepared on 08/07/2018 and analyzed on 08/09/2018 and 08/16/2018.

# Case Narrative

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

TestAmerica Job ID: 580-79278-1

## Job ID: 580-79278-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

Sample PDI-SG-S114 (580-79278-3)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Several analytes were detected in method blank MB 580-281014/1-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.

Benzo[a]pyrene, Benzo[k]fluoranthene, Chrysene and Phenanthrene failed the recovery criteria low for the MS of sample PDI-SG-B423-BL1MS (580-79278-2) in batch 580-281256. Benzo[a]pyrene, Benzo[k]fluoranthene and Chrysene failed the recovery criteria low for the MSD of sample PDI-SG-B423-BL1MSD (580-79278-2) in batch 580-281256. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. In addition, Benzo[b]fluoranthene exceeded the RPD limit.

The H flags were removed from the following samples due to the samples being received frozen from the client. PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3) and PDI-SG-S228 (580-79278-5)

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

### ORGANOTINS BY GC/MS

**Sample PDI-SG-B423-BL1 (580-79278-2) was analyzed for organotins by GC/MS in accordance with the Krone Method.** The samples were prepared on 08/07/2018 and analyzed on 08/13/2018.

The opening CCV was 1% high for the surrogate Triphenyltin. since all the affected samples met acceptance criteria, the data is qualified and reported. PDI-SG-B423-BL1 (580-79278-2), (CCVIS 580-281469/3), (LCS 580-281058/2-A), (LCSD 580-281058/3-A), (MB 580-281058/1-A).

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

### DIESEL AND EXTENDED RANGE ORGANICS

**Samples PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2) were analyzed for diesel and extended range organics in accordance with Method NWTPH-Dx.** The samples were prepared on 08/07/2018 and analyzed on 08/10/2018.

The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2).

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

### METALS (ICPMS)

**Samples PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2) were analyzed for Metals (ICPMS) in accordance with 6020A\_LL.** The samples were prepared on 08/06/2018 and analyzed on 08/07/2018.

Copper was detected in method blank MB 580-280930/19-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has 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.

### TOTAL MERCURY

**Samples PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A.** The samples were prepared and analyzed on 08/09/2018.

Method(s) 7471A: The following samples were received outside of holding time: PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2). Samples were received frozen; however, Mercury still has a 28-day hold time and is not extended by freezing.

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

# Case Narrative

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

TestAmerica Job ID: 580-79278-1

## Job ID: 580-79278-1 (Continued)

### Laboratory: TestAmerica Seattle (Continued)

#### TOTAL ORGANIC CARBON

Samples PDI-SG-B420-BL1 (580-79278-1), PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3), PDI-SG-S155 (580-79278-4) and PDI-SG-S228 (580-79278-5) were analyzed for Puget Sound Estuary Program total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 08/13/2018.

Total Organic Carbon - Duplicates was detected in method blank MB 580-281505/3 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has 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.

#### GRAIN SIZE

Samples PDI-SG-B420-BL1 (580-79278-1), PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3), PDI-SG-S155 (580-79278-4) and PDI-SG-S228 (580-79278-5) were analyzed for grain size in accordance with ASTM D7928/D6913. The samples were analyzed on 08/06/2018.

Coarse Sand, Coarse Sand, Silt and Silt exceeded the RPD limit for the duplicate of sample PDI-SG-S155DU (580-79278-4). The sample may not be homogeneous.

Negative silt results. Due to the difference between the actual recovered mass >63µm (#230 sieve) vs the calculated recovery and the low silt/clay content in the sample, the value for Silt is negative. This error is inherent of this method. The significant digits recorded in this test method preclude obtaining the grain size distribution of materials that do not contain a significant amount of fines. For example, clean sands will not yield detectable amounts of silt and clay sized particles. PDI-SG-B420-BL1 (580-79278-1) and PDI-SG-B423-BL1 (580-79278-2)

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

#### PERCENT SOLIDS

Samples PDI-SG-B420-BL1 (580-79278-1), PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3), PDI-SG-S155 (580-79278-4) and PDI-SG-S228 (580-79278-5) were analyzed for percent solids in accordance with ASTM D2216. The samples were analyzed on 08/07/2018.

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

#### TOTAL SOLIDS @ 70C

Samples PDI-SG-B420-BL1 (580-79278-1), PDI-SG-B423-BL1 (580-79278-2), PDI-SG-S114 (580-79278-3), PDI-SG-S155 (580-79278-4) and PDI-SG-S228 (580-79278-5) were analyzed for Total Solids @ 70C. The samples were analyzed on 08/06/2018.

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: 580-79278-1

## Qualifiers

### GC/MS Semi VOA

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.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

### GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time

### General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### 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: 580-79278-1

**Client Sample ID: PDI-SG-B420-BL1**

**Lab Sample ID: 580-79278-1**

**Date Collected: 05/23/18 17:15**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	2400	B	2000	44	mg/Kg			08/13/18 15:32	1
Total Solids	87.5		0.1	0.1	%			08/07/18 10:12	1
Total Solids @ 70°C	85	H	0.10	0.10	%			08/06/18 15:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	3.1				%			08/06/18 15:50	1
Coarse Sand	20.2				%			08/06/18 15:50	1
Fine Sand	6.6				%			08/06/18 15:50	1
Gravel	67.1				%			08/06/18 15:50	1
Medium Sand	11.6				%			08/06/18 15:50	1
Silt	-8.7				%			08/06/18 15:50	1

# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-B420-BL1**

**Lab Sample ID: 580-79278-1**

Date Collected: 05/23/18 17:15

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 87.5

**Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		54	13	mg/Kg	☼	08/07/18 09:53	08/10/18 22:34	1
<b>Motor Oil (&gt;C24-C36)</b>	<b>45</b>	<b>J</b>	54	19	mg/Kg	☼	08/07/18 09:53	08/10/18 22:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o-Terphenyl</i>	88		50 - 150				08/07/18 09:53	08/10/18 22:34	1

**Method: 6020B - Metals (ICP/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.2		0.17	0.034	mg/Kg	☼	08/06/18 15:18	08/07/18 14:44	5
Cadmium	0.039	J	0.14	0.026	mg/Kg	☼	08/06/18 15:18	08/07/18 14:44	5
Copper	12	B	0.34	0.075	mg/Kg	☼	08/06/18 15:18	08/07/18 14:44	5
Lead	6.5		0.17	0.016	mg/Kg	☼	08/06/18 15:18	08/07/18 14:44	5
Zinc	43		1.7	0.55	mg/Kg	☼	08/06/18 15:18	08/07/18 14:44	5

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.029	H	0.022	0.0067	mg/Kg	☼	08/09/18 09:33	08/09/18 13:57	1



# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-B423-BL1**

**Lab Sample ID: 580-79278-2**

Date Collected: 06/19/18 12:47

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 85.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.58	J B	1.1	0.10	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Acenaphthene	0.51	J B	1.1	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Acenaphthylene	0.79	J B	1.1	0.11	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Anthracene	0.46	J B	1.1	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Benzo[a]anthracene	0.97	J	1.1	0.17	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Benzo[a]pyrene	0.84	J F1	1.1	0.089	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Benzo[b]fluoranthene	1.5	F2	1.1	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Benzo[g,h,i]perylene	0.94	J	1.1	0.11	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Benzo[k]fluoranthene	0.40	J F1	1.1	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Chrysene	1.3	F1	1.1	0.33	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Dibenz(a,h)anthracene	0.26	J	1.1	0.16	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Fluoranthene	2.9	B	1.1	0.31	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Fluorene	0.37	J B	1.1	0.11	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Indeno[1,2,3-cd]pyrene	0.96	J	1.1	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Naphthalene	4.9	B	1.1	0.18	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Phenanthrene	1.8	F1 B	1.1	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
Pyrene	3.2	B	1.1	0.22	ug/Kg	☼	08/07/18 11:50	08/09/18 22:09	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14	86		57 - 120				08/07/18 11:50	08/09/18 22:09	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		340	40	ug/Kg	☼	08/06/18 10:01	08/07/18 16:01	10
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Terphenyl-d14 (Surr)	91		58 - 120				08/06/18 10:01	08/07/18 16:01	10

### Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		86	22	ug/Kg	☼	08/07/18 14:47	08/13/18 20:36	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Triphenyltin	32		10 - 113				08/07/18 14:47	08/13/18 20:36	1

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	560		54	13	mg/Kg	☼	08/07/18 09:53	08/10/18 22:57	1
Motor Oil (>C24-C36)	1100		54	19	mg/Kg	☼	08/07/18 09:53	08/10/18 22:57	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
o-Terphenyl	97		50 - 150				08/07/18 09:53	08/10/18 22:57	1

### Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0		0.23	0.047	mg/Kg	☼	08/06/18 15:18	08/07/18 14:48	5
Cadmium	0.068	J	0.19	0.036	mg/Kg	☼	08/06/18 15:18	08/07/18 14:48	5
Copper	22	B	0.47	0.10	mg/Kg	☼	08/06/18 15:18	08/07/18 14:48	5
Lead	11		0.23	0.022	mg/Kg	☼	08/06/18 15:18	08/07/18 14:48	5
Zinc	73		2.3	0.75	mg/Kg	☼	08/06/18 15:18	08/07/18 14:48	5

TestAmerica Seattle

# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-B423-BL1**

**Lab Sample ID: 580-79278-2**

Date Collected: 06/19/18 12:47

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 85.7

**Method: 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.029	H	0.024	0.0072	mg/Kg	☼	08/09/18 09:33	08/09/18 13:59	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	3900	B	2000	44	mg/Kg			08/13/18 15:37	1
Total Solids	85.7		0.1	0.1	%			08/07/18 10:12	1
Total Solids @ 70°C	81	H	0.10	0.10	%			08/06/18 15:50	1

**Method: D7928/D6913 - ASTM D7928/D6913**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	3.0				%			08/06/18 15:50	1
Coarse Sand	15.3				%			08/06/18 15:50	1
Fine Sand	8.3				%			08/06/18 15:50	1
Gravel	69.0				%			08/06/18 15:50	1
Medium Sand	13.8				%			08/06/18 15:50	1
Silt	-9.5				%			08/06/18 15:50	1

# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-S114**

**Lab Sample ID: 580-79278-3**

Date Collected: 06/18/18 15:27

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 66.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	610	B	14	1.3	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Acenaphthene	1100	B	14	1.7	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Acenaphthylene	190	B	14	1.4	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Anthracene	330	B	14	1.7	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Benzo[a]anthracene	1900		14	2.2	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Benzo[a]pyrene	2500		14	1.2	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Benzo[b]fluoranthene	3000		14	1.7	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Benzo[g,h,i]perylene	1800		14	1.4	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Benzo[k]fluoranthene	1100		14	1.7	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Chrysene	2800		14	4.3	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Dibenz(a,h)anthracene	340		14	2.1	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Fluoranthene	3400	B	14	4.0	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Fluorene	400	B	14	1.4	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Indeno[1,2,3-cd]pyrene	2200		14	1.7	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Naphthalene	6200	B	14	2.3	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Phenanthrene	1800	B	14	2.0	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10
Pyrene	4300	B	14	2.8	ug/Kg	☼	08/07/18 11:50	08/16/18 20:39	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	90		57 - 120	08/07/18 11:50	08/16/18 20:39	10

