

# Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site Subsurface Sediment – Deep Core Stations	
Laboratory:	TestAmerica Laboratories, Incorporated, Tacoma, WA	
Laboratory Group:	580-79626-1	
Analyses/Method:	Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Total Organic Carbon (TOC), Total Solids, and Grain Size	
Validation Level:	Stage 2A/Stage 4 on EPA split sample (PDI-SC-S151-6to8)	
AECOM Project Number:	60566335, Task #2.12	
Prepared by:	Debbie Casagrande/AECOM	Completed on: December 28, 2018
Reviewed by:	Stacy Louie/AECOM	File Name: 580-79626-1 DVR

## SUMMARY

The data quality review of 47 (including two field duplicates) subsurface sediment samples and three rinsate blanks (RBs), collected on August 14 and 15, 2018 has been completed. Field samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) by U.S. Environmental Protection Agency (EPA) Method 8270D modified by selected ion monitoring (SIM), PCBs by EPA Method 8082A, total organic (TOC) by EPA Method 9060, total solids by American Society for Testing and Materials (ASTM) Method D-2216, moisture content at 70 degrees centigrade (°C), and grain size by ASTM Method D7928/D6913 (not analyzed for field duplicates [FDs]) by TestAmerica Laboratories, Incorporated (TA) located in Tacoma, Washington. Equipment blanks were analyzed for PAHs by EPA Method 8270D modified by SIM, Polychlorinated Biphenyls (PCBs) by EPA Method 8082A, and TOC by Standard Method 5310B. The analyses were performed in general accordance with the methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)* and *Annual Book of ASTM Standards*, American Society for Testing & Materials (ASTM), Philadelphia, Pennsylvania. The laboratory provided level 2 and level 4 data packages containing sample results, and associated quality assurance (QA) and quality control (QC) data, preparation logs, and raw instrument outputs (where applicable). The following samples are associated with laboratory group 580-79626-1:

Sample ID	Laboratory ID
PDI-SC-S151-2to4	580-79626-1
PDI-SC-S151-0to2	580-79626-2
PDI-SC-S151-4to6	580-79626-3
PDI-SC-S151-6to8 (EPA split sample)	580-79626-4
PDI-SC-S151-8to10	580-79626-5
PDI-SC-S151-10to12	580-79626-6
PDI-SC-S150-0to2	580-79626-8
PDI-SC-S150-2to4	580-79626-9
PDI-SC-S150-4to6	580-79626-10
PDI-SC-S150-4to6D (FD of PDI-SC-S150-4to6D)	580-79626-11
PDI-SC-S150-6to7.7	580-79626-12
PDI-SC-S150-7.7to9.7	580-79626-13

Sample ID	Laboratory ID
PDI-SC-S092-0to2	580-79626-28
PDI-SC-S092-2to4	580-79626-29
PDI-SC-S092-4to6	580-79626-30
PDI-SC-S092-4to6D (FD of PDI-SC-S092-4to6)	580-79626-31
PDI-SC-S092-6to8	580-79626-32
PDI-SC-S092-8to9.9	580-79626-33
PDI-SC-S092-9.9to10.9	580-79626-34
PDI-SC-S065-0to2	580-79626-35
PDI-SC-S065-2to4	580-79626-36
PDI-SC-S065-4to6	580-79626-37
PDI-SC-S065-6to8	580-79626-38
PDI-SC-S065-8to10	580-79626-39
PDI-SC-S065-12to14.3	580-79626-40

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

Sample ID	Laboratory ID
PDI-SC-S150-9.7to11.1	580-79626-14
PDI-SC-S150-11.1to12.5	580-79626-15
PDI-SC-S146-0to2	580-79626-16
PDI-SC-S146-2to4	580-79626-17
PDI-SC-S146-4to5	580-79626-18
PDI-SC-S146-5to7	580-79626-19
PDI-SC-S146-7to8	580-79626-20
PDI-SC-S146-8to9.1	580-79626-21
PDI-SC-S136-0to2	580-79626-22
PDI-SC-S136-2to4	580-79626-23
PDI-SC-S136-4to6	580-79626-24
PDI-SC-S136-6to7	580-79626-25
PDI-SC-S136-7to9	580-79626-26
PDI-SC-S136-9to11.3	580-79626-27

Sample ID	Laboratory ID
PDI-SC-S070-0to1.1	580-79626-41
PDI-SC-S070-1.1to2.4	580-79626-42
PDI-SC-S070-2.4to4.4	580-79626-43
PDI-SC-S070-4.4to6.4	580-79626-44
PDI-SC-S070-6.4to8.4	580-79626-45
PDI-SC-S070-8.4to10.4	580-79626-46
PDI-SC-S065-10to12	580-79626-47
PDI-SC-S070-10.4to12.6	580-79626-48
PDI-RB-SS-180814-1040 (Rinsate Blank)	580-79626-49
PDI-RB-SS-180815-0730 (Rinsate Blank)	580-79626-50
PDI-RB-SS-180815-1340 (Rinsate Blank)	580-79626-51

Data validation is based on method performance criteria and QC criteria documented in the *Quality Assurance Project Plan (QAPP)*, dated March 23, 2018, as amended. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017, and *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, January 2017. Data qualifiers assigned to results reported in this sample set are included in Table 1.

**SAMPLE RECEIPT**

Upon receipt by TA, the sample jar information was compared to the associated chain-of-custody (COC) and the cooler temperatures were recorded. The coolers were received at temperatures within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C.

As noted in the laboratory narrative, 36 samples were placed in the freezer at -10 degrees Celsius to extend the holding time on August 28, 2018.

**ORGANIC ANALYSES**

Samples were analyzed for PAHs and PCBs by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

PAHs by Method 8270D-SIM – Samples 580-79626-13 through 580-79626-48 were frozen on 8/28/2018 by Test America within holding times. These samples were prepared on 9/10/2018 or 9/27/2018 after being allowed to thaw.

2. Initial and Continuing Calibration Verifications – Acceptable except as noted below:

PCBs by Method 8082A – The percent difference (%D) for the following analytes were recovered outside the control limits of ±20% for individual peaks in the continuing calibration verifications (CCVs) associated with the analytical batches below.



