ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

June 29, 2018

Analytical Report for Service Request No: K1804181A

Amy Dahl
AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

RE: Portland Harbor Pre-Remedial Design Investigation / 60566335

Dear Amy,

Enclosed are the results of the sample(s) submitted to our laboratory May 04, 2018
For your reference, these analyses have been assigned our service request number **K1804181.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation
Sample Matrix: Sediment, Water

Service Request: K1804181
Date Received: 05/04/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Twenty six sediment samples and two water samples were received for analysis at ALS Environmental on 05/04/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

Method 8270D SIM-PAH, 06/06-08/2018:The control criteria were exceeded for Terphenyl-d14 in samples PDI-SG-S236, PDI-SG_S194, PDI-SG-S126 and PDI-SG-S126-D due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Method 8270D SIM-PAH, 06/06/2018:The internal standard recovery of Phenanthrene-d10 in sample PDI-SG-S126-D was outside control criteria because of suspected matrix interference. The sample was reanalyzed at a dilution with acceptable results. All analytes associated with the affected internal standard were reported from the diluted analysis. The reporting limits were elevated accordingly. No further corrective action was taken.

Method 8270D, 06/06/2018:The duplicate matrix spike recovery of Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene and Benzo(b)fluoranthene for sample PDI-SG-S200 was outside control criteria because of matrix interference. The chromatogram indicated the presence of non-target background components that prevented adequate resolution of the target analytes. As a result, accurate quantitation was not possible. No further corrective action was required.

Method 8270D, 06/06/2018:The Relative Percent Difference (RPD) for Benz(a)anthracene and Chrysene in the replicate matrix spike analyses of PDI-SG-S200 was outside control criteria. All spike recoveries in the MS and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Method 8270D, 05/16/2018:The matrix spike recovery of Phenanthrene, Fluoranthene and Pyrene for sample PDI-SG-S236 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

The detection limits were elevated for both samples due to less than optimal sample volume received for analysis.

Semivoa GC:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/29/2018

Chain of Custody

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www.alsglobal.com

K1804181

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**SURFACE SEDIMENT CHAIN OF CUSTODY**		
Client Contact	**Project Contact: Amy Dahl / Chelsey Cook**	**Site Contact: Jennifer Ray / Michaela McCoog**	**Date: 5/04/18**
AECOM	**Tel: (206) 438-2261 / (206) 438-2010**	**Laboratory Contact: Howard-Holmes**	**Carrier: Courier**
1111 3rd Ave Suite 1600	**Analysis Turnaround Time**		
Seattle, WA 98101	Calendar (C) or Work Days (W) _____		
Phone: (206) 438-2700 Fax: 1+(866) 495-5288	[x] 21 days		
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[ ] Other _____		
Portland, OR			
Project #: 60566335 Study: Surface Sediment-SMA			

COC No: 1 — 1 of 3 page(s)

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, PAHs, Total Solids (669M, 8270-SIM, 160.3	Sample Specific Notes:
PDI-SG-S239	5/2/2018	9:25	SS		MT	1		x	
PDI-SG-S236	5/2/2018	11:50	SS	MS/MSD	MT	3		x	
PDI-SG-S242	5/2/2018	10:50	SS		MT	1		x	
PDI-SG-S233	5/2/2018	13:35	SS		MT	1		x	
PDI-SG-S037	5/2/2018	9:45	SS		AP	1		x	
PDI-SG-S038	5/2/2018	12:20	SS		AP	1		x	
PDI-SG-S039	5/2/2018	11:20	SS		AP	1		x	
PDI-SG-S037-D	5/2/2018	9:45	SS		AP	1		x	
PDI-SG-S040	5/2/2018	13:20	SS		AP	1		x	
PDI-SG-S041	5/2/2018	14:15	SS		AP	1		x	
PDI-SG-S043	5/2/2018	15:00	SS		AP	1		x	
PDI-SG-S044	5/2/2018	15:45	SS		AP	1		x	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

[ ] Return To Client [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

SMA Study samples - Log in seperately from SS Study samples

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael McCoog	AECOM	5-4-18 1137		HLA	5/4/18 1137
Relinquished by:	Company:	Date/Time:	Received by: @ LAB Kim Morrow	Company: ALS	Date/Time: 5-4-18 1250
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1804181

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 Ph: 360-577-7222 Fax: 360-636-1068	**SURFACE SEDIMENT** **CHAIN OF CUSTODY**		
Client Contact	**Project Contact: Amy Dahl / Chelsey Cook**	**Site Contact: Jennifer Ray / Michaela McCoog**	**Date: 5/04/18**
AECOM	**Tel: (206) 438-2261 / (206) 438-2010**	**Laboratory Contact: Howard-Holmes**	**Carrier: Courier**
1111 3rd Ave Suite 1600	**Analysis Turnaround Time**		COC No: 1
Seattle, WA 98101	Calendar (C) or Work Days (W) _____		2 of 3 page(s)
Phone: (206) 438-2700 Fax: 1+(866) 495-5288			
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[x] 21 days		
Portland, OR	[ ] Other _____		
Project #: 60566335 Study: Surface Sediment-SMA			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, PAHs, Total Solids 1669M, 8270-SIM, 160.3	Sample Specific Notes:
PDI-SG-S062	5/2/2018	16:40	SS		AP	1		x	
PDI-SG-S063	5/3/2018	10:05	SS		AM	1		x	
PDI-SG-S198	5/3/2018	10:01	SS		TP	1		x	
PDI-SG-S201	5/3/2018	11:36	SS		TP	1		x	
PDI-SG-S200	5/3/2018	12:38	SS	MS/MSD	TP	3		x	
PDI-SG-S194	5/3/2018	13:32	SS		TP	1		x	
PDI-SG-S193	5/3/2018	14:33	SS		TP	1		x	
PDI-SG-S186	5/3/2018	15:27	SS		TP	1		x	
PDI-SG-S172	5/3/2018	17:13	SS		TP	1		x	
PDI-SG-S123	5/3/2018	12:00	SS		AM	1		x	
PDI-SG-S125	5/3/2018	13:40	SS		AM	1		x	
PDI-SG-S128	5/3/2018	14:30	SS		AM	1		x	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