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	23000	B	2000	44	mg/Kg			08/13/18 15:42	1
Total Solids	66.4		0.1	0.1	%			08/07/18 10:12	1
Total Solids @ 70°C	78	H	0.10	0.10	%			08/06/18 15:50	1

**Method: D7928/D6913 - ASTM D7928/D6913**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	5.2				%			08/06/18 15:50	1
Coarse Sand	3.3				%			08/06/18 15:50	1
Fine Sand	29.0				%			08/06/18 15:50	1
Gravel	50.2				%			08/06/18 15:50	1
Medium Sand	9.2				%			08/06/18 15:50	1
Silt	3.1				%			08/06/18 15:50	1

# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-S155**

**Lab Sample ID: 580-79278-4**

**Date Collected: 05/14/18 11:15**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	7500	B	2000	44	mg/Kg			08/13/18 15:48	1
Total Solids	67.5		0.1	0.1	%			08/07/18 10:12	1
Total Solids @ 70°C	73	H	0.10	0.10	%			08/06/18 15:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	5.9				%			08/06/18 15:50	1
Coarse Sand	0.0				%			08/06/18 15:50	1
Fine Sand	74.6				%			08/06/18 15:50	1
Gravel	0.0				%			08/06/18 15:50	1
Medium Sand	5.4				%			08/06/18 15:50	1
Silt	14.1				%			08/06/18 15:50	1

# Client Sample Results

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-S228**

**Lab Sample ID: 580-79278-5**

Date Collected: 06/18/18 09:56

Matrix: Solid

Date Received: 08/01/18 14:10

Percent Solids: 74.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.71	J B	1.3	0.12	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Acenaphthene	2.4	B	1.3	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Acenaphthylene	0.90	J B	1.3	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Anthracene	3.8	B	1.3	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Benzo[a]anthracene	6.3		1.3	0.19	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Benzo[a]pyrene	5.6		1.3	0.10	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Benzo[b]fluoranthene	9.3		1.3	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Benzo[g,h,i]perylene	5.0		1.3	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Benzo[k]fluoranthene	2.7		1.3	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Chrysene	6.3		1.3	0.38	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Dibenz(a,h)anthracene	1.1	J	1.3	0.18	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Fluoranthene	11	B	1.3	0.36	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Fluorene	0.96	J B	1.3	0.13	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Indeno[1,2,3-cd]pyrene	5.6		1.3	0.15	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Naphthalene	1.7	B	1.3	0.20	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Phenanthrene	4.9	B	1.3	0.18	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1
Pyrene	17	B	1.3	0.25	ug/Kg	☼	08/07/18 11:50	08/09/18 23:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	60		57 - 120	08/07/18 11:50	08/09/18 23:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	3600	B	2000	44	mg/Kg			08/13/18 15:53	1
Total Solids	74.4		0.1	0.1	%			08/07/18 10:12	1
Total Solids @ 70°C	79	H	0.10	0.10	%			08/06/18 15:50	1

**Method: D7928/D6913 - ASTM D7928/D6913**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	3.6				%			08/06/18 15:50	1
Coarse Sand	1.5				%			08/06/18 15:50	1
Fine Sand	46.6				%			08/06/18 15:50	1
Gravel	2.9				%			08/06/18 15:50	1
Medium Sand	40.1				%			08/06/18 15:50	1
Silt	5.4				%			08/06/18 15:50	1

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

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

**Lab Sample ID: MB 580-280883/1-A**  
**Matrix: Solid**  
**Analysis Batch: 281021**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 280883**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		30	3.6	ug/Kg		08/06/18 10:01	08/07/18 15:10	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	97		58 - 120				08/06/18 10:01	08/07/18 15:10	1

**Lab Sample ID: LCS 580-280883/2-A**  
**Matrix: Solid**  
**Analysis Batch: 281021**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 280883**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	50.0	47.0		ug/Kg		94	59 - 123
Surrogate	%Recovery	LCS Qualifier	Limits				%Rec.
Terphenyl-d14 (Surr)	97		58 - 120				

**Lab Sample ID: 580-79278-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 281021**

**Client Sample ID: PDI-SG-B423-BL1**  
**Prep Type: Total/NA**  
**Prep Batch: 280883**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	ND		56.6	68.1	J	ug/Kg	☼	120	59 - 123
Surrogate	%Recovery	MS Qualifier	Limits					%Rec.	
Terphenyl-d14 (Surr)	91		58 - 120						

**Lab Sample ID: 580-79278-2 MSD**  
**Matrix: Solid**  
**Analysis Batch: 281021**

**Client Sample ID: PDI-SG-B423-BL1**  
**Prep Type: Total/NA**  
**Prep Batch: 280883**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bis(2-ethylhexyl) phthalate	ND		57.6	69.5	J	ug/Kg	☼	121	59 - 123	2	13
Surrogate	%Recovery	MSD Qualifier	Limits					%Rec.			
Terphenyl-d14 (Surr)	86		58 - 120								