**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

Analytical Batch	Analyte	Column 1%D	Column 2%D
282690	PCB-1232	ok	low
	PCB-1242	ok	low
283930	PCB-1016	low	low
	PCB-1221	low	low
	PCB-1232	low	low
	PCB-1242	low	low
	PCB-1248	ok	low
	PCB-1254	ok	low
	PCB-1260	ok	low
284001	PCB-1016	low	low
	PCB-1221	ok	low
	PCB-1232	low	low
	PCB-1242	low	low
	PCB-1248	low	low
	PCB-1260	ok	low
284244	PCB-1016	low/high	low
	PCB-1221	low/high	ok
	PCB-1232	low	low
	PCB-1242	high	ok
	PCB-1248	low	ok
	PCB-1260	high	ok
284258	PCB-1016	low/high	low
	PCB-1221	low	low
	PCB-1232	low	low
	PCB-1242	low	ok
	PCB-1248	low	ok
	PCB-1260	high	ok
285252	PCB-1016	low	low
	PCB-1221	low	ok
	PCB-1232	low	low
	PCB-1242	low	ok
	PCB-1248	low	ok
	PCB-1260	low	ok
285262	PCB-1016	low	ok
	PCB01232	low	ok
	PCB-1242	low	ok
	PCB-1248	low	low
	PCB-1254	low	ok
	PCB-1260	low	ok

The laboratory narrative only noted if the average %D for initial calibration check samples (ICVs) and CCVs did not meet the  $\pm 20\%$  criteria. As part of this review, all CCV results were reviewed and the individual peaks were assessed using the  $\pm 20\%$  criteria. As a result of that extended review, the following PCBs were qualified as estimated “J” or flagged ‘UJ’ based on the CCV % D. See table below for qualified PCBs and Table 1 for qualified results.



**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

Sample ID	Qualified PCBs
PDI-SC-S151-2to4	PCB-1016, PCB-1221, PCB-1232, and PCB-1242 qualified for all samples.
PDI-SC-S151-0to2	
PDI-SC-S151-4to6	
PDI-SC-S151-6to8	PCB-1016, PCB-1221, PCB-1232, and PCB-1248 qualified for all samples
PDI-SC-S151-8to10	
PDI-SC-S151-10to12	
PDI-SC-S150-0to2	
PDI-SC-S150-2to4	
PDI-SC-S150-4to6	
PDI-SC-S150-4to6D	
PDI-SC-S150-6to7.7	
PDI-SC-S146-0to2	
PDI-SC-S146-2to4	
PDI-SC-S146-4to5	
PDI-SC-S146-5to7	
PDI-SC-S146-7to8	
PDI-SC-S146-8to9.1	
PDI-SC-S150-7.7to9.7	PCB-1016, PCB-1232, PCB-1242, and PCB-1248 qualified for all samples.
PDI-SC-S150-9.7to11.1	
PDI-SC-S150-11.1to12.5	
PDI-SC-S136-0to2	PCB-1016, PCB-1221, and PCB-1232 qualified for all samples.
PDI-SC-S136-2to4	
PDI-SC-S136-4to6	
PDI-SC-S136-6to7	
PDI-SC-S136-7to9	
PDI-SC-S136-9to11.3	
PDI-SC-S092-0to2	
PDI-SC-S092-2to4	
PDI-SC-S092-4to6	PCB-1016 and PCB-1232 qualified for all samples.
PDI-SC-S092-4to6D	
PDI-SC-S092-6to8	
PDI-SC-S092-8to9.9	
PDI-SC-S092-9.9to10.9	
PDI-SC-S065-0to2	
PDI-SC-S065-2to4	
PDI-SC-S065-4to6	
PDI-SC-S065-6to8	
PDI-SC-S065-8to10	
PDI-SC-S065-12to14.3	
PDI-SC-S070-0to1.1	
PDI-SC-S070-1.1to2.4	
PDI-SC-S070-2.4to4.4	
PDI-SC-S070-4.4to6.4	
PDI-SC-S070-6.4to8.4	
PDI-SC-S070-8.4to10.4	
PDI-SC-S065-10to12	
PDI-SC-S070-10.4to12.6	PCB-1248

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

3. Blanks – Acceptable except as noted below:

General – Three rinsate blanks were submitted with this laboratory group. PCBs were not detected in these rinsate blanks. Naphthalene (0.030 micrograms per liter) was detected in PDI-RB-SS-180814-1040 at a concentration below the reporting limit but above the method detection limit (MDL). Data were not qualified based on rinsate blank results.

PAHs by Method 8270D-SIM – The following analytes were detected in the method blanks at concentrations between the MDLs and the reporting limits:

Extraction Date	Analyte	Result
9/10/2018	2-Methylnaphthalene	0.150 µg/kg
	Naphthalene	0.230 µg/kg
	Phenanthrene	0.151 µg/kg
9/27/2018	Fluoranthene	0.391 µg/kg

µg/kg = micrograms per kilogram

2-Methylnaphthalene, naphthalene, phenanthrene, and fluoranthene were detected in the associated samples at concentrations greater than the reporting limits (RLs) and greater than two times the method blank detections; therefore, data were not qualified based on these method blank results, except for one detection of 2-Methylnaphthalene in sample PDI-SC-S151-0TO2. This sample result was flagged by the laboratory as “JB” (detected in associated blank and reported at a concentration less than the RL but greater than the MDL) and qualified as estimated ‘J’ for potential high bias due to method blank contamination.

4. Surrogates – Acceptable except as noted below:

PCBs by EPA Method 8082A – The percent recoveries for decachlorobiphenyl and tetrachloro-m-xylene in the following samples were outside of the control limits of 54–142% and 58–122%, respectively:

Sample	Surrogate	% Recovery
PDI-SC-S151-2to4	Decachlorobiphenyl	167%
PDI-SC-S151-4to6	Decachlorobiphenyl	433%
	Tetrachloro-m-xylene	156%
PDI-SC-S151-4to6 MS	Decachlorobiphenyl	503%
PDI-SC-S151-4to6 MSD	Decachlorobiphenyl	176%
PDI-SC-S151-6to8	Decachlorobiphenyl	3,050%
	Tetrachloro-m-xylene	1,340%
PDI-SC-S151-8to10	Decachlorobiphenyl	2,431%
	Tetrachloro-m-xylene	435%
PDI-SC-S151-10to12	Decachlorobiphenyl	251%
	Tetrachloro-m-xylene	57%
PDI-SC-S150-0to2	Decachlorobiphenyl	300%
	Tetrachloro-m-xylene	306%
PDI-SC-S150-2to4	Decachlorobiphenyl	400%
	Tetrachloro-m-xylene	260%