[ ] Return To Client [X] Disposal By Lab [X] Archive For **12** Months

Special Instructions/QC Requirements & Comments:

SMA Study samples - Log in seperately from SS Study samples

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michael McCoog	AECOM	5-4-18 1137		HLV	5/4/18 1137
Relinquished by:	Company:	Date/Time:	Received by: @ LAB	Company:	Date/Time:
			T Morrow	ALS	5/4/18 1250
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1804181

SURFACE SEDIMENT
CHAIN OF CUSTODY

ALS-Environmental-Kelso 1317-S-13th-Ave Kelso, WA 98626 **Ph: 360-577-7222 Fax: 360-636-1068**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray / Michaela McCoog** **Laboratory Contact: Howard-Holmes**	**Date: 5/04/18** **Carrier: Courier**	COC No: 1 3 of 3 page(s)
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment-SMA	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, PAHs, Total Solids 1669M, 8270-SIM, 160.3	WQ - Pesticides 1669M	WQ - PAHs 8270-SIM	WQ - BEHP EPA 8270D-LL	WQ - Tributyltin Krone/Unger	Sample Specific Notes:
PDI-SG-S126	5/3/2018	15:30	SS		AM	1		x					
PDI-SG-S126-D	5/3/2018	15:33	SS		AM	1		x					
PDI-RB-VV-180502-1700	5/2/18	1700		RB	AM	8			X	X	X	X	
PDI-RB-VV-180502-1730	5/2/18	1730		RB	AP	8			X	X	X	X	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal

[ ] Return To Client [X] Disposal By Lab [X] Archive For **12** Months

Special Instructions/QC Requirements & Comments:

SMA Study samples - Log in seperately from SS Study samples

Relinquished by: Michael McCoog	Company: AECOM	Date/Time: 5-4-18 1137	Received by:	Company: HLV	Date/Time: 5/4/18 1137
Relinquished by:	Company:	Date/Time:	Received by: A Morrow	Company: ALS	Date/Time: 5-4-18 1250
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

PC HH

Cooler Receipt and Preservation Form

Client Aecom Service Request K1806181

Received: 5/4/18 Opened: 5/4/18 By: KM Unloaded: 5/4/18 By: KM

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
1.7	1.5	3.6	3.4	-0.2	379			
4.1	4.1	4.9	4.9	0.0	325			
0.1	0.0	5.9	5.8	-0.1	378			

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 - 05/03/18
Sample Matrix:	Sediment	**Date Received:**	05/4/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PDI-SG-S239	K1804181-001	**33.2**	-	-	1	05/07/18 10:51	
PDI-SG-S236	K1804181-002	**45.7**	-	-	1	05/07/18 10:51	
PDI-SG-S242	K1804181-003	**73.8**	-	-	1	05/07/18 10:51	
PDI-SG-S233	K1804181-004	**32.7**	-	-	1	05/07/18 10:51	
PDI-SG-S037	K1804181-005	**53.8**	-	-	1	05/07/18 10:51	
PDI-SG-S038	K1804181-006	**55.4**	-	-	1	05/07/18 10:51	
PDI-SG-S039	K1804181-007	**54.2**	-	-	1	05/07/18 10:51	
PDI-SG-S037-D	K1804181-008	**54.6**	-	-	1	05/07/18 10:51	
PDI-SG-S040	K1804181-009	**54.4**	-	-	1	05/07/18 10:51	
PDI-SG-S041	K1804181-010	**44.8**	-	-	1	05/07/18 10:51	
PDI-SG-S043	K1804181-011	**42.9**	-	-	1	05/07/18 10:51	
PDI-SG-S044	K1804181-012	**46.7**	-	-	1	05/07/18 10:51	
PDI-SG-S062	K1804181-013	**39.8**	-	-	1	05/07/18 10:51	
PDI-SG-S063	K1804181-014	**39.3**	-	-	1	05/07/18 10:51	
PDI-SG-S198	K1804181-015	**36.4**	-	-	1	05/07/18 10:51	
PDI-SG-S201	K1804181-016	**36.0**	-	-	1	05/07/18 10:51	
PDI-SG-S200	K1804181-017	**38.7**	-	-	1	05/07/18 10:51	
PDI-SG-S194	K1804181-018	**36.1**	-	-	1	05/07/18 10:51	
PDI-SG-S193	K1804181-019	**33.7**	-	-	1	05/07/18 10:51	
PDI-SG-S186	K1804181-020	**37.4**	-	-	1	05/07/18 10:51	
PDI-SG-S172	K1804181-021	**62.0**	-	-	1	05/07/18 13:37	
PDI-SG-S123	K1804181-022	**62.0**	-	-	1	05/07/18 13:37	
PDI-SG-S125	K1804181-023	**45.2**	-	-	1	05/07/18 13:37	
PDI-SG-S128	K1804181-024	**72.5**	-	-	1	05/07/18 13:37	
PDI-SG-S126	K1804181-025	**48.8**	-	-	1	05/07/18 13:37	
PDI-SG-S126-D	K1804181-026	**47.6**	-	-	1	05/07/18 13:37	

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QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 - 05/03/18
Sample Matrix:	Sediment	**Date Received:**	05/04/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Inorganic Parameters

Sample Name:	Lab Code:	MRL	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
PDI-SG-S236	K1804181-002DUP	-	-	45.7	45.7	45.7	<1	20	05/07/18
PDI-SG-S200	K1804181-017DUP	-	-	38.7	38.6	38.7	<1	20	05/07/18
PDI-SG-S172	K1804181-021DUP	-	-	62.0	60.8	61.4	2	20	05/07/18

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Butyltins

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 17:00
Sample Matrix:	Water	**Date Received:**	05/04/18 12:50
Sample Name:	PDI-RB-VV-180502-1700	**Units:**	ug/L
Lab Code:	K1804181-027	**Basis:**	NA