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

**Lab Sample ID: MB 580-281014/1-A**  
**Matrix: Solid**  
**Analysis Batch: 281256**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 281014**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	0.341	J	1.0	0.090	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Acenaphthene	0.218	J	1.0	0.12	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Acenaphthylene	0.330	J	1.0	0.10	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Anthracene	0.165	J	1.0	0.12	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		08/07/18 11:50	08/09/18 17:47	1

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

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

**Lab Sample ID: MB 580-281014/1-A**  
**Matrix: Solid**  
**Analysis Batch: 281256**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 281014**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Chrysene	ND		1.0	0.30	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Fluoranthene	0.394	J	1.0	0.28	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Fluorene	0.119	J	1.0	0.10	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Naphthalene	0.313	J	1.0	0.16	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Phenanthrene	0.672	J	1.0	0.14	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Pyrene	0.403	J	1.0	0.19	ug/Kg		08/07/18 11:50	08/09/18 17:47	1
Surrogate	MB	MB	Limits			D	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier							
Terphenyl-d14	110		57 - 120				08/07/18 11:50	08/09/18 17:47	1

**Lab Sample ID: LCS 580-281014/2-A**  
**Matrix: Solid**  
**Analysis Batch: 281256**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 281014**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits	
		Result	Qualifier					
2-Methylnaphthalene	200	217		ug/Kg		109	68 - 120	
Acenaphthene	200	200		ug/Kg		100	68 - 120	
Acenaphthylene	200	192		ug/Kg		96	68 - 120	
Anthracene	200	211		ug/Kg		105	73 - 125	
Benzo[a]anthracene	200	204		ug/Kg		102	66 - 120	
Benzo[a]pyrene	200	199		ug/Kg		100	72 - 124	
Benzo[b]fluoranthene	200	202		ug/Kg		101	63 - 121	
Benzo[g,h,i]perylene	200	219		ug/Kg		110	63 - 120	
Benzo[k]fluoranthene	200	217		ug/Kg		109	63 - 123	
Chrysene	200	195		ug/Kg		97	69 - 120	
Dibenz(a,h)anthracene	200	219		ug/Kg		109	70 - 125	
Fluoranthene	200	206		ug/Kg		103	74 - 125	
Fluorene	200	211		ug/Kg		105	73 - 120	
Indeno[1,2,3-cd]pyrene	200	204		ug/Kg		102	65 - 121	
Naphthalene	200	189		ug/Kg		95	70 - 120	
Phenanthrene	200	194		ug/Kg		97	73 - 120	
Pyrene	200	202		ug/Kg		101	70 - 120	
Surrogate	LCS	LCS	Limits			D	%Rec	Limits
	%Recovery	Qualifier						
Terphenyl-d14	91		57 - 120					

**Lab Sample ID: 580-79278-2 MS**  
**Matrix: Solid**  
**Analysis Batch: 281256**

**Client Sample ID: PDI-SG-B423-BL1**  
**Prep Type: Total/NA**  
**Prep Batch: 281014**

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
2-Methylnaphthalene	0.58	J B	216	190		ug/Kg	☼	88	68 - 120

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

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

**Lab Sample ID: 580-79278-2 MS**

**Matrix: Solid**

**Analysis Batch: 281256**

**Client Sample ID: PDI-SG-B423-BL1**

**Prep Type: Total/NA**

**Prep Batch: 281014**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Acenaphthene	0.51	J B	216	175		ug/Kg	☼	81	68 - 120
Acenaphthylene	0.79	J B	216	168		ug/Kg	☼	77	68 - 120
Anthracene	0.46	J B	216	167		ug/Kg	☼	77	73 - 125
Benzo[a]anthracene	0.97	J	216	151		ug/Kg	☼	69	66 - 120
Benzo[a]pyrene	0.84	J F1	216	135	F1	ug/Kg	☼	62	72 - 124
Benzo[b]fluoranthene	1.5	F2	216	138		ug/Kg	☼	63	63 - 121
Benzo[g,h,i]perylene	0.94	J	216	143		ug/Kg	☼	66	63 - 120
Benzo[k]fluoranthene	0.40	J F1	216	133	F1	ug/Kg	☼	61	63 - 123
Chrysene	1.3	F1	216	127	F1	ug/Kg	☼	58	69 - 120
Dibenz(a,h)anthracene	0.26	J	216	153		ug/Kg	☼	71	70 - 125
Fluoranthene	2.9	B	216	163		ug/Kg	☼	74	74 - 125
Fluorene	0.37	J B	216	184		ug/Kg	☼	85	73 - 120
Indeno[1,2,3-cd]pyrene	0.96	J	216	154		ug/Kg	☼	71	65 - 121
Naphthalene	4.9	B	216	162		ug/Kg	☼	73	70 - 120
Phenanthrene	1.8	F1 B	216	153	F1	ug/Kg	☼	70	73 - 120
Pyrene	3.2	B	216	165		ug/Kg	☼	75	70 - 120
		<b>MS MS</b>							
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
<i>Terphenyl-d14</i>	65		57 - 120						