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

Sample	Surrogate	% Recovery
PDI-SC-S150-4to6	Decachlorobiphenyl	638%
	Tetrachloro-m-xylene	446%
PDI-SC-S150-4to6D	Decachlorobiphenyl	1,390%
	Tetrachloro-m-xylene	708%
PDI-SC-S150-6to7.7	Decachlorobiphenyl	1,144%
	Tetrachloro-m-xylene	733%
PDI-SC-S150-7.7to9.7	Decachlorobiphenyl	160%
PDI-SC-S146-0to2	Decachlorobiphenyl	361%
	Tetrachloro-m-xylene	188%
PDI-SC-S146-2to4	Decachlorobiphenyl	781%
	Tetrachloro-m-xylene	306%
PDI-SC-S146-4to5	Decachlorobiphenyl	646%
	Tetrachloro-m-xylene	193%
PDI-SC-S136-0to2	Tetrachloro-m-xylene	133%
PDI-SC-S136-9to11.3	Tetrachloro-m-xylene	131%
PDI-SC-S092-2to4	Decachlorobiphenyl	187%
PDI-SC-S092-8to9.9 MS	Tetrachloro-m-xylene	57%
PDI-SC-S092-8to9.9 MSD	Tetrachloro-m-xylene	54%
PDI-SC-S092-9.9to10.9	Decachlorobiphenyl	50%
	Tetrachloro-m-xylene	55%
PDI-SC-S065-0to2	Decachlorobiphenyl	49%
	Tetrachloro-m-xylene	54%
PDI-SC-S065-4to6	Decachlorobiphenyl	0%
PDI-SC-S065-6to8	Decachlorobiphenyl	0%
PDI-SC-S065-8to10	Tetrachloro-m-xylene	55%
PDI-SC-S065-12to14.3	Tetrachloro-m-xylene	54%
PDI-SC-S070-0to1.1	Tetrachloro-m-xylene	55%
PDI-SC-S070-1.1to2.4	Tetrachloro-m-xylene	55%
PDI-SC-S070-2.4to4.4	Tetrachloro-m-xylene	56%
PDI-SC-S070-6.4to8.4	Tetrachloro-m-xylene	56%
PDI-RB-SS-180814-1040	Decachlorobiphenyl	36%

Data were not qualified based on surrogate recoveries in QC samples. If one of the surrogate recoveries was acceptable the data were not qualified, except when a surrogate recovery was 0%. Also, data were not qualified if surrogate recoveries were high, sample dilution factors were  $\geq 50$ , or if the sample analytes were not detected. Qualified results are listed below:

- PDI-SC-S151-4to6 and PDI-SC-S146-4to5; PCB 1248 detections qualified as estimated and flagged (J) based on surrogate spike recoveries.
- PDI-SC-S092-9.9to10.9, PDI-SC-S065-0to2, PDI-SC-S065-4to6, and PDI-SC-S065-6to8; The PCB results were qualified as estimated 'J' or 'UJ' based on the surrogate spike recoveries.

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

PAHs by Method 8270D-SIM – The percent recoveries for terphenyl-d14 in the following sample was outside of the control limits of 57-120%:

Sample	Surrogate	% Recovery
PDI-SC-S150-2to4	Terphenyl-d14	124%

- PDI-SC-S150-2to4; All PAH results are detected and are qualified as estimated and flagged 'J' base on the surrogate spike recovery.
5. Laboratory Control Sample – Acceptable
  6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

PAHs by Method 8270D-SIM – MS/MSDs were performed using PDI-SC-S151-4to6, PDI-SC-S136-4to6, and PDI-SC-S065-0to2. The percent recoveries and RPDs for the following analytes were outside of the control limits;

<b>PDI-SC-S151-4to6</b>				
Analyte	MS	MSD	RPD	Control Limits (Matrix Spike / RPD)
Benzo[b]fluoranthene	ok	ok	18%	63-121% / 10%
Fluoranthene	ok	63%	ok	74-125% / 13%
Naphthalene	ok	68%	ok	70-120% / 12%
Pyrene	ok	67%	ok	70-120% / 12%

MS = matrix spike  
MSD = Matrix Spike Duplicate  
ok = acceptable  
RPD = relative percent difference

As two of the three quality control parameters (MS, MSD, and RPD) were acceptable for benzo[b]fluoranthene, fluoranthene, naphthalene and pyrene these data were not qualified.

<b>PDI-SC-S136-4to6</b>				
Analyte	MS	MSD	RPD	Control Limits (Matrix Spike / RPD)
2-Methylnaphthalene	ok	ok	16%	68-120% / 12%
Benzo[a]anthracene	85	137%	24%	66-120% / 14%
Benzo[a]pyrene	71%	176%	51%	72-124% / 12%
Benzo[b]fluoranthene	ok	158%	40%	63-121% / 10%
Benzo[g,h,i]perylene	ok	239%	72%	63-120% / 14%
Benzo[k]fluoranthene	ok	ok	19%	63-123% / 15%
Chrysene	ok	130%	21%	69-120% / 10%
Fluoranthene	ok	190%	23%	74-125% / 13%
Indeno[1,2,3-cd]pyrene	ok	181%	50%	65-121% / 15%
Naphthalene	ok	66%	35%	70-120% / 12%
Phenanthrene	144%	166%	ok	73-120% / 11%
Pyrene	ok	287%	32%	70-120% / 12%

MS = matrix spike  
MSD = Matrix Spike Duplicate  
ok = acceptable  
RPD = relative percent difference



**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

As two of the three quality control parameters (MS, MSD, and RPD) were acceptable for 2-Methylnaphthalene and benzo[k]fluoranthene, these data were not qualified. The results for benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene were qualified as estimated and flagged 'J' in PDI-SC-S136-4to6 based on the MS/MSD results.

<b>PDI-SC-S065-0to2</b>				
<b>Analyte</b>	<b>MS</b>	<b>MSD</b>	<b>RPD</b>	<b>Control Limits (Matrix Spike / RPD)</b>
Benzo[b]fluoranthene	61%	ok	11%	63-121% / 10%
Benzo[g,h,i]perylene	62%	ok	ok	63-120% / 14%
Benzo[k]fluoranthene	ok	61%	21%	63-123% / 15%
Fluoranthene	56%	66%	ok	74-125% / 13%
Naphthalene	36%	41%	ok	70-120% / 12%
Phenanthrene	58%	65%	ok	73-120% / 11%
Pyrene	55%	68%	ok	70-120% / 12%

MS = matrix spike  
MSD = Matrix Spike Duplicate  
ok = acceptable  
RPD = relative percent difference

As two of the three quality control parameters (MS, MSD, and RPD) were acceptable for benzo[g,h,i]perylene this data was not qualified. The results for benzo[b]fluoranthene, benzo[k]fluoranthene, fluoranthene, naphthalene, phenanthrene, and pyrene were qualified as estimated and flagged "J" in PDI-SC-S065-0to2 based on the MS/MSD results.