Butyltins

Analysis Method: ALS SOP
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	0.050	0.012	1	06/13/18 21:18	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	72	31 - 137	06/13/18 21:18	

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 17:30
Sample Matrix:	Water	**Date Received:**	05/04/18 12:50
Sample Name:	PDI-RB-VV-180502-1730	**Units:**	ug/L
Lab Code:	K1804181-028	**Basis:**	NA

Butyltins

Analysis Method: ALS SOP
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	0.050	0.012	1	06/13/18 21:37	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	79	31 - 137	06/13/18 21:37	

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ1806062-03	**Basis:**	NA

Butyltins

Analysis Method: ALS SOP
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	0.050	0.012	1	06/13/18 22:51	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	93	31 - 137	06/13/18 22:51	

Client: AECOM **Service Request:** K1804181

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Butyltins

Analysis Method: ALS SOP

Extraction Method: EPA 3520C

Sample Name	Lab Code	Tri-n-propyltin 31-137
PDI-RB-VV-180502-1700	K1804181-027	72
PDI-RB-VV-180502-1730	K1804181-028	79
Method Blank	KQ1806062-03	93
Lab Control Sample	KQ1806062-01	60
Duplicate Lab Control Sample	KQ1806062-02	71

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Duplicate Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	594642

	Lab Control Sample KQ1806062-01			Duplicate Lab Control Sample KQ1806062-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Tri-n-butyltin Cation	0.476	0.446	107	0.528	0.446	118	32-122	10	30

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QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 22:51
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Method Blank Summary
Butyltins

Sample Name:	Method Blank	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806062-03	**File ID:**	J:\GC26\DATA\061318\0613F040.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	594642
Prep Method:	EPA 3520C	**Extraction Lot:**	313504

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-RB-VV-180502-1700	K1804181-027	J:\GC26\DATA\061318\0613F035.D\	06/13/18 21:18
PDI-RB-VV-180502-1730	K1804181-028	J:\GC26\DATA\061318\0613F036.D\	06/13/18 21:37
Lab Control Sample	KQ1806062-01	J:\GC26\DATA\061318\0613F038.D\	06/13/18 22:14
Duplicate Lab Control Sample	KQ1806062-02	J:\GC26\DATA\061318\0613F039.D\	06/13/18 22:32

ALS Group USA, Corp.
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QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 22:14
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806062-01	**File ID:**	J:\GC26\DATA\061318\0613F038.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	594642
Prep Method:	EPA 3520C	**Extraction Lot:**	313504

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-RB-VV-180502-1700	K1804181-027	J:\GC26\DATA\061318\0613F035.D\	06/13/18 21:18
PDI-RB-VV-180502-1730	K1804181-028	J:\GC26\DATA\061318\0613F036.D\	06/13/18 21:37
Duplicate Lab Control Sample	KQ1806062-02	J:\GC26\DATA\061318\0613F039.D\	06/13/18 22:32
Method Blank	KQ1806062-03	J:\GC26\DATA\061318\0613F040.D\	06/13/18 22:51

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-1
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800264-01	OT5-10A 2 PPB	J:\GC26\DATA\061318\0613F004.D	06/13/2018 10:58
02	KC1800264-02	OT5-10B 5 PPB	J:\GC26\DATA\061318\0613F005.D	06/13/2018 11:18
03	KC1800264-03	OT5-10C 10 PPB	J:\GC26\DATA\061318\0613F006.D	06/13/2018 11:38
04	KC1800264-04	OT5-10D 20 PPB	J:\GC26\DATA\061318\0613F007.D	06/13/2018 11:58
05	KC1800264-05	OT5-090 50 PPB	J:\GC26\DATA\061318\0613F008.D	06/13/2018 12:19
06	KC1800264-06	OT5-10E 200 PPB	J:\GC26\DATA\061318\0613F009.D	06/13/2018 12:39
07	KC1800264-07	OT5-10F 500 PPB	J:\GC26\DATA\061318\0613F010.D	06/13/2018 13:00

Analyte

Tri-n-butyltin Cation

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	4.968E4	02	4.455	5.356E4	03	8.910	5.013E4	04	17.820	5.364E4
05	44.550	5.46E4	06	178.200	6.055E4	07	445.500	5.969E4			

Tri-n-propyltin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	4.929E4	02	5.000	3.918E4	03	10.000	3.885E4	04	20.000	3.986E4
05	50.000	4.17E4	06	200.000	4.731E4	07	500.000	4.862E4			

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-1
Instrument ID: K-GC-26

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Tri-n-butyltin Cation	TRG	Average RF	% RSD	7.8	≤20	5.455E4	
Tri-n-propyltin	SURR	Average RF	% RSD	10.7	≤20	4.354E4	

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-35
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800264-01	OT5-10A 2 PPB	J:\GC26\DATA\061318\0613F004.D	06/13/2018 10:58
02	KC1800264-02	OT5-10B 5 PPB	J:\GC26\DATA\061318\0613F005.D	06/13/2018 11:18
03	KC1800264-03	OT5-10C 10 PPB	J:\GC26\DATA\061318\0613F006.D	06/13/2018 11:38
04	KC1800264-04	OT5-10D 20 PPB	J:\GC26\DATA\061318\0613F007.D	06/13/2018 11:58
05	KC1800264-05	OT5-090 50 PPB	J:\GC26\DATA\061318\0613F008.D	06/13/2018 12:19
06	KC1800264-06	OT5-10E 200 PPB	J:\GC26\DATA\061318\0613F009.D	06/13/2018 12:39
07	KC1800264-07	OT5-10F 500 PPB	J:\GC26\DATA\061318\0613F010.D	06/13/2018 13:00

Analyte

Tri-n-butyltin Cation

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	1.236E5	02	4.455	1.131E5	03	8.910	1.183E5	04	17.820	1.161E5
05	44.550	1.152E5	06	178.200	1.161E5	07	445.500	1.117E5			

Tri-n-propyltin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.237E5	02	5.000	1.107E5	03	10.000	9.725E4	04	20.000	9.086E4
05	50.000	8.957E4	06	200.000	9.349E4	07	500.000	9.01E4			