**Lab Sample ID: 580-79278-2 MSD**

**Matrix: Solid**

**Analysis Batch: 281256**

**Client Sample ID: PDI-SG-B423-BL1**

**Prep Type: Total/NA**

**Prep Batch: 281014**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
2-Methylnaphthalene	0.58	J B	217	208		ug/Kg	☼	95	68 - 120	9	12
Acenaphthene	0.51	J B	217	185		ug/Kg	☼	85	68 - 120	6	12
Acenaphthylene	0.79	J B	217	178		ug/Kg	☼	82	68 - 120	6	12
Anthracene	0.46	J B	217	175		ug/Kg	☼	80	73 - 125	5	12
Benzo[a]anthracene	0.97	J	217	155		ug/Kg	☼	71	66 - 120	3	14
Benzo[a]pyrene	0.84	J F1	217	140	F1	ug/Kg	☼	64	72 - 124	3	12
Benzo[b]fluoranthene	1.5	F2	217	157	F2	ug/Kg	☼	72	63 - 121	13	10
Benzo[g,h,i]perylene	0.94	J	217	146		ug/Kg	☼	67	63 - 120	2	14
Benzo[k]fluoranthene	0.40	J F1	217	125	F1	ug/Kg	☼	58	63 - 123	6	15
Chrysene	1.3	F1	217	129	F1	ug/Kg	☼	59	69 - 120	2	10
Dibenz(a,h)anthracene	0.26	J	217	154		ug/Kg	☼	71	70 - 125	1	13
Fluoranthene	2.9	B	217	173		ug/Kg	☼	78	74 - 125	6	13
Fluorene	0.37	J B	217	195		ug/Kg	☼	90	73 - 120	5	13
Indeno[1,2,3-cd]pyrene	0.96	J	217	160		ug/Kg	☼	73	65 - 121	4	15
Naphthalene	4.9	B	217	179		ug/Kg	☼	80	70 - 120	10	12
Phenanthrene	1.8	F1 B	217	163		ug/Kg	☼	74	73 - 120	6	11
Pyrene	3.2	B	217	175		ug/Kg	☼	79	70 - 120	5	12
		<b>MSD MSD</b>									
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>								
<i>Terphenyl-d14</i>	65		57 - 120								

TestAmerica Seattle



# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

## Method: Organotins - Organotins, PSEP (GC/MS)

**Lab Sample ID: MB 580-281058/1-A**  
**Matrix: Solid**  
**Analysis Batch: 281469**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 281058**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		75	20	ug/Kg		08/07/18 14:47	08/13/18 14:01	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tripentyltin	59		10 - 113				08/07/18 14:47	08/13/18 14:01	1

**Lab Sample ID: LCS 580-281058/2-A**  
**Matrix: Solid**  
**Analysis Batch: 281469**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 281058**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Tributyltin	71.8	48.9	J	ug/Kg		68	14 - 150		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
Tripentyltin	65		10 - 113						

**Lab Sample ID: LCSD 580-281058/3-A**  
**Matrix: Solid**  
**Analysis Batch: 281469**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 281058**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Tributyltin	71.8	51.5	J	ug/Kg		72	14 - 150	5	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
Tripentyltin	67		10 - 113						

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-280988/1-A**  
**Matrix: Solid**  
**Analysis Batch: 281295**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 280988**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		08/07/18 09:53	08/10/18 17:22	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		08/07/18 09:53	08/10/18 17:22	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	92		50 - 150				08/07/18 09:53	08/10/18 17:22	1

**Lab Sample ID: LCS 580-280988/2-A**  
**Matrix: Solid**  
**Analysis Batch: 281295**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 280988**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
#2 Diesel (C10-C24)	500	469		mg/Kg		94	70 - 125		
Motor Oil (>C24-C36)	500	492		mg/Kg		98	70 - 129		

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: LCS 580-280988/2-A**  
**Matrix: Solid**  
**Analysis Batch: 281295**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 280988**

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	104		50 - 150

**Lab Sample ID: LCSD 580-280988/3-A**  
**Matrix: Solid**  
**Analysis Batch: 281295**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 280988**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	500	466		mg/Kg		93	70 - 125	1	16
Motor Oil (>C24-C36)	500	493		mg/Kg		99	70 - 129	0	16

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	102		50 - 150

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 580-280930/19-A**  
**Matrix: Solid**  
**Analysis Batch: 281097**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 280930**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.25	0.050	mg/Kg		08/06/18 15:18	08/07/18 13:49	5
Cadmium	ND		0.20	0.039	mg/Kg		08/06/18 15:18	08/07/18 13:49	5
Copper	0.124	J	0.50	0.11	mg/Kg		08/06/18 15:18	08/07/18 13:49	5
Lead	ND		0.25	0.024	mg/Kg		08/06/18 15:18	08/07/18 13:49	5
Zinc	ND		2.5	0.81	mg/Kg		08/06/18 15:18	08/07/18 13:49	5

**Lab Sample ID: LCS 580-280930/20-A**  
**Matrix: Solid**  
**Analysis Batch: 281097**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 280930**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	200		mg/Kg		100	80 - 120
Cadmium	5.00	5.10		mg/Kg		102	80 - 120
Copper	25.0	26.9		mg/Kg		107	80 - 120
Lead	50.0	49.6		mg/Kg		99	80 - 120
Zinc	200	192		mg/Kg		96	80 - 120

**Lab Sample ID: LCSD 580-280930/21-A**  
**Matrix: Solid**  
**Analysis Batch: 281097**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 280930**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	198		mg/Kg		99	80 - 120	1	20
Cadmium	5.00	5.27		mg/Kg		105	80 - 120	3	20
Copper	25.0	26.2		mg/Kg		105	80 - 120	2	20
Lead	50.0	49.3		mg/Kg		99	80 - 120	1	20
Zinc	200	193		mg/Kg		96	80 - 120	0	20

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

## Method: 7471A - Mercury (CVAA)

**Lab Sample ID: MB 580-281205/18-A**  
**Matrix: Solid**  
**Analysis Batch: 281241**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 281205**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		08/09/18 09:33	08/09/18 13:23	1

**Lab Sample ID: LCS 580-281205/19-A**  
**Matrix: Solid**  
**Analysis Batch: 281241**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 281205**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.151		mg/Kg		91	80 - 120

