

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: 580-79669-1

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:
10/12/2018 12:36:53 PM

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

elaine.walker@testamericainc.com

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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
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Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79669-1

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

Three samples were received on 8/17/2018 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

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.

The following sample was submitted for analysis; however, it was not listed on the Chain-of-Custody (COC): PDI-SG-B437 (580-79669-1)

All samples were frozen to preserve the holding times. Samples were originally received and frozen at TestAmerica Sacramento on 8/22/18. Frozen samples were shipped to the Seattle laboratory on 9/10/18 and received/frozen in Seattle on 9/11/18.

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)

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were prepared on 09/15/2018 and analyzed on 09/20/2018 and 09/24/2018.

Bis(2-ethylhexyl) phthalate was detected in method blank MB 580-284043/1-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. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples were not performed.

Bis(2-ethylhexyl) phthalate was detected in method blank MB 580-284057/1-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. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples were not performed.

Bis(2-ethylhexyl) phthalate failed the recovery criteria high for the MS of sample PDI-SG-B438MS (580-79669-3) in batch 580-284800.

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Bis(2-ethylhexyl) phthalate failed the recovery criteria high for the MSD of sample PDI-SG-B438MSD (580-79669-3) in batch 580-284800. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), and PDI-SG-B438 (580-79669-3) were preserved by freezing within holding time. The samples were removed from the freezer on 9/12/2018.

The 8270D SIM reference spectra for Fluoranthene is incorrect in the raw data for samples PDI-SG-B437 (580-79669-1) and PDI-SG-B437-D (580-79669-2). However, this reference spectra is correct for sample PDI-SG-B438 (580-79669-3) and this reference spectra can be utilized for review of data for samples PDI-SG-B437 (580-79669-1) and PDI-SG-B437-D (580-79669-2).

The opening CCV for analytical batch 284395 was 3% above %D criteria for surrogate Terphenyl-d14. Since all samples and batch QC were well above 3% of the lower %R limit for this surrogate, the small bias has not caused any of the data to be artificially passing due to the instrument bias. Therefore the data is qualified and reported. The following samples are impacted: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), (CCVIS 580-284395/3), and (MB 580-284043/1-A).

The opening CCV for analytical batch 284567 was 1% above %D criteria for surrogate Terphenyl-d14. Since all samples and batch QC were well above 1% %R for this surrogate, the small bias has not caused any of the data to be artificially passing due to the instrument bias. Therefore the data is qualified and reported. (CCVIS 580-284567/3).

The following samples were diluted due to dark colored and viscous extracts, indicative of matrix interference: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), PDI-SG-B438 (580-79669-3), PDI-SG-B438 (580-79669-3[MS]) and PDI-SG-B438 (580-79669-3[MSD]). Elevated reporting limits (RL) are provided.

No additional 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-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with SW846 8270D_SIM. The samples were prepared on 09/15/2018 and analyzed on 09/19/2018.

Fluoranthene, Phenanthrene and Pyrene were detected in method blank MB 580-284059/1-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. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples were not performed.

The following samples were received frozen at the laboratory: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), and PDI-SG-B438 (580-79669-3). The samples were removed from freezer on 09/13/18.

The following samples were diluted due to the nature of the sample matrix: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), and PDI-SG-B438 (580-79669-3). Elevated reporting limits (RLs) are provided.

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

ORGANOTINS BY GC/MS

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for organotins by GC/MS in accordance with the Krone Method. The samples were prepared on 09/26/2018 and analyzed on 10/09/2018 and 10/10/2018.

The following samples were received frozen at the laboratory: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), PDI-SG-B438 (580-79669-3). The samples were removed from freezer on 09/13/18.

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-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for diesel and

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extended range organics in accordance with Method NWTPH-Dx. The samples were prepared on 09/15/2018 and analyzed on 09/18/2018 and 09/20/2018.

#2 Diesel (C10-C24) and Motor Oil (>C24-C36) exceeded the RPD limit for the MSD of sample PDI-SG-B438MSD (580-79669-3) in batch 580-284335. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

The %D of surrogate (o-Terphenyl) for CCV associated with batch 580-284139 was outside the upper control limits. All associated sample surrogate fell within acceptance criteria; therefore, the data have been reported. (CCV 580-284139/14), (CCV 580-284139/25) and (CCV 580-284139/30).

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-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), (580-79202-G-6-D) and (580-79202-G-6-E DU).

Continuing calibration verification (CCV) standard associated with batch 580-284335 recovered outside %Drift acceptance criteria for o-Terphenyl surrogate. The %Recovery is within acceptance criteria for the surrogate in the CCV and associated samples; therefore, the data are qualified and reported. The following samples are impacted: PDI-SG-B438 (580-79669-3), PDI-SG-B438 (580-79669-3[MS]), PDI-SG-B438 (580-79669-3[MSD]), (CCV 580-284335/14), (CCV 580-284335/25), (CCVRT 580-284335/3), (LCS 580-284058/2-A), (LCSD 580-284058/3-A), and (MB 580-284058/1-A).

The following samples were received frozen at the laboratory: PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2), and PDI-SG-B438 (580-79669-3). The samples were removed from the freezer in the evening on 09/14/2018.

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

METALS (ICPMS)

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared and analyzed on 09/19/2018.