PCBs by EPA Method 8082A – MS/MSDs were performed using PDI-SC-S151-4to6, PDI-SC-S136-4to6, and PDI-SC-S065-0to2. The percent recoveries for the following analytes were outside of the control limits:

<b>PDI-SC-S151-4to6</b>				
<b>Analyte</b>	<b>MS</b>	<b>MSD</b>	<b>RPD</b>	<b>Control Limits (Matrix Spike / RPD)</b>
PCB-1016	697%	689%	ok	64–120% / 21%
PCB-1260	1,296%	602%	72%	63–130% / 25%

MS = matrix spike  
MSD = Matrix Spike Duplicate  
ok = acceptable  
RPD = relative percent difference

No data were qualified due to the high MS/MSD and RPD recoveries for sample PDI-SC-S151-4to6 because no PBCs were detected.

<b>PDI-SC-S136-4to6</b>				
<b>Analyte</b>	<b>MS</b>	<b>MSD</b>	<b>RPD</b>	<b>Control Limits (Matrix Spike / RPD)</b>
PCB-1260	150%	143%	ok	63–130% / 25%

MS = matrix spike  
MSD = Matrix Spike Duplicate  
ok = acceptable  
RPD = relative percent difference



**Data Validation Report  
 Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling  
 Subsurface Sediment – Deep Core Stations  
 TA Lab Group: 580-79626-1**

No data were qualified due to the high MS/MSD recoveries for sample PDI-SC-S136-4to6 because no PBCs were detected.

<b>PDI-SC-S065-0to2</b>				
<b>Analyte</b>	<b>MS</b>	<b>MSD</b>	<b>RPD</b>	<b>Control Limits (Matrix Spike / RPD)</b>
PCB-1016	55%	49%	ok	64–120% / 21%
PCB-1260	49%	43%	ok	63–130% / 25%

MS = matrix spike  
 MSD = Matrix Spike Duplicate  
 ok = acceptable  
 RPD = relative percent difference

The results for PCB-1016 and PCB-1260 were qualified as estimated and flagged 'UJ' in PDI-SC-S065-0to2 based on the MS/MSD results.

7. Field Duplicate – Acceptable

General – Field duplicates were submitted for PDI-SC-S150-4to6 and PDI-SC-S092-4to6 and identified as PDI-SC-S150-4to6D and PDI-SC-S092-4to6D, respectively. Results were comparable.

8. Reporting Limits and Chromatographic Review – Acceptable except as noted below:

General – One or more results were flagged 'J' by the laboratory to indicate the reported concentrations were above the MDLs but below the reporting limits. Laboratory 'J'-flagged results are considered estimated. As the result is between the MDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

PCBs by EPA Method 8082A – Chromatograms were reviewed to confirm target analytes were properly identified. The review confirmed target analytes were properly identified and reported by the laboratory.

PCBs by EPA Method 8082A – The following samples were diluted due to the nature of the sample matrix: PDI-SC-S151-6to8 (580-79626-4), PDI-SC-S151-8to10 (580-79626-5), PDI-SC-S151-10to12 (580-79626-6), PDI-SC-S150-0to2 (580-79626-8), PDI-SC-S150-2to4 (580-79626-9), PDI-SC-S150-4to6 (580-79626-10), PDI-SC-S150-4to6D (580-79626-11), PDI-SC-S150-6to7.7 (580-79626-12), PDI-SC-S146-0to2 (580-79626-16), PDI-SC-S146-2to4 (580-79626-17), PDI-SC-S146-4to5 (580-79626-18), PDI-SC-S146-5to7 (580-79626-19), PDI-SC-S146-7to8 (580-79626-20) and PDI-SC-S146-8to9.1 (580-79626-21). Elevated reporting limits (RLs) are provided.

PAHs by Method 8270D-SIM – All samples required dilution prior to analysis due to the nature of the sample matrix, except PDI-SC-S150-11.1to12.5. There were no PAHs reported as not detected.

9. Calculation Checks – Acceptable

A calculation check was performed for PDI-SC-S151-6to8. The review confirmed the final results were correct as reported.

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

10. Other Items of Note:

PCBs by EPA Method 8082A – The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: PDI-SC-S150-7.7to9.7(580-79626-13), PDI-SC-S150-9.7to11.1 (580-79626-14), PDI-SC-S150-11.1to12.5 (580-79626-15), PDI-SC-S092-6to8 (580-79626-32), PDI-SC-S092-8to9.9 (580-79626-33), PDI-SC-S092-9.9to10.9 (580-79626-34), PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4 (580-79626-36), PDI-SC-S065-4to6 (580-79626-37), PDI-SC-S065-6to8 (580-79626-38), PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S065-12to14.3 (580-79626-40), PDI-SC-S070-0to1.1 (580-79626-41), PDI-SC-S070-1.1to2.4 (580-79626-42), PDI-SC-S070-2.4to4.4 (580-79626-43), PDI-SC-S070-4.4to6.4 (580-79626-44), PDI-SC-S070-6.4to8.4 (580-79626-45), PDI-SC-S070-8.4to10.4 (580-79626-46), PDI-SC-S065-10to12 (580-79626-47), (LCS 580-285032/2-A), (MB 580-285032/1-A), (580-79626-B-33-B MS) and (580-79626-B-33-C MSD).

The laboratory narrative noted that PDI-SC-S136-0to2 (580-79626-22), PDI-SC-S136-6to7 (580-79626-25), PDI-SC-S092-2to4 (580-79626-29), PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4(580-79626-36), PDI-SC-S065-6to8 (580-79626-38), PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S070-4.4to6.4 (580-79626-44) and PDI-SC-S065-10to12 (580-79626-47) appeared to contain PCBs; however, due to weathering or other environmental processes, the PCBs in these samples do not closely match any of the laboratory's Aroclor standards used for instrument calibration. The detected sample results have been quantified and reported with the predominant Aroclor or mixture of Aroclors. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with these results. The Aroclor results for these samples were qualified as estimated and flagged 'J' base on identification issues.

The laboratory narrative noted that PCB-1254 is found to be the primary Aroclor in PDI-SC-S065-0to2 (580-79626-35), PDI-SC-S065-2to4 (580-79626-36) and PDI-SC-S065-6to8 (580-79626-38); however, certain peaks within the Aroclor were found to be significantly larger causing high bias in the recovery of this Aroclor. Because of this, these peaks were omitted from the calculation.

The laboratory narrative noted that PCB-1260 is found to be the primary Aroclor in PDI-SC-S065-8to10 (580-79626-39), PDI-SC-S070-4.4to6.4 (580-79626-44) and PDI-SC-S065-10to12 (580-79626-47); however, certain peaks within the Aroclor were found to be significantly larger causing high bias in the recovery of this Aroclor. Because of this, these peaks were omitted from the calculation.

## CONVENTIONAL ANALYSES

Samples were analyzed for TOC and total solids by the methods identified in the introduction to this report.

1. Holding Times – Acceptable, except as noted below,

Moisture Content at 70°C – The 7-day holding time indicated for total solids in the QAPP was exceeded for all samples in the laboratory group by 8 to 23 days due to an oversight by the laboratory. No data qualifiers were assigned based on the holding time exceedance.