**Lab Sample ID: LCSD 580-281205/20-A**  
**Matrix: Solid**  
**Analysis Batch: 281241**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 281205**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	0.167	0.152		mg/Kg		91	80 - 120	0	20

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

**Lab Sample ID: MB 580-281505/3**  
**Matrix: Solid**  
**Analysis Batch: 281505**

**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	100	J	2000	44	mg/Kg			08/13/18 14:46	1

**Lab Sample ID: LCS 580-281505/4**  
**Matrix: Solid**  
**Analysis Batch: 281505**

**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	5500		mg/Kg		129	68 - 149

**Lab Sample ID: LCSD 580-281505/5**  
**Matrix: Solid**  
**Analysis Batch: 281505**

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Total Organic Carbon - Duplicates	4270	5070		mg/Kg		119	68 - 149	8	32

## Method: D 2216 - Percent Moisture

**Lab Sample ID: 580-79278-2 DU**  
**Matrix: Solid**  
**Analysis Batch: 280990**

**Client Sample ID: PDI-SG-B423-BL1**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Solids	85.7		85.4		%		0.4	20

TestAmerica Seattle

# QC Sample Results

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

TestAmerica Job ID: 580-79278-1

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

**Lab Sample ID: 580-79278-4 DU**  
**Matrix: Solid**  
**Analysis Batch: 281538**

**Client Sample ID: PDI-SG-S155**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Solids @ 70°C	73	H	78		%		7	20

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

**Lab Sample ID: 580-79278-4 DU**  
**Matrix: Solid**  
**Analysis Batch: 280933**

**Client Sample ID: PDI-SG-S155**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Clay	5.9		5.5		%		7	20
Clay	5.9		5.5		%		7	20
Coarse Sand	0.0		0.1	F3	%		200	20
Coarse Sand	0.0		0.1	F3	%		200	20
Fine Sand	74.6		70.6		%		6	20
Fine Sand	74.6		70.6		%		6	20
Gravel	0.0		0.0		%		NC	20
Gravel	0.0		0.0		%		NC	20
Medium Sand	5.4		5.1		%		6	20
Medium Sand	5.4		5.1		%		6	20
Silt	14.1		18.7	F3	%		28	20
Silt	14.1		18.7	F3	%		28	20

# Lab Chronicle

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-B420-BL1**

**Date Collected: 05/23/18 17:15**

**Date Received: 08/01/18 14:10**

**Lab Sample ID: 580-79278-1**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	281505	08/13/18 15:32	SPP	TAL SEA
Total/NA	Analysis	D 2216		1	280990	08/07/18 10:12	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	281538	08/06/18 15:50	HJM	TAL SEA
Total/NA	Analysis	D7928/D6913		1	280933	08/06/18 15:50	A1K	TAL SEA

**Client Sample ID: PDI-SG-B420-BL1**

**Date Collected: 05/23/18 17:15**

**Date Received: 08/01/18 14:10**

**Lab Sample ID: 580-79278-1**

**Matrix: Solid**

**Percent Solids: 87.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			280988	08/07/18 09:53	TTN	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	281295	08/10/18 22:34	AEK	TAL SEA
Total/NA	Prep	3050B			280930	08/06/18 15:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	281097	08/07/18 14:44	FCW	TAL SEA
Total/NA	Prep	7471A			281205	08/09/18 09:33	T1H	TAL SEA
Total/NA	Analysis	7471A		1	281241	08/09/18 13:57	FCW	TAL SEA

**Client Sample ID: PDI-SG-B423-BL1**

**Date Collected: 06/19/18 12:47**

**Date Received: 08/01/18 14:10**

**Lab Sample ID: 580-79278-2**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	281505	08/13/18 15:37	SPP	TAL SEA
Total/NA	Analysis	D 2216		1	280990	08/07/18 10:12	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	281538	08/06/18 15:50	HJM	TAL SEA
Total/NA	Analysis	D7928/D6913		1	280933	08/06/18 15:50	A1K	TAL SEA

**Client Sample ID: PDI-SG-B423-BL1**

**Date Collected: 06/19/18 12:47**

**Date Received: 08/01/18 14:10**

**Lab Sample ID: 580-79278-2**

**Matrix: Solid**

**Percent Solids: 85.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			280883	08/06/18 10:01	TTN	TAL SEA
Total/NA	Analysis	8270D		10	281021	08/07/18 16:01	ERB	TAL SEA
Total/NA	Prep	3546			281014	08/07/18 11:50	TTN	TAL SEA
Total/NA	Analysis	8270D SIM		1	281256	08/09/18 22:09	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			281058	08/07/18 14:47	TTN	TAL SEA
Total/NA	Analysis	Organotins		1	281469	08/13/18 20:36	ERZ	TAL SEA
Total/NA	Prep	3546			280988	08/07/18 09:53	TTN	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	281295	08/10/18 22:57	AEK	TAL SEA
Total/NA	Prep	3050B			280930	08/06/18 15:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	281097	08/07/18 14:48	FCW	TAL SEA

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-B423-BL1**

**Lab Sample ID: 580-79278-2**

**Date Collected: 06/19/18 12:47**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

**Percent Solids: 85.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			281205	08/09/18 09:33	T1H	TAL SEA
Total/NA	Analysis	7471A		1	281241	08/09/18 13:59	FCW	TAL SEA