Copper failed the recovery criteria high for the MS of sample PDI-SG-B438MS (580-79669-3) in batch 580-284430. Copper failed the recovery criteria high for the MSD of sample PDI-SG-B438MSD (580-79669-3) in batch 580-284430. The associated LCS/LCSD recoveries met acceptance limits.

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

TOTAL MERCURY

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A. The samples were prepared and analyzed on 09/12/2018.

Mercury failed the recovery criteria high for the MS of sample PDI-SG-B438MS (580-79669-3) in batch 580-283864. The MSD and associated LCS/LCSD recoveries met acceptance limits.

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

TOTAL ORGANIC CARBON

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 09/19/2018.

Total Organic Carbon - Duplicates was detected in method blank MB 580-284391/5 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. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples were not performed.

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were frozen were preserved by

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freezing within holding time. Samples removed from freezer 09/14/2018.

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

PERCENT SOLIDS

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for percent solids in accordance with ASTM D2216. The samples were analyzed on 09/14/2018.

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

TOTAL SOLIDS @ 70C

Samples PDI-SG-B437 (580-79669-1), PDI-SG-B437-D (580-79669-2) and PDI-SG-B438 (580-79669-3) were analyzed for Total Solids @ 70C. The samples were analyzed on 09/13/2018 and 09/21/2018.

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



Definitions/Glossary

Client: AECOM
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Qualifiers

GC/MS 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.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance 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.
F2	MS/MSD RPD exceeds control limits
F4	MS/MSD RPD exceeds control limits due to sample size difference.

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.
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
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.

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: 580-79669-1

Client Sample ID: PDI-SG-B437

Lab Sample ID: 580-79669-1

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 54.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		45	4.0	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Acenaphthene	ND		45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Acenaphthylene	ND		45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Anthracene	8.5	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Benzo[a]anthracene	24	J	45	6.8	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Benzo[a]pyrene	33	J	45	3.6	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Benzo[b]fluoranthene	46		45	5.3	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Benzo[g,h,i]perylene	37	J	45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Benzo[k]fluoranthene	16	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Chrysene	39	J	45	13	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Dibenz(a,h)anthracene	ND		45	6.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Fluoranthene	50		45	13	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Fluorene	ND		45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Indeno[1,2,3-cd]pyrene	40	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Naphthalene	20	J	45	7.2	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Phenanthrene	38	J	45	6.2	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Pyrene	57		45	8.7	ug/Kg	☼	09/15/18 08:40	09/19/18 00:41	25
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14	76		57 - 120				09/15/18 08:40	09/19/18 00:41	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	1700	B	1100	130	ug/Kg	☼	09/15/18 08:47	09/20/18 01:11	25
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	109		58 - 120				09/15/18 08:47	09/20/18 01:11	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		130	35	ug/Kg	☼	09/26/18 09:35	10/09/18 22:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Triphenyltin	11		10 - 113				09/26/18 09:35	10/09/18 22:17	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)	59	J	87	22	mg/Kg	☼	09/15/18 08:55	09/18/18 00:49	1
Motor Oil (>C24-C36)	280		87	31	mg/Kg	☼	09/15/18 08:55	09/18/18 00:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	101		50 - 150				09/15/18 08:55	09/18/18 00:49	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.1		0.39	0.077	mg/Kg	☼	09/19/18 09:20	09/19/18 22:13	5
Cadmium	0.14	J	0.31	0.059	mg/Kg	☼	09/19/18 09:20	09/19/18 22:13	5
Copper	33		0.77	0.17	mg/Kg	☼	09/19/18 09:20	09/19/18 22:13	5
Lead	10		0.39	0.037	mg/Kg	☼	09/19/18 09:20	09/19/18 22:13	5
Zinc	98		3.9	1.2	mg/Kg	☼	09/19/18 09:20	09/19/18 22:13	5

TestAmerica Seattle

Client Sample Results

Client: AECOM
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Client Sample ID: PDI-SG-B437

Lab Sample ID: 580-79669-1

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 54.3

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.075		0.046	0.014	mg/Kg	☼	09/12/18 12:34	09/12/18 15:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	22000	B	2000	44	mg/Kg			09/19/18 14:16	1
Total Solids	54.3		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	53	H	0.10	0.10	%			09/13/18 04:11	1



Client Sample Results

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B437-D

Lab Sample ID: 580-79669-2

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		45	4.1	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Acenaphthene	ND		45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Acenaphthylene	ND		45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Anthracene	6.1	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Benzo[a]anthracene	11	J	45	6.9	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Benzo[a]pyrene	14	J	45	3.6	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Benzo[b]fluoranthene	16	J	45	5.3	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Benzo[g,h,i]perylene	12	J	45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Benzo[k]fluoranthene	8.6	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Chrysene	18	J	45	14	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Dibenz(a,h)anthracene	ND		45	6.5	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Fluoranthene	35	J	45	13	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Fluorene	ND		45	4.5	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Indeno[1,2,3-cd]pyrene	14	J	45	5.4	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Naphthalene	15	J	45	7.2	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Phenanthrene	26	J	45	6.2	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25
Pyrene	32	J	45	8.7	ug/Kg	☼	09/15/18 08:40	09/19/18 01:07	25

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	76		57 - 120	09/15/18 08:40	09/19/18 01:07	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	150	J B	1100	130	ug/Kg	☼	09/15/18 08:47	09/20/18 01:35	25