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-35
Instrument ID: K-GC-26

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Tri-n-butyltin Cation	TRG	Average RF	% RSD	3.3	≤20	1.163E5	
Tri-n-propyltin	SURR	Average RF	% RSD	13.1	≤20	9.938E4	

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Verification Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-1
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800264-08	OT5-09P 50 PPB ICV	J:\GC26\DATA\061318\0613F012.D	06/13/2018 13:43

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	49.7	5.455E4	6.091E4	11.66	±25	Average RF

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 6/13/2018

Initial Calibration Verification Summary
Butyltins

Calibration ID: KC1800264 **Signal ID:** RTX-35
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800264-08	OT5-09P 50 PPB ICV	J:\GC26\DATA\061318\0613F012.D	06/13/2018 13:43

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	51.5	1.163E5	1.343E5	15.51	±25	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 18:32

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F026.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-1	**Analysis Lot:**	594642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	46.3	5.455E4	5.672E4	4.0	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	51.6	4.354E4	4.495E4	3.2	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 18:32

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F026.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-35	**Analysis Lot:**	594642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	48.1	1.163E5	1.256E5	8.0	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	51.1	9.938E4	1.016E5	2.2	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 23:09

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F041.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-35	**Analysis Lot:**	594642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	46.0	1.163E5	1.202E5	3.3	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	50.7	9.938E4	1.009E5	1.5	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/13/18 23:09

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F041.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-1	**Analysis Lot:**	594642
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	49.5	5.455E4	6.064E4	11.2	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	52.5	4.354E4	4.576E4	5.1	NA	±25	Average RF

Client: AECOM **Service Request:**K1804181

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Butyltins

Analysis Method: **Analysis Lot:**594642

Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\061318\0613F014.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	14:48:00	
J:\GC26\DATA\061318\0613F014.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	14:48:00	
J:\GC26\DATA\061318\0613F015.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	15:07:00	
J:\GC26\DATA\061318\0613F016.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	15:26:00	
J:\GC26\DATA\061318\0613F017.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	15:45:00	
J:\GC26\DATA\061318\0613F018.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	16:03:00	
J:\GC26\DATA\061318\0613F019.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	16:22:00	
J:\GC26\DATA\061318\0613F020.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	16:41:00	
J:\GC26\DATA\061318\0613F021.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	16:59:00	
J:\GC26\DATA\061318\0613F022.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	17:19:00	
J:\GC26\DATA\061318\0613F023.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	17:37:00	
J:\GC26\DATA\061318\0613F024.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	17:55:00	
J:\GC26\DATA\061318\0613F025.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	18:14:00	
J:\GC26\DATA\061318\0613F026.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	18:32:00	
J:\GC26\DATA\061318\0613F026.D\	Continuing Calibration Verification	KQ1808469-10	6/13/2018	18:32:00	
J:\GC26\DATA\061318\0613F027.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	18:51:00	
J:\GC26\DATA\061318\0613F028.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	19:09:00	
J:\GC26\DATA\061318\0613F029.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	19:28:00	
J:\GC26\DATA\061318\0613F030.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	19:46:00	
J:\GC26\DATA\061318\0613F031.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	20:04:00	
J:\GC26\DATA\061318\0613F032.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	20:23:00	
J:\GC26\DATA\061318\0613F033.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	20:41:00	
J:\GC26\DATA\061318\0613F034.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	21:00:00	
J:\GC26\DATA\061318\0613F035.D\	PDI-RB-VV-180502-1700	K1804181-027	6/13/2018	21:18:00	
J:\GC26\DATA\061318\0613F036.D\	PDI-RB-VV-180502-1730	K1804181-028	6/13/2018	21:37:00	
J:\GC26\DATA\061318\0613F037.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	21:55:00	
J:\GC26\DATA\061318\0613F038.D\	Lab Control Sample	KQ1806062-01	6/13/2018	22:14:00	
J:\GC26\DATA\061318\0613F039.D\	Duplicate Lab Control Sample	KQ1806062-02	6/13/2018	22:32:00	
J:\GC26\DATA\061318\0613F040.D\	Method Blank	KQ1806062-03	6/13/2018	22:51:00	
J:\GC26\DATA\061318\0613F041.D\	Continuing Calibration Verification	KQ1808469-11	6/13/2018	23:09:00	
J:\GC26\DATA\061318\0613F041.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	23:09:00	
J:\GC26\DATA\061318\0613F042.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	23:28:00	
J:\GC26\DATA\061318\0613F043.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	23:46:00	
J:\GC26\DATA\061318\0613F044.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	00:05:00	
J:\GC26\DATA\061318\0613F045.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	00:23:00	
J:\GC26\DATA\061318\0613F046.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	00:42:00	
J:\GC26\DATA\061318\0613F047.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	01:00:00	
J:\GC26\DATA\061318\0613F048.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	01:19:00	
J:\GC26\DATA\061318\0613F049.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	01:37:00	
J:\GC26\DATA\061318\0613F050.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	01:56:00	
J:\GC26\DATA\061318\0613F051.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	02:15:00	
J:\GC26\DATA\061318\0613F052.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	02:33:00	
J:\GC26\DATA\061318\0613F053.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	02:52:00	
J:\GC26\DATA\061318\0613F054.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	03:10:00	
J:\GC26\DATA\061318\0613F055.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	03:29:00	
J:\GC26\DATA\061318\0613F056.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	03:47:00	

Client: AECOM **Service Request:**K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Butyltins

Analysis Method: **Analysis Lot:**594642
Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\061318\0613F057.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	04:05:00	
J:\GC26\DATA\061318\0613F058.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	04:24:00	
J:\GC26\DATA\061318\0613F059.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	04:42:00	
J:\GC26\DATA\061318\0613F060.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	05:01:00	
J:\GC26\DATA\061318\0613F060.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	05:01:00	
J:\GC26\DATA\061318\0613F061.D\	ZZZZZZZ	ZZZZZZZ	6/14/2018	05:19:00	