**Client Sample ID: PDI-SG-S114**

**Lab Sample ID: 580-79278-3**

**Date Collected: 06/18/18 15:27**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	281505	08/13/18 15:42	SPP	TAL SEA
Total/NA	Analysis	D 2216		1	280990	08/07/18 10:12	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	281538	08/06/18 15:50	HJM	TAL SEA
Total/NA	Analysis	D7928/D6913		1	280933	08/06/18 15:50	A1K	TAL SEA

**Client Sample ID: PDI-SG-S114**

**Lab Sample ID: 580-79278-3**

**Date Collected: 06/18/18 15:27**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

**Percent Solids: 66.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			281014	08/07/18 11:50	TTN	TAL SEA
Total/NA	Analysis	8270D SIM		10	281781	08/16/18 20:39	CJ	TAL SEA

**Client Sample ID: PDI-SG-S155**

**Lab Sample ID: 580-79278-4**

**Date Collected: 05/14/18 11:15**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	281505	08/13/18 15:48	SPP	TAL SEA
Total/NA	Analysis	D 2216		1	280990	08/07/18 10:12	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	281538	08/06/18 15:50	HJM	TAL SEA
Total/NA	Analysis	D7928/D6913		1	280933	08/06/18 15:50	A1K	TAL SEA

**Client Sample ID: PDI-SG-S228**

**Lab Sample ID: 580-79278-5**

**Date Collected: 06/18/18 09:56**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	281505	08/13/18 15:53	SPP	TAL SEA
Total/NA	Analysis	D 2216		1	280990	08/07/18 10:12	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	281538	08/06/18 15:50	HJM	TAL SEA
Total/NA	Analysis	D7928/D6913		1	280933	08/06/18 15:50	A1K	TAL SEA

TestAmerica Seattle

# Lab Chronicle

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

TestAmerica Job ID: 580-79278-1

**Client Sample ID: PDI-SG-S228**

**Lab Sample ID: 580-79278-5**

**Date Collected: 06/18/18 09:56**

**Matrix: Solid**

**Date Received: 08/01/18 14:10**

**Percent Solids: 74.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			281014	08/07/18 11:50	TTN	TAL SEA
Total/NA	Analysis	8270D SIM		1	281256	08/09/18 23:53	CJ	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: 580-79278-1

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
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

TestAmerica Job ID: 580-79278-1

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79278-1	PDI-SG-B420-BL1	Solid	05/23/18 17:15	08/01/18 14:10
580-79278-2	PDI-SG-B423-BL1	Solid	06/19/18 12:47	08/01/18 14:10
580-79278-3	PDI-SG-S114	Solid	06/18/18 15:27	08/01/18 14:10
580-79278-4	PDI-SG-S155	Solid	05/14/18 11:15	08/01/18 14:10
580-79278-5	PDI-SG-S228	Solid	06/18/18 09:56	08/01/18 14:10

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

**TestAmerica-Seattle**  
 5755-8th-Street-East  
 Tacoma, WA 98424-1317  
 Ph: 253-922-2310 Fax: 253-922-5047

**SURFACE SEDIMENT  
 CHAIN OF CUSTODY**

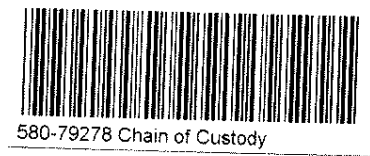
**Client Contact:** AECOM  
 1111 3rd Ave Suite 1600  
 Seattle, WA 98101  
 Phone: (206) 438-2700 Fax: 1+(866) 495-5288  
 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling  
 Portland, OR  
 Project #: 60566335 Study: Surface Sediment

**Project Contact:** Amy Dahl / Chelsey Cook  
 Tel: (206) 438-2261 / (206) 438-2010

**Site Contact:** Jennifer Ray / Michaela McCoog  
 8/1/2018  
 COC No: 2

**Analysis Turnaround Time:** 21 days  
 Calendar (C) or Work Days (W)  
 Other \_\_\_\_\_

**Laboratory Contact:** Elaine-Walker  
 Carrier: Courier  
 1 of 2 page(s)



7 Fraction		PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NVTPHL-DX, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	PAHs Total Solids BEHP, Tributyltin (TBT), DDT, DDE, DDD, DDTO-LI, Koc - V/9g
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Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	7 Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NVTPHL-DX, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	Sample Specific Notes
PDI-SG-B420-BL1	5/23/2018	1715	SS	No	MT	1	x	x	x	x	x	x	x	Frozen 5/23/18 @ 1340
PDI-SG-B423-BL1	6/19/2018	1247	SS	No	MM	11	x	x	x	x	x	x	X	Frozen 6/19/18 @ 1500

**Container Type:** WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column  
**Preservative:** HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid  
**Fraction:** D = Dissolved, PRT = Particulate, T = Total (unfiltered)  
**Sample Disposal:**  Return To Client  Disposal By Lab  Archive For 12 Months

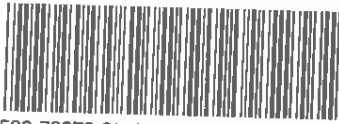
**Special Instructions/QC Requirements & Comments:**  
 Separate reports for each lab  
 B 423 jar cracked  
 -209

Relinquished by: [Signature]	Company: AECOM	Date/Time: 8/1/18 1340	Received by: [Signature]	Company: M-E-	Date/Time: 8/1/18 1340
Relinquished by: [Signature]	Company: M-E-	Date/Time: 8/1/18 1410	Received by: [Signature]	Company: TAPOR	Date/Time: 8/1/18 1410
Relinquished by: [Signature]	Company: TAPOR	Date/Time: 8/2/18 1700	Received by: B. Street	Company: SIRATA	Date/Time: 8/2/18 0930

IRS = -31.0/-31.0 W/C.S.