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	90		58 - 120	09/15/18 08:47	09/20/18 01:35	25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		140	36	ug/Kg	☼	09/26/18 09:35	10/10/18 01:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenyltin	15		10 - 113	09/26/18 09:35	10/10/18 01:16	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)	61	J	96	24	mg/Kg	☼	09/15/18 08:55	09/18/18 01:10	1
Motor Oil (>C24-C36)	300		96	34	mg/Kg	☼	09/15/18 08:55	09/18/18 01:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	97		50 - 150	09/15/18 08:55	09/18/18 01:10	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.4		0.46	0.093	mg/Kg	☼	09/19/18 09:20	09/19/18 22:17	5
Cadmium	0.17	J	0.37	0.071	mg/Kg	☼	09/19/18 09:20	09/19/18 22:17	5
Copper	35		0.93	0.20	mg/Kg	☼	09/19/18 09:20	09/19/18 22:17	5
Lead	11		0.46	0.045	mg/Kg	☼	09/19/18 09:20	09/19/18 22:17	5
Zinc	110		4.6	1.5	mg/Kg	☼	09/19/18 09:20	09/19/18 22:17	5

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B437-D

Lab Sample ID: 580-79669-2

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.8

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.075		0.041	0.012	mg/Kg	☼	09/12/18 12:34	09/12/18 15:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	22000	B	2000	44	mg/Kg			09/19/18 14:21	1
Total Solids	51.8		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	60	H	0.10	0.10	%			09/21/18 10:42	1



Client Sample Results

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B438

Lab Sample ID: 580-79669-3

Date Collected: 08/16/18 14:34

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 56.4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	16	J	17	1.5	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Acenaphthene	6.8	J	17	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Acenaphthylene	12	J	17	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Anthracene	11	J	17	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Benzo[a]anthracene	26		17	2.5	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Benzo[a]pyrene	26		17	1.3	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Benzo[b]fluoranthene	37		17	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Benzo[g,h,i]perylene	21		17	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Benzo[k]fluoranthene	11	J	17	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Chrysene	41		17	5.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Dibenz(a,h)anthracene	6.1	J	17	2.4	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Fluoranthene	74	B	17	4.7	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Fluorene	11	J	17	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Indeno[1,2,3-cd]pyrene	22		17	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Naphthalene	39		17	2.7	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Phenanthrene	50	B	17	2.3	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Pyrene	70	B	17	3.2	ug/Kg	☼	09/15/18 16:23	09/19/18 14:31	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14	95		57 - 120				09/15/18 16:23	09/19/18 14:31	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND	F1	500	59	ug/Kg	☼	09/15/18 14:52	09/24/18 21:58	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	95		58 - 120				09/15/18 14:52	09/24/18 21:58	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		130	33	ug/Kg	☼	09/26/18 09:35	10/09/18 22:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Triphenyltin	17		10 - 113				09/26/18 09:35	10/09/18 22:43	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)	73	J F2	80	20	mg/Kg	☼	09/15/18 16:58	09/20/18 00:52	1
Motor Oil (>C24-C36)	310	F2	80	28	mg/Kg	☼	09/15/18 16:58	09/20/18 00:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	97		50 - 150				09/15/18 16:58	09/20/18 00:52	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.4		0.38	0.077	mg/Kg	☼	09/19/18 09:20	09/19/18 21:42	5
Cadmium	0.15	J	0.31	0.059	mg/Kg	☼	09/19/18 09:20	09/19/18 21:42	5
Copper	31	F1	0.77	0.17	mg/Kg	☼	09/19/18 09:20	09/19/18 21:42	5
Lead	14		0.38	0.037	mg/Kg	☼	09/19/18 09:20	09/19/18 21:42	5
Zinc	120		3.8	1.2	mg/Kg	☼	09/19/18 09:20	09/19/18 21:42	5

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B438

Lab Sample ID: 580-79669-3

Date Collected: 08/16/18 14:34

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 56.4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.10	F1	0.046	0.014	mg/Kg	☼	09/12/18 12:34	09/12/18 15:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	18000	B	2000	44	mg/Kg			09/19/18 12:39	1
Total Solids	56.4		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	57	H	0.10	0.10	%			09/13/18 04:11	1



QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: MB 580-284043/1-A
Matrix: Solid
Analysis Batch: 284395

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284043

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	3.89	J	30	3.6	ug/Kg		09/15/18 08:47	09/19/18 17:23	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	107		58 - 120				09/15/18 08:47	09/19/18 17:23	1

Lab Sample ID: LCS 580-284043/2-A
Matrix: Solid
Analysis Batch: 284567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Bis(2-ethylhexyl) phthalate	50.0	46.4		ug/Kg		93	59 - 123		
Surrogate	LCS %Recovery	LCS Qualifier	Limits				%Rec.		
Terphenyl-d14 (Surr)	113		58 - 120						

Lab Sample ID: MB 580-284057/1-A
Matrix: Solid
Analysis Batch: 284800

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	8.73	J	30	3.6	ug/Kg		09/15/18 14:52	09/24/18 18:17	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	97		58 - 120				09/15/18 14:52	09/24/18 18:17	1

Lab Sample ID: LCS 580-284057/2-A
Matrix: Solid
Analysis Batch: 284800

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Bis(2-ethylhexyl) phthalate	50.0	59.7		ug/Kg		119	59 - 123		
Surrogate	LCS %Recovery	LCS Qualifier	Limits				%Rec.		
Terphenyl-d14 (Surr)	116		58 - 120						