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

- Blanks – Acceptable where applicable, except as noted below:

General – Three rinsate blanks were submitted with this laboratory group for TOC analysis. TOC was detected in all three blanks: PDI-RB-SS-180814-1040 (0.23 milligrams per liter [mg/L]), PDI-RB-SS-180815-0730 (0.26 mg/L), and PDI-RB-SS-180815-1340 (0.21 mg/L) at concentrations below the reporting limit but above the MDL. No data were qualified based on rinsate blank results.

TOC by Method SW9060 – Laboratory method blanks and continuing calibration blanks were analyzed with the samples, as appropriate.

Analysis Date	Analyte	Result
08/25/2018	TOC	454 mg/kg
08/27/2018	TOC	132 mg/kg

mg/kg = milligrams per kilogram  
 TOC = total organic carbon

TOC was detected in the associated samples at concentrations greater than the reporting limits (RLs) and greater than ten times the method blank detections; therefore, data were not qualified.

- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

TOC by Method 9060 – MS/MSDs were performed using PDI-SC-S151-4to6, PDI-SC-S136-4to6, and PDI-SC-S070-1.1to2.4. Results were acceptable.

- Field Duplicate – Acceptable

TOC by Method 9060 – field duplicates were submitted for PDI-SC-S150-4to6 and PDI-SC-S092-4to6 and identified as PDI-SC-S150-4to6D and PDI-SC-S092-4to6D, respectively. Results were comparable.

ASTM D-2216 – field duplicates were submitted for PDI-SC-S150-4to6 and PDI-SC-S092-4to6 and identified as PDI-SC-S150-4to6D and PDI-SC-S092-4to6D, respectively. Results were comparable.

Total Solids at 70°C – field duplicates were submitted for PDI-SC-S150-4to6 and PDI-SC-S092-4to6 and identified as PDI-SC-S150-4to6D and PDI-SC-S092-4to6D, respectively. Results were comparable.

- Laboratory Replicate – Acceptable

TOC by Method 9060 – Laboratory duplicate and triplicate analyses were performed using PDI-SC-S151-4to6, PDI-SC-S136-4to6, and PDI-SC-S070-1.1to2.4. Results were comparable.

ASTM D-2216 – Laboratory duplicates were performed using PDI-SC-S146-7to8, and PDI-SC-S070-10.4to12.6. Results were comparable.

**Data Validation Report**  
**Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling**  
**Subsurface Sediment – Deep Core Stations**  
**TA Lab Group: 580-79626-1**

Total Solids at 70°C – Laboratory duplicates were performed using PDI-SC-S151-2to4, PDI-SC-S136-0to2, and PDI-SC-S065-12to14.3. Results were comparable.

7. Reporting Limits – Acceptable
8. Calculation Checks – Acceptable

A calculation check was performed for PDI-SC-S151-6to8. The review confirmed the final results were correct as reported.

## **GRAIN SIZE ANALYSES**

Samples were analyzed for grain size by the methods identified in the introduction to this report. The data were reviewed to confirm that the required grain size fractions identified in the QAPP were reported for each sample.

1. Laboratory Duplicate – Acceptable

The laboratory performed duplicate analysis at a rate of 1 per 20 samples per their internal requirements. Laboratory duplicates were performed on PDI-SC-S151-2to4, PDI-SC-S151-4to6, PDI-SC-S136-0to2, and PDI-SC-S065-12to14.3. Results were comparable.

2. Calculation Checks – Acceptable

## **OVERALL ASSESSMENT OF DATA**

The data reported in this laboratory group is considered usable for meeting project objectives. The completeness for laboratory group 580-79626-1 is 100%.

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S151-2TO4	580-79626-1	SW8082A	Aroclor 1221	3.9 U	µg/kg	3.9 UJ	c
PDI-SC-S151-2TO4	580-79626-1	SW8082A	Aroclor 1232	3.9 U	µg/kg	3.9 UJ	c
PDI-SC-S151-2TO4	580-79626-1	SW8082A	Aroclor 1016	3.9 U	µg/kg	3.9 UJ	c
PDI-SC-S151-2TO4	580-79626-1	SW8082A	Aroclor 1242	3.9 U	µg/kg	3.9 UJ	c
PDI-SC-S151-0TO2	580-79626-2	SW8082A	Aroclor 1221	4.1 U	µg/kg	4.1 UJ	c
PDI-SC-S151-0TO2	580-79626-2	SW8082A	Aroclor 1232	4.1 U	µg/kg	4.1 UJ	c
PDI-SC-S151-0TO2	580-79626-2	SW8082A	Aroclor 1016	4.1 U	µg/kg	4.1 UJ	c
PDI-SC-S151-0TO2	580-79626-2	SW8082A	Aroclor 1242	4.1 U	µg/kg	4.1 UJ	c
PDI-SC-S151-0TO2	580-79626-2	SW8270DSIM	2-Methylnaphthalene	18 J	µg/kg	18 J	bl
PDI-SC-S151-4TO6	580-79626-3	SW8082A	Aroclor 1221	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S151-4TO6	580-79626-3	SW8082A	Aroclor 1232	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S151-4TO6	580-79626-3	SW8082A	Aroclor 1248	180	µg/kg	180 J	s
PDI-SC-S151-4TO6	580-79626-3	SW8082A	Aroclor 1016	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S151-4TO6	580-79626-3	SW8082A	Aroclor 1242	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S151-6TO8	580-79626-4	SW8082A	Aroclor 1221	180 U	µg/kg	180 UJ	c
PDI-SC-S151-6TO8	580-79626-4	SW8082A	Aroclor 1232	180 U	µg/kg	180 UJ	c
PDI-SC-S151-6TO8	580-79626-4	SW8082A	Aroclor 1248	2,000	µg/kg	2,000 J	c
PDI-SC-S151-6TO8	580-79626-4	SW8082A	Aroclor 1016	180 U	µg/kg	180 UJ	c
PDI-SC-S151-8TO10	580-79626-5	SW8082A	Aroclor 1221	160 U	µg/kg	160 UJ	c
PDI-SC-S151-8TO10	580-79626-5	SW8082A	Aroclor 1232	160 U	µg/kg	160 UJ	c
PDI-SC-S151-8TO10	580-79626-5	SW8082A	Aroclor 1248	160 U	µg/kg	160 UJ	c
PDI-SC-S151-8TO10	580-79626-5	SW8082A	Aroclor 1016	160 U	µg/kg	160 UJ	c
PDI-SC-S151-10TO12	580-79626-6	SW8082A	Aroclor 1221	160 U	µg/kg	160 UJ	c
PDI-SC-S151-10TO12	580-79626-6	SW8082A	Aroclor 1232	160 U	µg/kg	160 UJ	c
PDI-SC-S151-10TO12	580-79626-6	SW8082A	Aroclor 1016	160 U	µg/kg	160 UJ	c
PDI-SC-S151-10TO12	580-79626-6	SW8082A	Aroclor 1248	160 U	ug/kg	160 UJ	c
PDI-SC-S150-0TO2	580-79626-8	SW8082A	Aroclor 1221	220 U	µg/kg	220 UJ	c
PDI-SC-S150-0TO2	580-79626-8	SW8082A	Aroclor 1232	220 U	µg/kg	220 UJ	c