Prep Summary Report

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Butyltins

Prep Method: EPA 3520C **Extraction Lot:** 313504
Analytical Method: ALS SOP **Extraction Date:** 05/09/18 17:42

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-RB-VV-180502-1700	K1804181-027	5/2/18	5/4/18	500 mL	1 mL	
PDI-RB-VV-180502-1730	K1804181-028	5/2/18	5/4/18	500 mL	1 mL	
Lab Control Sample	KQ1806062-01LCS	NA	NA	500 mL	1 mL	
Duplicate Lab Control Sample	KQ1806062-02DLCS	NA	NA	500 mL	1 mL	
Method Blank	KQ1806062-03MB	NA	NA	500 mL	1 mL	

Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 17:00
Sample Matrix:	Water	**Date Received:**	05/04/18 12:50
Sample Name:	PDI-RB-VV-180502-1700	**Units:**	ug/L
Lab Code:	K1804181-027	**Basis:**	NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**0.60** J	0.95	0.13	1	05/16/18 03:02	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	81	48 - 109	05/16/18 03:02	

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/18 17:30
Sample Matrix:	Water	**Date Received:**	05/04/18 12:50
Sample Name:	PDI-RB-VV-180502-1730	**Units:**	ug/L
Lab Code:	K1804181-028	**Basis:**	NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**0.47 J**	1.1	0.15	1	05/16/18 03:30	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	69	48 - 109	05/16/18 03:30	

Analytical Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KQ1806000-04	**Basis:**	NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.95	0.13	1	05/15/18 18:01	5/9/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	97	48 - 109	05/15/18 18:01	

Client: AECOM **Service Request:** K1804181

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3520C

Sample Name	Lab Code	p-Terphenyl-d14 48 - 109
PDI-RB-VV-180502-1700	K1804181-027	81
PDI-RB-VV-180502-1730	K1804181-028	69
Lab Control Sample	KQ1806000-03	84
Method Blank	KQ1806000-04	97

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 05/15/18 17:33

Internal Standard Area and RT SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\051518\0515F003.D\ **Lab Code:** KQ1806457-02
Instrument ID: K-MS-29 **Analysis Lot:** 591231
Analysis Method: 8270D **Signal ID:**

		Chrysene-d12	
		Area	**RT**
	ICAL Result ==>	250,335	15.47
	Upper Limit ==>	500,670	15.97
	Lower Limit ==>	125,168	14.97
Associated Analyses			
Method Blank	KQ1806000-04	218043	15.47
Lab Control Sample	KQ1806000-03	241941	15.46

Client: AECOM **Service Request:**K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**05/16/18 01:36

Internal Standard Area and RT SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\051518\0515F020.D\ **Lab Code:**KQ1806460-02
Instrument ID: K-MS-29 **Analysis Lot:**591233
Analysis Method: 8270D **Signal ID:**

		Chrysene-d12	
		Area	**RT**
	ICAL Result ==>	279,708	15.46
	Upper Limit ==>	559,416	15.96
	Lower Limit ==>	139,854	14.96
Associated Analyses			
PDI-RB-VV-180502-1700	K1804181-027	264977	15.46
PDI-RB-VV-180502-1730	K1804181-028	260782	15.46

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/15/18
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	591231

Lab Control Sample
KQ1806000-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	4.53	5.00	91	42-147

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/15/18 18:01
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Method Blank Summary
Low Level Semivolatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806000-04	**File ID:**	J:\MS29\DATA\051518\0515F004.D\
Analysis Method:	8270D	**Analysis Lot:**	591231,591233
Prep Method:	EPA 3520C	**Extraction Lot:**	313430

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1806000-03	J:\MS29\DATA\051518\0515F005.D\	05/15/18 18:30
PDI-RB-VV-180502-1700	K1804181-027	J:\MS29\DATA\051518\0515F023.D\	05/16/18 03:02
PDI-RB-VV-180502-1730	K1804181-028	J:\MS29\DATA\051518\0515F024.D\	05/16/18 03:30

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/15/18 18:30
Sample Matrix:	Water	**Date Extracted:**	05/09/18

Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806000-03	**File ID:**	J:\MS29\DATA\051518\0515F005.D\
Analysis Method:	8270D	**Analysis Lot:**	591231,591233
Prep Method:	EPA 3520C	**Extraction Lot:**	313430

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1806000-04	J:\MS29\DATA\051518\0515F004.D\	05/15/18 18:01
PDI-RB-VV-180502-1700	K1804181-027	J:\MS29\DATA\051518\0515F023.D\	05/16/18 03:02
PDI-RB-VV-180502-1730	K1804181-028	J:\MS29\DATA\051518\0515F024.D\	05/16/18 03:30

Client: AECOM **Service Request:**K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**05/15/18 15:27

Tune Summary
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\051518\0515F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-29 **Analysis Lot:** 591231

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	26.49	607842	Pass
68	69	0	2	1.89	14024	Pass
69	198	0	100	32.28	740819	Pass
70	69	0	2	0.47	3472	Pass
127	198	10	80	43.35	994780	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	68.16	2294837	Pass
199	198	5	9	6.72	154154	Pass
275	198	10	60	30.71	704725	Pass
365	442	1	50	2.26	76026	Pass
441	443	0.01	100	77.67	507968	Pass
442	442	30	100	100.00	3366806	Pass
443	442	15	24	19.42	653973	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1806457-02	J:\MS29\DATA\051518\0515F003.D\	05/15/18 17:33	
Method Blank	KQ1806000-04	J:\MS29\DATA\051518\0515F004.D\	05/15/18 18:01	
Lab Control Sample	KQ1806000-03	J:\MS29\DATA\051518\0515F005.D\	05/15/18 18:30	

Client: AECOM **Service Request:**K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**05/16/18 01:08

Tune Summary
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\051518\0515F019.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-29 **Analysis Lot:** 591233