TestAmerica-Seattle 3755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SURFACE SEDIMENT CHAIN OF CUSTODY										8/1/2018 COC No: 2					
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray / Michaela McCoog				Laboratory Contact: Elaine-Walker				Carrier: Courier		2 of 2 page(s)	
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment		Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____															
Sample Identification		Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	PCDD/Fs 16EB	TPH Diesel Metals, Mercury NWTPH-DX 60208, 7471A	Grain Size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	Sample Specific Notes:		
PDI-SG-S114		6/10/18	1527	SS	No	MM	6		x	x	x	x	x	x	X	Frozen 6/20/18 @ 1100	
PDI-SG-S155		5/14/18	1115	SS	No	MT	5		x	x	x	x	x	x		Frozen 5/14/18 @ 1115	
PDI-SG-S228		6/10/18	0956	SS	No	MM	6	X	X	X	X	X	X	X	X	Frozen 6/10/18 @ 1125	
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)																	
Special Instructions/QC Requirements & Comments: Separate reports for each lab																	
Relinquished by: [Signature] Company: AECOM Date/Time: 8/1/18 1340 Relinquished by: [Signature] Company: M-E Date/Time: 8/1/18 1410 Relinquished by: [Signature] Company: TAPOR Date/Time: 8/3/18 0930																	
Received by: [Signature] Company: M-E Date/Time: 8/1/18 1340 Received by: [Signature] Company: TAPOR Date/Time: 8/1/18 1410 Received by: [Signature] Company: SICA TR Date/Time: 8/3/18 0930																	

IR5 = -31.0 / -31.0 w/-.S.

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		<b>SURFACE SEDIMENT CHAIN OF CUSTODY</b>												
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Elaine-Walker				8/1/2018		COC No: 2		
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment		Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____				Carrier: Courier				1 of 2 page(s)		 580-79278 Chain of Custody		
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	FCB Congeners 1608A	PCDD/Fs 1613B	TPH Dissolved Metals, Mercury NWTPEL-DL, 6090R, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive -20 C	Sample Specific Notes:
PDI-SG-B420-BL1	5/23/2018	1715	SS	No	MT	1		x	x	x	x	x	x	Frozen 5/23/18 @ 1340
PDI-SG-B423-BL1	6/19/2018	1247	SS	No	MM	11		x	x	x	x	x	X	Frozen 6/19/18 @ 1500
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: Separate reports for each lab B 423 jar cracked <span style="float: right;">-209</span>														
Relinquished by: [Signature]	Company: AECOM	Date/Time: 8/1/18 1340	Received by: [Signature]		Company: M.E.	Date/Time: 8/1/18 1340								
Relinquished by: [Signature]	Company: M.E.	Date/Time: 8/1/18 1410	Received by: [Signature]		Company: TAPOR	Date/Time: 8/1/18 1410								
Relinquished by: [Signature]	Company: TAPOR	Date/Time: 8/2/18 1700	Received by: [Signature]		Company: SIZATA	Date/Time: 8/2/18 0930								

IR5 = -31.0/-31.0 W/C.S.

Revised

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		SURFACE SEDIMENT CHAIN OF CUSTODY										8/1/2018 COC No: 2				
Client Contact		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010			Site Contact: Jennifer Ray / Michaela McCoog			Laboratory Contact: Elaine-Walker				Carrier: Courier				
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment		Analysis Turnaround Time Calendar (C) or Work Days (W) <input checked="" type="checkbox"/> 21 days <input type="checkbox"/> Other _____			PCB Congeners 168A PCDD/Fs 1613B TPH Dist - Metals - Mercury - NV17545-05 6020B-7471A Grain size ASTM D7928/D6913 Total organic carbon, Total solids 9060 Archive Archive 20 C THIS IS A SOLID, BEHP INCLUDING 1613B, 8270-SM 160.3, 1620-LI, Cu, / Arsenic										2 of 2 page(s)	
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	PCB Congeners 168A	PCDD/Fs 1613B	TPH Dist - Metals - Mercury - NV17545-05 6020B-7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060	Archive Archive 20 C	Sample Specific Notes:			
PDI-SG-S114	6/16/18	1527	SS	No	MM	6	x	x	x	x	x	x	Frozen 6/20/18 @ 1100			
PDI-SG-S155	5/14/18	1115	SS	No	MT	5	x	x	x	x	x	x	Frozen 5/14/18 @ 1115			
PDI-SG-S228	6/18/18	0936	SS	No	MM	6	x	x	x	x	x	x	Frozen 6/18/18 @ 1125			
													Cancelled Analysis Per AZELON 8/2/18 (KJ)			
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)																
Special Instructions/QC Requirements & Comments: Separate reports for each lab							Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months									
Relinquished by: [Signature] Company: AZELON Date/Time: 8/1/18 1340 Relinquished by: [Signature] Company: M-E Date/Time: 8/1/18 1410 Relinquished by: [Signature] Company: HPOK Date/Time: 8/4/18 1700 Received by: [Signature] Company: M-E Date/Time: 8/1/18 1340 Received by: [Signature] Company: HPOK Date/Time: 8/1/18 1410 Received by: [Signature] Company: SRA TA Date/Time: 8/3/18 0930																

-2.9

IR5 = -31.0 / -31.0 w/-.5.

## Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79278-1

**Login Number: 79278**

**List Number: 1**

**Creator: O'Connell, Jason I**

**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.	False	Refer to Job Narrative for details.
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	