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S150-0TO2	580-79626-8	SW8082A	Aroclor 1248	220 U	µg/kg	220 UJ	c
PDI-SC-S150-0TO2	580-79626-8	SW8082A	Aroclor 1016	220 U	µg/kg	220 UJ	c
PDI-SC-S150-2TO4	580-79626-9	SW8082A	Aroclor 1221	190 U	µg/kg	190 UJ	c
PDI-SC-S150-2TO4	580-79626-9	SW8082A	Aroclor 1232	190 U	µg/kg	190 UJ	c
PDI-SC-S150-2TO4	580-79626-9	SW8082A	Aroclor 1248	190 U	µg/kg	190 UJ	c
PDI-SC-S150-2TO4	580-79626-9	SW8082A	Aroclor 1016	190 U	µg/kg	190 UJ	c
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Anthracene	89	µg/kg	89 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Pyrene	780	µg/kg	780 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Benzo(g,h,i)perylene	170	µg/kg	170 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Benzo(b)fluoranthene	530	µg/kg	530 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Fluoranthene	990	µg/kg	990 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Benzo(k)fluoranthene	150	µg/kg	150 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Acenaphthylene	26	µg/kg	26 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Chrysene	560	µg/kg	560 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Benzo(a)pyrene	230	µg/kg	230 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Dibenz(a,h)anthracene	68	µg/kg	68 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Benz(a)anthracene	290	µg/kg	290 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Acenaphthene	48	µg/kg	48 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Phenanthrene	300	µg/kg	300 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Fluorene	69	µg/kg	69 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Naphthalene	58	µg/kg	58 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	2-Methylnaphthalene	27	µg/kg	27 J	s
PDI-SC-S150-2TO4	580-79626-9	SW8270DSIM	Indeno(1,2,3-cd)pyrene	250	µg/kg	250 J	s
PDI-SC-S150-4TO6	580-79626-10	SW8082A	Aroclor 1221	200 U	µg/kg	200 UJ	c
PDI-SC-S150-4TO6	580-79626-10	SW8082A	Aroclor 1232	200 U	µg/kg	200 UJ	c
PDI-SC-S150-4TO6	580-79626-10	SW8082A	Aroclor 1248	200 U	µg/kg	200 UJ	c
PDI-SC-S150-4TO6	580-79626-10	SW8082A	Aroclor 1016	200 U	µg/kg	200 UJ	c
PDI-SC-S150-4TO6D	580-79626-11	SW8082A	Aroclor 1221	210 U	µg/kg	210 UJ	c

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S150-4TO6D	580-79626-11	SW8082A	Aroclor 1232	210 U	µg/kg	210 UJ	c
PDI-SC-S150-4TO6D	580-79626-11	SW8082A	Aroclor 1248	210 U	µg/kg	210 UJ	c
PDI-SC-S150-4TO6D	580-79626-11	SW8082A	Aroclor 1016	210 U	µg/kg	210 UJ	c
PDI-SC-S150-6TO7.7	580-79626-12	SW8082A	Aroclor 1221	190 U	µg/kg	190 UJ	c
PDI-SC-S150-6TO7.7	580-79626-12	SW8082A	Aroclor 1232	190 U	µg/kg	190 UJ	c
PDI-SC-S150-6TO7.7	580-79626-12	SW8082A	Aroclor 1248	190 U	µg/kg	190 UJ	c
PDI-SC-S150-6TO7.7	580-79626-12	SW8082A	Aroclor 1016	190 U	µg/kg	190 UJ	c
PDI-SC-S150-7.7TO9.7	580-79626-13	SW8082A	Aroclor 1232	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-7.7TO9.7	580-79626-13	SW8082A	Aroclor 1248	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-7.7TO9.7	580-79626-13	SW8082A	Aroclor 1016	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-7.7TO9.7	580-79626-13	SW8082A	Aroclor 1242	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-9.7TO11.1	580-79626-14	SW8082A	Aroclor 1232	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-9.7TO11.1	580-79626-14	SW8082A	Aroclor 1248	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-9.7TO11.1	580-79626-14	SW8082A	Aroclor 1016	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-9.7TO11.1	580-79626-14	SW8082A	Aroclor 1242	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-11.1TO12.5	580-79626-15	SW8082A	Aroclor 1232	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-11.1TO12.5	580-79626-15	SW8082A	Aroclor 1248	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-11.1TO12.5	580-79626-15	SW8082A	Aroclor 1016	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S150-11.1TO12.5	580-79626-15	SW8082A	Aroclor 1242	2.6 U	µg/kg	2.6 UJ	c
PDI-SC-S146-0TO2	580-79626-16	SW8082A	Aroclor 1221	200 U	µg/kg	200 UJ	c
PDI-SC-S146-0TO2	580-79626-16	SW8082A	Aroclor 1232	200 U	µg/kg	200 UJ	c
PDI-SC-S146-0TO2	580-79626-16	SW8082A	Aroclor 1248	200 U	µg/kg	200 UJ	c
PDI-SC-S146-0TO2	580-79626-16	SW8082A	Aroclor 1016	200 U	µg/kg	200 UJ	c
PDI-SC-S146-2TO4	580-79626-17	SW8082A	Aroclor 1221	36 U	µg/kg	36 UJ	c
PDI-SC-S146-2TO4	580-79626-17	SW8082A	Aroclor 1232	36 U	µg/kg	36 UJ	c
PDI-SC-S146-2TO4	580-79626-17	SW8082A	Aroclor 1248	36 U	µg/kg	36 UJ	c
PDI-SC-S146-2TO4	580-79626-17	SW8082A	Aroclor 1016	36 U	µg/kg	36 UJ	c