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 284800

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284057

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	ND	F1	81.8	132	J F1	ug/Kg	☼	161	59 - 123
Surrogate	MS %Recovery	MS Qualifier	Limits				%Rec.		
Terphenyl-d14 (Surr)	98		58 - 120						

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 284800

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284057

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bis(2-ethylhexyl) phthalate	ND	F1	68.2	132	J F1	ug/Kg	☼	194	59 - 123	1	13
Surrogate	%Recovery	MSD Qualifier	Limits								
Terphenyl-d14 (Surr)	93		58 - 120								

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

Lab Sample ID: MB 580-284042/1-A
Matrix: Solid
Analysis Batch: 284269

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		1.0	0.090	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Acenaphthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Acenaphthylene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Anthracene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Chrysene	ND		1.0	0.30	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Fluoranthene	ND		1.0	0.28	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Fluorene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Naphthalene	ND		1.0	0.16	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Phenanthrene	ND		1.0	0.14	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Pyrene	ND		1.0	0.19	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14	88		57 - 120				09/15/18 08:40	09/18/18 16:04	1

Lab Sample ID: LCS 580-284042/2-A
Matrix: Solid
Analysis Batch: 284269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-Methylnaphthalene	200	178		ug/Kg		89	68 - 120
Acenaphthene	200	178		ug/Kg		89	68 - 120
Acenaphthylene	200	187		ug/Kg		94	68 - 120
Anthracene	200	183		ug/Kg		92	73 - 125
Benzo[a]anthracene	200	189		ug/Kg		95	66 - 120
Benzo[a]pyrene	200	174		ug/Kg		87	72 - 124
Benzo[b]fluoranthene	200	192		ug/Kg		96	63 - 121
Benzo[g,h,i]perylene	200	199		ug/Kg		100	63 - 120
Benzo[k]fluoranthene	200	200		ug/Kg		100	63 - 123

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: LCS 580-284042/2-A
Matrix: Solid
Analysis Batch: 284269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chrysene	200	176		ug/Kg		88	69 - 120
Dibenz(a,h)anthracene	200	194		ug/Kg		97	70 - 125
Fluoranthene	200	185		ug/Kg		92	74 - 125
Fluorene	200	181		ug/Kg		91	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	177		ug/Kg		88	73 - 120
Pyrene	200	182		ug/Kg		91	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	82		57 - 120

Lab Sample ID: MB 580-284059/1-A
Matrix: Solid
Analysis Batch: 284623

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284059

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		1.0	0.090	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Acenaphthene	ND		1.0	0.12	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Acenaphthylene	ND		1.0	0.10	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Anthracene	ND		1.0	0.12	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Chrysene	ND		1.0	0.30	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Fluoranthene	0.373	J	1.0	0.28	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Fluorene	ND		1.0	0.10	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Naphthalene	ND		1.0	0.16	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Phenanthrene	0.734	J	1.0	0.14	ug/Kg		09/15/18 16:23	09/21/18 17:08	1
Pyrene	0.314	J	1.0	0.19	ug/Kg		09/15/18 16:23	09/21/18 17:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	91		57 - 120	09/15/18 16:23	09/21/18 17:08	1

Lab Sample ID: LCS 580-284059/2-A
Matrix: Solid
Analysis Batch: 284415

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	200	183		ug/Kg		92	68 - 120
Acenaphthene	200	191		ug/Kg		95	68 - 120
Acenaphthylene	200	203		ug/Kg		101	68 - 120
Anthracene	200	180		ug/Kg		90	73 - 125
Benzo[a]anthracene	200	183		ug/Kg		91	66 - 120

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: LCS 580-284059/2-A
Matrix: Solid
Analysis Batch: 284415

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzo[a]pyrene	200	201		ug/Kg		100	72 - 124
Benzo[b]fluoranthene	200	205		ug/Kg		103	63 - 121
Benzo[g,h,i]perylene	200	206		ug/Kg		103	63 - 120
Benzo[k]fluoranthene	200	212		ug/Kg		106	63 - 123
Chrysene	200	210		ug/Kg		105	69 - 120
Dibenz(a,h)anthracene	200	232		ug/Kg		116	70 - 125
Fluoranthene	200	200		ug/Kg		100	74 - 125
Fluorene	200	189		ug/Kg		95	73 - 120
Indeno[1,2,3-cd]pyrene	200	239		ug/Kg		120	65 - 121
Naphthalene	200	177		ug/Kg		89	70 - 120
Phenanthrene	200	189		ug/Kg		94	73 - 120
Pyrene	200	198		ug/Kg		99	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	107		57 - 120