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	27.14	628949	Pass
68	69	0	2	1.91	14540	Pass
69	198	0	100	32.77	759585	Pass
70	69	0	2	0.46	3496	Pass
127	198	10	80	43.53	1008896	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	69.21	2317653	Pass
199	198	5	9	6.63	153685	Pass
275	198	10	60	30.14	698474	Pass
365	442	1	50	2.27	76005	Pass
441	443	0.01	100	77.43	504576	Pass
442	442	30	100	100.00	3348846	Pass
443	442	15	24	19.46	651648	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1806460-02	J:\MS29\DATA\051518\0515F020.D\	05/16/18 01:36	
PDI-RB-VV-180502-1700	K1804181-027	J:\MS29\DATA\051518\0515F023.D\	05/16/18 03:02	
PDI-RB-VV-180502-1730	K1804181-028	J:\MS29\DATA\051518\0515F024.D\	05/16/18 03:30	

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800181 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800181-01	SVO_LL ICAL @ 0.05ug/mL | SVM57-73A	J:\MS29\DATA\022718A\0227A003.D	02/27/2018 09:27
02	KC1800181-02	SVO_LL ICAL @ 0.10ug/mL | SVM57-73B	J:\MS29\DATA\022718A\0227A004.D	02/27/2018 09:55
03	KC1800181-03	SVO_LL ICAL @ 0.20ug/mL | SVM57-73C	J:\MS29\DATA\022718A\0227A005.D	02/27/2018 10:24
04	KC1800181-04	SVO_LL ICAL @ 0.50ug/mL | SVM57-73D	J:\MS29\DATA\022718A\0227A006.D	02/27/2018 10:52
05	KC1800181-05	SVO_LL ICAL @ 1.0ug/mL | SVM57-73E	J:\MS29\DATA\022718A\0227A007.D	02/27/2018 11:21
06	KC1800181-06	SVO_LL ICAL @ 2.0ug/mL | SVM57-73F	J:\MS29\DATA\022718A\0227A008.D	02/27/2018 11:50
07	KC1800181-07	SVO_LL ICAL @ 3.0ug/mL | SVM57-73G	J:\MS29\DATA\022718A\0227A009.D	02/27/2018 12:18
08	KC1800181-08	SVO_LL ICAL @ 5.0ug/mL | SVM57-73H	J:\MS29\DATA\022718A\0227A010.D	02/27/2018 12:47
09	KC1800181-09	SVO_LL ICAL @ 7.0ug/mL | SVM57-73I	J:\MS29\DATA\022718A\0227A011.D	02/27/2018 13:15
10	KC1800181-10	SVO_LL ICAL @ 10ug/mL | SVM57-73J	J:\MS29\DATA\022718A\0227A012.D	02/27/2018 13:44

Analyte

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	0.6474	03	200.000	0.5702	04	500.000	0.6761	05	1000.000	0.7395
06	2000.000	0.8035	07	3000.000	0.8376	08	5000.000	0.8421	09	7000.000	0.8761
10	10000.000	0.8523									

p-Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9129	02	100.000	0.8792	03	200.000	0.9298	04	500.000	0.9017
05	1000.000	0.8251	06	2000.000	0.866	07	3000.000	0.854	08	5000.000	0.8188
09	7000.000	0.8877	10	10000.000	0.8579						

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800181 **Signal ID:** 1
Instrument ID: K-MS-29

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Bis(2-ethylhexyl) Phthalate	TRG	Average RF	% RSD	14.2	≤20	0.7605	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	4.1	≤20	0.8733	0.010

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800085 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800085-01	SVO_LL ICAL @ 0.05ug/mL | SVM57-73A	J:\MS29\DATA\022718\0227F003.D	02/27/2018 09:27
02	KC1800085-02	SVO_LL ICAL @ 0.10ug/mL | SVM57-73B	J:\MS29\DATA\022718\0227F004.D	02/27/2018 09:55
03	KC1800085-03	SVO_LL ICAL @ 0.20ug/mL | SVM57-73C	J:\MS29\DATA\022718\0227F005.D	02/27/2018 10:24
04	KC1800085-04	SVO_LL ICAL @ 0.50ug/mL | SVM57-73D	J:\MS29\DATA\022718\0227F006.D	02/27/2018 10:52
05	KC1800085-05	SVO_LL ICAL @ 1.0ug/mL | SVM57-73E	J:\MS29\DATA\022718\0227F007.D	02/27/2018 11:21
06	KC1800085-06	SVO_LL ICAL @ 2.0ug/mL | SVM57-73F	J:\MS29\DATA\022718\0227F008.D	02/27/2018 11:50
07	KC1800085-07	SVO_LL ICAL @ 3.0ug/mL | SVM57-73G	J:\MS29\DATA\022718\0227F009.D	02/27/2018 12:18
08	KC1800085-08	SVO_LL ICAL @ 5.0ug/mL | SVM57-73H	J:\MS29\DATA\022718\0227F010.D	02/27/2018 12:47
09	KC1800085-09	SVO_LL ICAL @ 7.0ug/mL | SVM57-73I	J:\MS29\DATA\022718\0227F011.D	02/27/2018 13:15
10	KC1800085-10	SVO_LL ICAL @ 10ug/mL | SVM57-73J	J:\MS29\DATA\022718\0227F012.D	02/27/2018 13:44

Analyte

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	0.6474	03	200.000	0.5702	04	500.000	0.6761	05	1000.000	0.7395
06	2000.000	0.8035	07	3000.000	0.8376	08	5000.000	0.8421	09	7000.000	0.8761
10	10000.000	0.8523									

p-Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9129	02	100.000	0.8792	03	200.000	0.9298	04	500.000	0.9017
05	1000.000	0.8251	06	2000.000	0.866	07	3000.000	0.854	08	5000.000	0.8188
09	7000.000	0.8877	10	10000.000	0.8579						

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800085 **Signal ID:** 1
Instrument ID: K-MS-29

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Bis(2-ethylhexyl) Phthalate	TRG	Average RF	% RSD	14.2	≤20	0.7605	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	4.1	≤20	0.8733	0.010

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Verification Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800181 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800181-11	SVO_LL ICV @ 3.0ug/mL | SVM57-77C	J:\MS29\DATA\022718A\0227A013.D	02/27/2018 14:12