**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S146-4TO5	580-79626-18	SW8082A	Aroclor 1221	34 U	µg/kg	34 UJ	c
PDI-SC-S146-4TO5	580-79626-18	SW8082A	Aroclor 1232	34 U	µg/kg	34 UJ	c
PDI-SC-S146-4TO5	580-79626-18	SW8082A	Aroclor 1248	280	µg/kg	280 J	s,c
PDI-SC-S146-4TO5	580-79626-18	SW8082A	Aroclor 1016	34 U	µg/kg	34 UJ	c
PDI-SC-S146-5TO7	580-79626-19	SW8082A	Aroclor 1221	27 U	µg/kg	27 UJ	c
PDI-SC-S146-5TO7	580-79626-19	SW8082A	Aroclor 1232	27 U	µg/kg	27 UJ	c
PDI-SC-S146-5TO7	580-79626-19	SW8082A	Aroclor 1248	27 U	µg/kg	27 UJ	c
PDI-SC-S146-5TO7	580-79626-19	SW8082A	Aroclor 1016	27 U	µg/kg	27 UJ	c
PDI-SC-S146-7TO8	580-79626-20	SW8082A	Aroclor 1221	26 U	µg/kg	26 UJ	c
PDI-SC-S146-7TO8	580-79626-20	SW8082A	Aroclor 1232	26 U	µg/kg	26 UJ	c
PDI-SC-S146-7TO8	580-79626-20	SW8082A	Aroclor 1248	26 U	µg/kg	26 UJ	c
PDI-SC-S146-7TO8	580-79626-20	SW8082A	Aroclor 1016	26 U	µg/kg	26 UJ	c
PDI-SC-S146-8TO9.1	580-79626-21	SW8082A	Aroclor 1221	26 U	µg/kg	26 UJ	c
PDI-SC-S146-8TO9.1	580-79626-21	SW8082A	Aroclor 1232	26 U	µg/kg	26 UJ	c
PDI-SC-S146-8TO9.1	580-79626-21	SW8082A	Aroclor 1248	26 U	µg/kg	26 UJ	c
PDI-SC-S146-8TO9.1	580-79626-21	SW8082A	Aroclor 1016	26 U	µg/kg	26 UJ	c
PDI-SC-S136-0TO2	580-79626-22	SW8082A	Aroclor 1232	29 U	µg/kg	29 UJ	c
PDI-SC-S136-0TO2	580-79626-22	SW8082A	Aroclor 1016	29 U	µg/kg	29 UJ	c
PDI-SC-S136-0TO2	580-79626-22	SW8082A	Aroclor 1221	29 U	µg/kg	29 UJ	c
PDI-SC-S136-0TO2	580-79626-22	SW8082A	Aroclor 1248	28 J	µg/kg	28 J	q
PDI-SC-S136-2TO4	580-79626-23	SW8082A	Aroclor 1232	24 U	µg/kg	24 UJ	c
PDI-SC-S136-2TO4	580-79626-23	SW8082A	Aroclor 1016	24 U	µg/kg	24 UJ	c
PDI-SC-S136-2TO4	580-79626-23	SW8082A	Aroclor 1221	24 U	µg/kg	24 UJ	c
PDI-SC-S136-4TO6	580-79626-24	SW8082A	Aroclor 1232	25 U	µg/kg	25 UJ	c
PDI-SC-S136-4TO6	580-79626-24	SW8082A	Aroclor 1016	25 U	µg/kg	25 UJ	c
PDI-SC-S136-4TO6	580-79626-24	SW8082A	Aroclor 1221	25 U	µg/kg	25 UJ	c
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Pyrene	650	µg/kg	650 J	m,md

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Benzo(g,h,i)perylene	150	µg/kg	150 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Indeno(1,2,3-cd)pyrene	110	µg/kg	110 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Benzo(b)fluoranthene	140	µg/kg	140 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Fluoranthene	320	µg/kg	320 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Chrysene	190	µg/kg	190 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Benzo(a)pyrene	150	µg/kg	150 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Benz(a)anthracene	160	µg/kg	160 J	m,md
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Phenanthrene	260	µg/kg	260 J	m
PDI-SC-S136-4TO6	580-79626-24	SW8270DSIM	Naphthalene	120	µg/kg	120 J	m,md
PDI-SC-S136-6TO7	580-79626-25	SW8082A	Aroclor 1232	26 U	µg/kg	26 UJ	c
PDI-SC-S136-6TO7	580-79626-25	SW8082A	Aroclor 1016	26 U	µg/kg	26 UJ	c
PDI-SC-S136-6TO7	580-79626-25	SW8082A	Aroclor 1221	26 U	µg/kg	26 UJ	c
PDI-SC-S136-6TO7	580-79626-25	SW8082A	Aroclor 1248	10 J	µg/kg	10 J	q
PDI-SC-S136-7TO9	580-79626-26	SW8082A	Aroclor 1232	28 U	µg/kg	28 UJ	c
PDI-SC-S136-7TO9	580-79626-26	SW8082A	Aroclor 1016	28 U	µg/kg	28 UJ	c
PDI-SC-S136-7TO9	580-79626-26	SW8082A	Aroclor 1221	28 U	µg/kg	28 UJ	c
PDI-SC-S136-9TO11.3	580-79626-27	SW8082A	Aroclor 1232	27 U	µg/kg	27 UJ	c
PDI-SC-S136-9TO11.3	580-79626-27	SW8082A	Aroclor 1016	27 U	µg/kg	27 UJ	c
PDI-SC-S136-9TO11.3	580-79626-27	SW8082A	Aroclor 1221	27 U	µg/kg	27 UJ	c
PDI-SC-S092-0TO2	580-79626-28	SW8082A	Aroclor 1232	30 U	µg/kg	30 UJ	c
PDI-SC-S092-0TO2	580-79626-28	SW8082A	Aroclor 1016	30 U	µg/kg	30 UJ	c
PDI-SC-S092-0TO2	580-79626-28	SW8082A	Aroclor 1221	30 U	µg/kg	30 UJ	c
PDI-SC-S092-2TO4	580-79626-29	SW8082A	Aroclor 1260	220	µg/kg	220 J	q
PDI-SC-S092-2TO4	580-79626-29	SW8082A	Aroclor 1232	35 U	µg/kg	35 UJ	c
PDI-SC-S092-2TO4	580-79626-29	SW8082A	Aroclor 1016	35 U	µg/kg	35 UJ	c
PDI-SC-S092-2TO4	580-79626-29	SW8082A	Aroclor 1221	35 U	µg/kg	35 UJ	c
PDI-SC-S092-4TO6	580-79626-30	SW8082A	Aroclor 1232	31 U	µg/kg	31 UJ	c
PDI-SC-S092-4TO6	580-79626-30	SW8082A	Aroclor 1016	31 U	µg/kg	31 UJ	c