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 284415

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284059

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2-Methylnaphthalene	16	J	304	296		ug/Kg	☼	92	68 - 120
Acenaphthene	6.8	J	304	367		ug/Kg	☼	118	68 - 120
Acenaphthylene	12	J	304	334		ug/Kg	☼	106	68 - 120
Anthracene	11	J	304	320		ug/Kg	☼	101	73 - 125
Benzo[a]anthracene	26		304	336		ug/Kg	☼	102	66 - 120
Benzo[a]pyrene	26		304	326		ug/Kg	☼	99	72 - 124
Benzo[b]fluoranthene	37		304	321		ug/Kg	☼	93	63 - 121
Benzo[g,h,i]perylene	21		304	295		ug/Kg	☼	90	63 - 120
Benzo[k]fluoranthene	11	J	304	326		ug/Kg	☼	104	63 - 123
Chrysene	41		304	352		ug/Kg	☼	102	69 - 120
Dibenz(a,h)anthracene	6.1	J	304	298		ug/Kg	☼	96	70 - 125
Fluoranthene	74	B	304	443		ug/Kg	☼	122	74 - 125
Fluorene	11	J	304	339		ug/Kg	☼	108	73 - 120
Indeno[1,2,3-cd]pyrene	22		304	355		ug/Kg	☼	110	65 - 121
Naphthalene	39		304	288		ug/Kg	☼	82	70 - 120
Phenanthrene	50	B	304	399		ug/Kg	☼	115	73 - 120
Pyrene	70	B	304	434		ug/Kg	☼	120	70 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
Terphenyl-d14	105		57 - 120

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 284415

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284059

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2-Methylnaphthalene	16	J	333	312		ug/Kg	☼	89	68 - 120	5	12

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 284415

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284059

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Acenaphthene	6.8	J	333	334		ug/Kg	☼	98	68 - 120	10	12
Acenaphthylene	12	J	333	346		ug/Kg	☼	100	68 - 120	3	12
Anthracene	11	J	333	325		ug/Kg	☼	94	73 - 125	2	12
Benzo[a]anthracene	26		333	329		ug/Kg	☼	91	66 - 120	2	14
Benzo[a]pyrene	26		333	344		ug/Kg	☼	95	72 - 124	5	12
Benzo[b]fluoranthene	37		333	334		ug/Kg	☼	89	63 - 121	4	10
Benzo[g,h,i]perylene	21		333	312		ug/Kg	☼	87	63 - 120	6	14
Benzo[k]fluoranthene	11	J	333	321		ug/Kg	☼	93	63 - 123	1	15
Chrysene	41		333	379		ug/Kg	☼	102	69 - 120	7	10
Dibenz(a,h)anthracene	6.1	J	333	322		ug/Kg	☼	95	70 - 125	8	13
Fluoranthene	74	B	333	402		ug/Kg	☼	99	74 - 125	10	13
Fluorene	11	J	333	331		ug/Kg	☼	96	73 - 120	2	13
Indeno[1,2,3-cd]pyrene	22		333	389		ug/Kg	☼	110	65 - 121	9	15
Naphthalene	39		333	302		ug/Kg	☼	79	70 - 120	5	12
Phenanthrene	50	B	333	372		ug/Kg	☼	97	73 - 120	7	11
Pyrene	70	B	333	415		ug/Kg	☼	103	70 - 120	5	12
Surrogate	MSD	MSD	Qualifier	Limits							
Terphenyl-d14	102			57 - 120							

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

Lab Sample ID: MB 580-284918/1-A
Matrix: Solid
Analysis Batch: 285981

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284918

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Tributyltin	ND		75	20	ug/Kg		09/26/18 09:35	10/09/18 16:44	1
Surrogate	MB	MB	Limits						
Tripentyltin	54		10 - 113						

Lab Sample ID: LCS 580-284918/2-A
Matrix: Solid
Analysis Batch: 285981

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284918

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Tributyltin	178	95.2		ug/Kg		53	14 - 150	
Surrogate	LCS	LCS	Limits					
Tripentyltin	52		10 - 113					

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MS

Matrix: Solid
Analysis Batch: 285981

Client Sample ID: PDI-SG-B438

Prep Type: Total/NA
Prep Batch: 284918

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Tributyltin	ND		307	42.8	J	ug/Kg	☼	14	14 - 150
Surrogate		MS %Recovery			MS Qualifier				Limits
Tripentyltin		14							10 - 113

Lab Sample ID: 580-79669-3 MSD

Matrix: Solid
Analysis Batch: 285981

Client Sample ID: PDI-SG-B438

Prep Type: Total/NA
Prep Batch: 284918

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Tributyltin	ND		303	46.3	J	ug/Kg	☼	15	14 - 150	8	20
Surrogate		MSD %Recovery			MSD Qualifier				Limits		
Tripentyltin		16							10 - 113		

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

Lab Sample ID: MB 580-284044/1-A

Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 284044

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		09/15/18 08:55	09/17/18 16:24	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		09/15/18 08:55	09/17/18 16:24	1
Surrogate		MB %Recovery					Prepared	Analyzed	Dil Fac
o-Terphenyl		94					09/15/18 08:55	09/17/18 16:24	1

Lab Sample ID: LCS 580-284044/2-A

Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Lab Control Sample

Prep Type: Total/NA
Prep Batch: 284044

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	500	555		mg/Kg		111	70 - 125
Motor Oil (>C24-C36)	500	545		mg/Kg		109	70 - 129
Surrogate		LCS %Recovery					Limits
o-Terphenyl		122					50 - 150

Lab Sample ID: LCSD 580-284044/3-A

Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA
Prep Batch: 284044

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	500	598		mg/Kg		120	70 - 125	8	16
Motor Oil (>C24-C36)	500	585		mg/Kg		117	70 - 129	7	16

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: LCSD 580-284044/3-A
Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284044

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
<i>o</i> -Terphenyl	121		50 - 150

Lab Sample ID: MB 580-284058/1-A
Matrix: Solid
Analysis Batch: 284335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284058

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		09/15/18 15:32	09/19/18 22:17	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		09/15/18 15:32	09/19/18 22:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	93		50 - 150	09/15/18 15:32	09/19/18 22:17	1

Lab Sample ID: LCS 580-284058/2-A
Matrix: Solid
Analysis Batch: 284335

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	500	499		mg/Kg		100	70 - 125
Motor Oil (>C24-C36)	500	504		mg/Kg		101	70 - 129

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	113		50 - 150

Lab Sample ID: LCSD 580-284058/3-A
Matrix: Solid
Analysis Batch: 284335

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284058

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	500	515		mg/Kg		103	70 - 125	3	16
Motor Oil (>C24-C36)	500	515		mg/Kg		103	70 - 129	2	16

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	119		50 - 150

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 284335

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284058

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	73	J F2	851	915		mg/Kg	☼	99	70 - 125
Motor Oil (>C24-C36)	310	F2	851	1230		mg/Kg	☼	108	70 - 129

Surrogate	MS %Recovery	MS Qualifier	Limits
<i>o</i> -Terphenyl	108		50 - 150

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MSD

Matrix: Solid
Analysis Batch: 284335

Client Sample ID: PDI-SG-B438

Prep Type: Total/NA
Prep Batch: 284058

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
#2 Diesel (C10-C24)	73	J F2	719	732	F4	mg/Kg	☼	92	70 - 125	22	16
Motor Oil (>C24-C36)	310	F2	719	979	F4	mg/Kg	☼	93	70 - 129	23	16
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
<i>o</i> -Terphenyl	91		50 - 150								

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-284311/10-A

Matrix: Solid
Analysis Batch: 284430

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 284311

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.25	0.050	mg/Kg		09/19/18 09:20	09/19/18 21:27	5
Cadmium	ND		0.20	0.039	mg/Kg		09/19/18 09:20	09/19/18 21:27	5
Copper	ND		0.50	0.11	mg/Kg		09/19/18 09:20	09/19/18 21:27	5
Lead	ND		0.25	0.024	mg/Kg		09/19/18 09:20	09/19/18 21:27	5
Zinc	ND		2.5	0.81	mg/Kg		09/19/18 09:20	09/19/18 21:27	5

Lab Sample ID: LCS 580-284311/11-A

Matrix: Solid
Analysis Batch: 284430

Client Sample ID: Lab Control Sample

Prep Type: Total/NA
Prep Batch: 284311

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
Arsenic	200	200		mg/Kg		100	80 - 120
Cadmium	5.00	5.04		mg/Kg		101	80 - 120
Copper	25.0	25.6		mg/Kg		102	80 - 120
Lead	50.0	49.3		mg/Kg		99	80 - 120
Zinc	200	198		mg/Kg		99	80 - 120

Lab Sample ID: LCSD 580-284311/12-A

Matrix: Solid
Analysis Batch: 284430

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA
Prep Batch: 284311

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	200	206		mg/Kg		103	80 - 120	3	20
Cadmium	5.00	5.06		mg/Kg		101	80 - 120	0	20
Copper	25.0	26.3		mg/Kg		105	80 - 120	3	20
Lead	50.0	49.6		mg/Kg		99	80 - 120	0	20
Zinc	200	204		mg/Kg		102	80 - 120	3	20

Lab Sample ID: 580-79669-3 MS

Matrix: Solid
Analysis Batch: 284430

Client Sample ID: PDI-SG-B438

Prep Type: Total/NA
Prep Batch: 284311

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Arsenic	4.4		311	326		mg/Kg	☼	103	80 - 120
Cadmium	0.15	J	7.78	8.24		mg/Kg	☼	104	80 - 120

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 284430

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284311
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Copper	31	F1	38.9	82.2	F1	mg/Kg	☼	133	80 - 120
Lead	14		77.8	97.4		mg/Kg	☼	108	80 - 120
Zinc	120		311	478		mg/Kg	☼	114	80 - 120

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 284430

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284311
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	4.4		311	331		mg/Kg	☼	105	80 - 120	2	20
Cadmium	0.15	J	7.77	8.11		mg/Kg	☼	103	80 - 120	2	20
Copper	31	F1	38.8	77.7	F1	mg/Kg	☼	121	80 - 120	6	20
Lead	14		77.7	98.0		mg/Kg	☼	109	80 - 120	1	20
Zinc	120		311	468		mg/Kg	☼	111	80 - 120	2	20

Lab Sample ID: 580-79669-3 DU
Matrix: Solid
Analysis Batch: 284430

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 284311
%Rec.

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	4.4		4.23		mg/Kg	☼	5	20
Cadmium	0.15	J	0.154	J	mg/Kg	☼	5	20
Copper	31	F1	30.1		mg/Kg	☼	2	20
Lead	14		15.2		mg/Kg	☼	11	20
Zinc	120		120		mg/Kg	☼	2	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-283789/22-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 283789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		09/12/18 12:34	09/12/18 15:01	1

Lab Sample ID: LCS 580-283789/23-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 283789
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.167	0.155		mg/Kg		93	80 - 120

Lab Sample ID: LCSD 580-283789/24-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 283789
%Rec.