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S092-4TO6	580-79626-30	SW8082A	Aroclor 1221	31 U	µg/kg	31 UJ	c
PDI-SC-S092-4TO6D	580-79626-31	SW8082A	Aroclor 1232	31 U	µg/kg	31 UJ	c
PDI-SC-S092-4TO6D	580-79626-31	SW8082A	Aroclor 1016	31 U	µg/kg	31 UJ	c
PDI-SC-S092-4TO6D	580-79626-31	SW8082A	Aroclor 1221	31 U	µg/kg	31 UJ	c
PDI-SC-S092-6TO8	580-79626-32	SW8082A	Aroclor 1232	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S092-6TO8	580-79626-32	SW8082A	Aroclor 1016	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S092-8TO9.9	580-79626-33	SW8082A	Aroclor 1260	3.1 U	µg/kg	3.1 UJ	m
PDI-SC-S092-8TO9.9	580-79626-33	SW8082A	Aroclor 1232	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S092-8TO9.9	580-79626-33	SW8082A	Aroclor 1016	3.1 U	µg/kg	3.1 UJ	c,m
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1260	3.0 U	µg/kg	3.0 UJ	s
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1254	3.0 U	µg/kg	3.0 UJ	s
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1221	3.0 U	µg/kg	3.0 UJ	s
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1232	3.0 U	µg/kg	3.0 UJ	s,c
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1248	3.0 U	µg/kg	3.0 UJ	s
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1016	3.0 U	µg/kg	3.0 UJ	s,c
PDI-SC-S092-9.9TO10.9	580-79626-34	SW8082A	Aroclor 1242	3.0 U	µg/kg	3.0 UJ	s
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1260	3.7 U	µg/kg	3.7 UJ	s,m
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1254	20	µg/kg	20 J	s,q
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1221	3.7 U	µg/kg	3.7 UJ	s
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1232	3.7 U	µg/kg	3.7 UJ	s,c
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1248	3.7 U	µg/kg	3.7 UJ	s
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1016	3.7 U	µg/kg	3.7 UJ	s,c,m
PDI-SC-S065-0TO2	580-79626-35	SW8082A	Aroclor 1242	3.7 U	µg/kg	3.7 UJ	s
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Pyrene	540	µg/kg	540 J	m
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Benzo(b)fluoranthene	310	µg/kg	310 J	m,md
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Fluoranthene	500	µg/kg	500 J	m
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Benzo(k)fluoranthene	110	µg/kg	110 J	m,md
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Phenanthrene	410	µg/kg	410 J	m

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S065-0TO2	580-79626-35	SW8270DSIM	Naphthalene	230	µg/kg	230 J	m
PDI-SC-S065-2TO4	580-79626-36	SW8082A	Aroclor 1254	20	µg/kg	20 J	q
PDI-SC-S065-2TO4	580-79626-36	SW8082A	Aroclor 1232	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S065-2TO4	580-79626-36	SW8082A	Aroclor 1016	3.8 U	µg/kg	3.8 UJ	c
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1260	3.6 U	µg/kg	3.6 UJ	s
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1254	3.6 U	µg/kg	3.6 UJ	s
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1221	3.6 U	µg/kg	3.6 UJ	s
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1232	3.6 U	µg/kg	3.6 UJ	s,c
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1248	3.6 U	µg/kg	3.6 UJ	s
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1016	3.6 U	µg/kg	3.6 UJ	s,c
PDI-SC-S065-4TO6	580-79626-37	SW8082A	Aroclor 1242	3.6 U	µg/kg	3.6 UJ	s
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1260	3.5 U	µg/kg	3.5 UJ	s
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1254	27	µg/kg	27 J	s,q
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1221	3.5 U	µg/kg	3.5 UJ	s
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1232	3.5 U	µg/kg	3.5 UJ	s,c
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1248	3.5 U	µg/kg	3.5 UJ	s
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1016	3.5 U	µg/kg	3.5 UJ	s,c
PDI-SC-S065-6TO8	580-79626-38	SW8082A	Aroclor 1242	3.5 U	µg/kg	3.5 UJ	s
PDI-SC-S065-8TO10	580-79626-39	SW8082A	Aroclor 1260	11	µg/kg	11 J	q
PDI-SC-S065-8TO10	580-79626-39	SW8082A	Aroclor 1232	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S065-8TO10	580-79626-39	SW8082A	Aroclor 1016	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S065-12TO14.3	580-79626-40	SW8082A	Aroclor 1232	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S065-12TO14.3	580-79626-40	SW8082A	Aroclor 1016	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S070-0TO1.1	580-79626-41	SW8082A	Aroclor 1232	3.4 U	µg/kg	3.4 UJ	c
PDI-SC-S070-0TO1.1	580-79626-41	SW8082A	Aroclor 1016	3.4 U	µg/kg	3.4 UJ	c
PDI-SC-S070-1.1TO2.4	580-79626-42	SW8082A	Aroclor 1232	2.4 U	µg/kg	2.4 UJ	c
PDI-SC-S070-1.1TO2.4	580-79626-42	SW8082A	Aroclor 1016	2.4 U	µg/kg	2.4 UJ	c
PDI-SC-S070-2.4TO4.4	580-79626-43	SW8082A	Aroclor 1232	3.1 U	µg/kg	3.1 UJ	c

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Subsurface Sediment - Deep Core Stations**  
**TestAmerica Laboratory Group: 580-79626-1**

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result	Units	Final Result	Reason Code
PDI-SC-S070-2.4TO4.4	580-79626-43	SW8082A	Aroclor 1016	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S070-4.4TO6.4	580-79626-44	SW8082A	Aroclor 1260	8.7	µg/kg	8.7 J	q
PDI-SC-S070-4.4TO6.4	580-79626-44	SW8082A	Aroclor 1232	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S070-4.4TO6.4	580-79626-44	SW8082A	Aroclor 1016	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S070-6.4TO8.4	580-79626-45	SW8082A	Aroclor 1232	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S070-6.4TO8.4	580-79626-45	SW8082A	Aroclor 1016	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S070-8.4TO10.4	580-79626-46	SW8082A	Aroclor 1232	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S070-8.4TO10.4	580-79626-46	SW8082A	Aroclor 1016	3.1 U	µg/kg	3.1 UJ	c
PDI-SC-S065-10TO12	580-79626-47	SW8082A	Aroclor 1260	0.93 J	µg/kg	0.93 J	q
PDI-SC-S065-10TO12	580-79626-47	SW8082A	Aroclor 1232	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S065-10TO12	580-79626-47	SW8082A	Aroclor 1016	3.2 U	µg/kg	3.2 UJ	c
PDI-SC-S070-10.4TO12.6	580-79626-48	SW8082A	Aroclor 1248	3.0 U	µg/kg	3.0 UJ	c

µg/kg = micrograms per kilogram

bl = laboratory blank contamination

c = calibration issue

ID = identification

J = estimated concentration

m = matrix spike recovery

md = matrix spike/matrix spike duplicate relative percent difference

q = quantitation issue

r = dual column relative percent difference

s = surrogate recovery

U = not detected

UJ = estimated reporting limit