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.167	0.144		mg/Kg		86	80 - 120	8	20

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

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

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 283789
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	0.10	F1	0.257	0.416	F1	mg/Kg	☼	121	80 - 120

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 283789
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.10	F1	0.257	0.382		mg/Kg	☼	108	80 - 120	8	20

Lab Sample ID: 580-79669-3 DU
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA
Prep Batch: 283789
%Rec.

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Mercury	0.10	F1	0.101		mg/Kg	☼	4	20

Method: 9060_PSEP - TOC (Puget Sound)

Lab Sample ID: MB 580-284391/5
Matrix: Solid
Analysis Batch: 284391

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	119	J	2000	44	mg/Kg			09/19/18 12:31	1

Lab Sample ID: LCS 580-284391/6
Matrix: Solid
Analysis Batch: 284391

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Organic Carbon - Duplicates	4270	4310		mg/Kg		101	68 - 149

Lab Sample ID: LCSD 580-284391/7
Matrix: Solid
Analysis Batch: 284391

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Total Organic Carbon - Duplicates	4270	3680		mg/Kg		86	68 - 149	16	32

Lab Sample ID: 580-79669-3 MS
Matrix: Solid
Analysis Batch: 284391

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Total Organic Carbon - Duplicates	18000	B	120000	107000		mg/Kg		75	68 - 149

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79669-1

Method: 9060_PSEP - TOC (Puget Sound) (Continued)

Lab Sample ID: 580-79669-3 MSD
Matrix: Solid
Analysis Batch: 284391

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	18000	B	120000	131000		mg/Kg		95	68 - 149	20	32

Lab Sample ID: 580-79669-3 DU
Matrix: Solid
Analysis Batch: 284391

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon - Duplicates	18000	B	18400		mg/Kg		3	50

Lab Sample ID: 580-79669-3 TRL
Matrix: Solid
Analysis Batch: 284391

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	TRL Result	TRL Qualifier	Unit	D	RSD	RSD Limit
Total Organic Carbon - Duplicates	18000	B	19100		mg/Kg		3	20

Method: D 2216 - Percent Moisture

Lab Sample ID: 580-79669-3 DU
Matrix: Solid
Analysis Batch: 283991

Client Sample ID: PDI-SG-B438
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Solids	56.4		56.0		%		0.7	20

Method: Moisture 70C - Percent Moisture, 70 C

Lab Sample ID: 580-79669-2 DU
Matrix: Solid
Analysis Batch: 284559

Client Sample ID: PDI-SG-B437-D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Solids @ 70°C	60	H	61		%		0.4	20

Lab Chronicle

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B437

Lab Sample ID: 580-79669-1

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 14:16	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283855	09/13/18 04:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B437

Lab Sample ID: 580-79669-1

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 54.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284043	09/15/18 08:47	DB	TAL SEA
Total/NA	Analysis	8270D		25	284395	09/20/18 01:11	ERZ	TAL SEA
Total/NA	Prep	3546			284042	09/15/18 08:40	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		25	284269	09/19/18 00:41	W1T	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/09/18 22:17	ERZ	TAL SEA
Total/NA	Prep	3546			284044	09/15/18 08:55	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284139	09/18/18 00:49	CJ	TAL SEA
Total/NA	Prep	3050B			284311	09/19/18 09:20	T1H	TAL SEA
Total/NA	Analysis	6020B		5	284430	09/19/18 22:13	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:22	FCW	TAL SEA

Client Sample ID: PDI-SG-B437-D

Lab Sample ID: 580-79669-2

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 14:21	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	284559	09/21/18 10:42	A1K	TAL SEA

Client Sample ID: PDI-SG-B437-D

Lab Sample ID: 580-79669-2

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284043	09/15/18 08:47	DB	TAL SEA
Total/NA	Analysis	8270D		25	284395	09/20/18 01:35	ERZ	TAL SEA
Total/NA	Prep	3546			284042	09/15/18 08:40	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		25	284269	09/19/18 01:07	W1T	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/10/18 01:16	ERZ	TAL SEA

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79669-1

Client Sample ID: PDI-SG-B437-D

Lab Sample ID: 580-79669-2

Date Collected: 08/16/18 12:45

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 51.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284044	09/15/18 08:55	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284139	09/18/18 01:10	CJ	TAL SEA
Total/NA	Prep	3050B			284311	09/19/18 09:20	T1H	TAL SEA
Total/NA	Analysis	6020B		5	284430	09/19/18 22:17	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:25	FCW	TAL SEA

Client Sample ID: PDI-SG-B438

Lab Sample ID: 580-79669-3

Date Collected: 08/16/18 14:34

Matrix: Solid

Date Received: 08/17/18 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 12:39	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283855	09/13/18 04:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B438

Lab Sample ID: 580-79669-3

Date Collected: 08/16/18 14:34

Matrix: Solid

Date Received: 08/17/18 15:30

Percent Solids: 56.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284057	09/15/18 14:52	DB	TAL SEA
Total/NA	Analysis	8270D		10	284800	09/24/18 21:58	ADB	TAL SEA
Total/NA	Prep	3546			284059	09/15/18 16:23	DB	TAL SEA
Total/NA	Analysis	8270D SIM		10	284415	09/19/18 14:31	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/09/18 22:43	ERZ	TAL SEA
Total/NA	Prep	3546			284058	09/15/18 16:58	DB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284335	09/20/18 00:52	JCM	TAL SEA
Total/NA	Prep	3050B			284311	09/19/18 09:20	T1H	TAL SEA
Total/NA	Analysis	6020B		5	284430	09/19/18 21:42	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:08	FCW	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: 580-79669-1

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

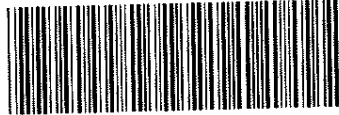
Client: AECOM

TestAmerica Job ID: 580-79669-1

Project/Site: Portland Harbor Pre-Remedial Design

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79669-1	PDI-SG-B437	Solid	08/16/18 12:45	08/17/18 15:30
580-79669-2	PDI-SG-B437-D	Solid	08/16/18 12:45	08/17/18 15:30
580-79669-3	PDI-SG-B438	Solid	08/16/18 14:34	08/17/18 15:30

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- 9
- 10
- 11

TestAmerica-Seattle		SURFACE SEDIMENT CHAIN OF CUSTODY													
5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010				Site Contact: Jennifer Ray				8/17/2018		COC No. 1			
Client Contact		Analysis Turnaround Time				Laboratory Contact: Elaine-Walker				Carrier: Courier		1 of 3 pages			
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 Sample Type: D/U		Calendar (C) or Work Days (W) <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> Other _ASAP_				PCB Congeners 168A PCBDFs 16 L3B TPH Diesel, Metak., Mercury, NVTPE-Dx, 020B, 747A Grain size ASTM D7928/D6913 Total organic carbon, Total solids 9060 (104C & 70C) Archive Archive -20 C PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Lager				 580-79669 Chain of Custody					
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	PCBDFs 16 L3B	TPH Diesel, Metak., Mercury, NVTPE-Dx, 020B, 747A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Lager	Sample Specific Notes:
PDI-SG-B437	8/16/2018	12:45	SS		MM	8		H	H	H	x	H	H	H	
PDI-SG-B437-D	8/16/2018	12:45	SS		MM	6		H	H	H	x	H	H	H	
PDI-SG-B438	8/16/2018	14:34	SS	MS/MSD	MM	9		H	H	H	x	H	H	H	
Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)															
							Sample Disposal <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> Archive For 12 Months								
Special Instructions/QC Requirements & Comments: Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction. Separate reports for each lab.															
Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 1500 8/17/18	Received by: <i>[Signature]</i>				Company: M.E.	Date/Time: 8/17/18 1500							
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 8/17/18 1530	Received by: <i>[Signature]</i>				Company: WFOR	Date/Time: 8/17/18 1530							
Relinquished by: <i>[Signature]</i>	Company: WFOR	Date/Time: 8/17/18 1800	Received by: B. Law				Company: S2 A TA	Date/Time: 8/18/18 0950							

IRB = 1.6/1.6 w/c-s -

Revised
8/20/18

**SURFACE SEDIMENT
CHAIN OF CUSTODY**

Test America - Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-972-5047		Client Contact 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 Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> Other ASAP		Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Carrier: Courier 8/17/2018 COC No: 1 of 3 pages							
Project #: 60566335 Study: Surface Sediment Sample Type: D/U		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Analysis Turnaround Time Calendar (C) or Work Days (W) <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> Other ASAP		Site Contact: Jennifer Ray Laboratory Contact: Elaine-Walker Carrier: Courier 8/17/2018 COC No: 1 of 3 pages									
Sample Identification PDI-SG-B437 PDI-SG-B437-D PDI-SG-B438		Sample Date 8/16/2018 8/16/2018 8/16/2018		Sample Time 12:45 12:45 14:34		Matrix SS SS SS		QC Sample 		Sampler's Initials MM MM MM		Total No. of Cont. 8 6 9	
Fraction PCB Congeners 168A PCDFs 1618 TPH Diesel, Metals, Mercury NWTPH-DX 6020B, 7471A Grain size ASTM D7928/D6913 Total organic carbon, Total solids 9060 (104C & 70C) Archive Archive -20 C PAHs, BEHP, Tributyltin, 8270-SIM, 8270- TL, Kron/Lunger		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Dispose By Lab <input checked="" type="checkbox"/> Archive For 12 Months		Sample Specific Notes: 580-79669 Chain of Custody Cancelled Per Action 8/17/18 (JFR)									
Container Type: WMC=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=green, RC=Resin Column Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid Fraction: D = Dissolved, PR1 = Particulates, T = Total (unfiltered)		Special Instructions/QC Requirements & Comments: Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction. Separate reports for each lab.		Relinquished by: [Signature] Company: AECOM Date/Time: 8/17/18 1500 Relinquished by: [Signature] Company: M.E. Date/Time: 8/17/18 1530 Relinquished by: [Signature] Company: MDOK Date/Time: 8/17/18 1800									
Relinquished by: [Signature] Company: M.E. Date/Time: 8/17/18 1500 Relinquished by: [Signature] Company: MDOK Date/Time: 8/17/18 1530 Relinquished by: [Signature] Company: M.E. Date/Time: 8/18-18 0850		Received by: [Signature] Company: M.E. Date/Time: 8/17/18 1500 Received by: [Signature] Company: MDOK Date/Time: 8/17/18 1530 Received by: [Signature] Company: M.E. Date/Time: 8/18-18 0850		Sample Disposal: <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Dispose By Lab <input checked="" type="checkbox"/> Archive For 12 Months									

IRS = 1.6/1.6 w/c.s.

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79669-1

Login Number: 79669

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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