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3350	7.605E-1	8.486E-1	11.58	±30	Average RF
p-Terphenyl-d14	3000	3770	8.733E-1	1.096E0	25.51	±30	Average RF

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/27/2018

Initial Calibration Verification Summary
Low Level Semivolatile Organic Compounds by GC/MS

Calibration ID: KC1800085 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800085-11	SVO_LL ICV @ 3.0ug/mL | SVM57-77C	J:\MS29\DATA\022718\0227F013.D	02/27/2018 14:12

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3350	7.605E-1	8.486E-1	11.58	±30	Average RF
p-Terphenyl-d14	3000	3770	8.733E-1	1.096E0	25.51	±30	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/15/18 17:33

Continuing Calibration Verification (CCV) Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Calibration Date:**	2/27/2018
File ID:	J:\MS29\DATA\051518\0515F003.D\	**Calibration ID:**	KC1800085
Signal ID:	1	**Analysis Lot:**	591231
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3160	0.7605	0.8019	5.4	NA	±20	Average RF
p-Terphenyl-d14	3000	3000	0.8733	0.8743	0.1	NA	±20	Average RF

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/16/18 01:36

Continuing Calibration Verification (CCV) Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	**Calibration Date:**	2/27/2018
File ID:	J:\MS29\DATA\051518\0515F020.D\	**Calibration ID:**	KC1800181
Signal ID:	1	**Analysis Lot:**	591233
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	2920	0.7605	0.7404	-2.7	NA	±20	Average RF
p-Terphenyl-d14	3000	2640	0.8733	0.7694	-11.9	NA	±20	Average RF

Client: AECOM **Service Request:**K1804181

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: **Analysis Lot:**591231

Instrument ID:K-MS-29

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS29\DATA\051518\0515F001.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	15:27:00	
J:\MS29\DATA\051518\0515F003.D\	Continuing Calibration Verification	KQ1806457-02	5/15/2018	17:33:00	
J:\MS29\DATA\051518\0515F004.D\	Method Blank	KQ1806000-04	5/15/2018	18:01:00	
J:\MS29\DATA\051518\0515F005.D\	Lab Control Sample	KQ1806000-03	5/15/2018	18:30:00	
J:\MS29\DATA\051518\0515F006.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	18:58:00	
J:\MS29\DATA\051518\0515F007.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	19:26:00	
J:\MS29\DATA\051518\0515F008.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	19:55:00	
J:\MS29\DATA\051518\0515F009.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	20:23:00	
J:\MS29\DATA\051518\0515F010.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	20:52:00	
J:\MS29\DATA\051518\0515F011.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	21:20:00	
J:\MS29\DATA\051518\0515F012.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	21:49:00	
J:\MS29\DATA\051518\0515F013.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	22:17:00	
J:\MS29\DATA\051518\0515F014.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	22:45:00	
J:\MS29\DATA\051518\0515F015.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	23:14:00	
J:\MS29\DATA\051518\0515F016.D\	ZZZZZZZ	ZZZZZZZ	5/15/2018	23:42:00	
J:\MS29\DATA\051518\0515F017.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	00:11:00	

Client: AECOM **Service Request:**K1804181

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:

Analysis Lot:591233

Instrument ID:K-MS-29

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS29\DATA\051518\0515F019.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	01:08:00	
J:\MS29\DATA\051518\0515F019.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	01:08:00	
J:\MS29\DATA\051518\0515F020.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	01:36:00	
J:\MS29\DATA\051518\0515F020.D\	Continuing Calibration Verification	KQ1806460-02	5/16/2018	01:36:00	
J:\MS29\DATA\051518\0515F021.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	02:05:00	
J:\MS29\DATA\051518\0515F022.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	02:33:00	
J:\MS29\DATA\051518\0515F023.D\	PDI-RB-VV-180502-1700	K1804181-027	5/16/2018	03:02:00	
J:\MS29\DATA\051518\0515F024.D\	PDI-RB-VV-180502-1730	K1804181-028	5/16/2018	03:30:00	
J:\MS29\DATA\051518\0515F025.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	03:58:00	
J:\MS29\DATA\051518\0515F026.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	04:27:00	
J:\MS29\DATA\051518\0515F027.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	04:56:00	
J:\MS29\DATA\051518\0515F028.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	05:24:00	
J:\MS29\DATA\051518\0515F029.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	05:53:00	
J:\MS29\DATA\051518\0515F030.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	06:21:00	
J:\MS29\DATA\051518\0515F031.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	06:50:00	
J:\MS29\DATA\051518\0515F032.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	07:18:00	
J:\MS29\DATA\051518\0515F033.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	07:47:00	
J:\MS29\DATA\051518\0515F034.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	08:15:00	
J:\MS29\DATA\051518\0515F035.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	08:44:00	
J:\MS29\DATA\051518\0515F036.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	09:12:00	
J:\MS29\DATA\051518\0515F037.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	09:41:00	
J:\MS29\DATA\051518\0515F038.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	10:10:00	
J:\MS29\DATA\051518\0515F039.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	10:38:00	
J:\MS29\DATA\051518\0515F040.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	11:07:00	
J:\MS29\DATA\051518\0515F041.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	11:35:00	
J:\MS29\DATA\051518\0515F042.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	12:04:00	
J:\MS29\DATA\051518\0515F043.D\	ZZZZZZZ	ZZZZZZZ	5/16/2018	12:33:00	

Prep Summary Report

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Low Level Semivolatile Organic Compounds by GC/MS

Prep Method: EPA 3520C **Extraction Lot:** 313430
Analytical Method: 8270D **Extraction Date:** 05/09/18 07:48

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-RB-VV-180502-1700	K1804181-027	5/2/18	5/4/18	1050.0000	2 mL	
PDI-RB-VV-180502-1730	K1804181-028	5/2/18	5/4/18	920.0000 mL	2 mL	
Lab Control Sample	KQ1806000-03LCS	NA	NA	1000 mL	2 mL	
Method Blank	KQ1806000-04MB	NA	NA	1050.0000	2 mL	

Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
PDI-SG-S239	K1804181-001	05/02/2018	05/04/2018
PDI-SG-S236	K1804181-002	05/02/2018	05/04/2018
PDI-SG-S242	K1804181-003	05/02/2018	05/04/2018
PDI-SG-S233	K1804181-004	05/02/2018	05/04/2018
PDI-SG-S037	K1804181-005	05/02/2018	05/04/2018
PDI-SG-S038	K1804181-006	05/02/2018	05/04/2018
PDI-SG-S039	K1804181-007	05/02/2018	05/04/2018
PDI-SG-S037-D	K1804181-008	05/02/2018	05/04/2018
PDI-SG-S040	K1804181-009	05/02/2018	05/04/2018
PDI-SG-S041	K1804181-010	05/02/2018	05/04/2018
PDI-SG-S043	K1804181-011	05/02/2018	05/04/2018
PDI-SG-S044	K1804181-012	05/02/2018	05/04/2018
PDI-SG-S062	K1804181-013	05/02/2018	05/04/2018
PDI-SG-S063	K1804181-014	05/03/2018	05/04/2018
PDI-SG-S198	K1804181-015	05/03/2018	05/04/2018
PDI-SG-S201	K1804181-016	05/03/2018	05/04/2018
PDI-SG-S200	K1804181-017	05/03/2018	05/04/2018
PDI-SG-S194	K1804181-018	05/03/2018	05/04/2018
PDI-SG-S193	K1804181-019	05/03/2018	05/04/2018
PDI-SG-S186	K1804181-020	05/03/2018	05/04/2018
PDI-SG-S172	K1804181-021	05/03/2018	05/04/2018
PDI-SG-S123	K1804181-022	05/03/2018	05/04/2018
PDI-SG-S125	K1804181-023	05/03/2018	05/04/2018
PDI-SG-S128	K1804181-024	05/03/2018	05/04/2018
PDI-SG-S126	K1804181-025	05/03/2018	05/04/2018
PDI-SG-S126-D	K1804181-026	05/03/2018	05/04/2018
PDI-SG-S200MS	KWG1802407-3	05/03/2018	05/04/2018
PDI-SG-S200DMS	KWG1802407-4	05/03/2018	05/04/2018
PDI-SG-S236MS	KWG1802419-1	05/02/2018	05/04/2018
PDI-SG-S236DMS	KWG1802419-2	05/02/2018	05/04/2018

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S239	**Units:**	ug/Kg
Lab Code:	K1804181-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**24**	D	7.6	1.2	5	05/14/18	06/11/18	KWG1802419	
2-Methylnaphthalene	**14**	D	7.6	0.91	5	05/14/18	06/11/18	KWG1802419	
Acenaphthylene	**17**	D	3.8	0.35	5	05/14/18	06/11/18	KWG1802419	
Acenaphthene	**11**	D	3.8	0.36	5	05/14/18	06/11/18	KWG1802419	
Fluorene	**16**	D	3.8	0.40	5	05/14/18	06/11/18	KWG1802419	
Phenanthrene	**120**	D	3.8	0.50	5	05/14/18	06/11/18	KWG1802419	
Anthracene	**33**	D	3.8	0.29	5	05/14/18	06/11/18	KWG1802419	
Fluoranthene	**330**	D	3.8	0.37	5	05/14/18	06/11/18	KWG1802419	
Pyrene	**400**	D	3.8	0.38	5	05/14/18	06/11/18	KWG1802419	
Benz(a)anthracene	**130**	D	3.8	0.29	5	05/14/18	06/11/18	KWG1802419	
Chrysene	**260**	D	3.8	0.42	5	05/14/18	06/11/18	KWG1802419	
Benzo(b)fluoranthene†	**310**	D	3.8	0.50	5	05/14/18	06/11/18	KWG1802419	
Benzo(k)fluoranthene	**98**	D	3.8	0.43	5	05/14/18	06/11/18	KWG1802419	
Benzo(a)pyrene	**180**	D	3.8	0.55	5	05/14/18	06/11/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**140**	D	3.8	0.73	5	05/14/18	06/11/18	KWG1802419	
Dibenz(a,h)anthracene	**31**	D	3.8	0.65	5	05/14/18	06/11/18	KWG1802419	
Benzo(g,h,i)perylene	**190**	D	3.8	0.72	5	05/14/18	06/11/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	42-106	06/11/18	Acceptable
Fluoranthene-d10	80	45-109	06/11/18	Acceptable
Terphenyl-d14	77	41-102	06/11/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S236	**Units:**	ug/Kg
Lab Code:	K1804181-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**15**		1.1	0.17	1	05/14/18	06/08/18	KWG1802419	
2-Methylnaphthalene	**6.2**		1.1	0.13	1	05/14/18	06/08/18	KWG1802419	
Acenaphthylene	**8.7**		0.55	0.050	1	05/14/18	06/08/18	KWG1802419	
Acenaphthene	**6.1**		0.55	0.051	1	05/14/18	06/08/18	KWG1802419	
Fluorene	**11**		0.55	0.057	1	05/14/18	06/08/18	KWG1802419	
Phenanthrene	**77**		0.55	0.072	1	05/14/18	06/08/18	KWG1802419	
Anthracene	**22**		0.55	0.042	1	05/14/18	06/08/18	KWG1802419	
Fluoranthene	**240**	D	5.5	0.53	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**240**	D	5.5	0.55	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**81**		0.55	0.042	1	05/14/18	06/08/18	KWG1802419	
Chrysene	**150**		0.55	0.060	1	05/14/18	06/08/18	KWG1802419	
Benzo(b)fluoranthene†	**140**		0.55	0.072	1	05/14/18	06/08/18	KWG1802419	
Benzo(k)fluoranthene	**46**		0.55	0.062	1	05/14/18	06/08/18	KWG1802419	
Benzo(a)pyrene	**82**		0.55	0.079	1	05/14/18	06/08/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**71**		0.55	0.11	1	05/14/18	06/08/18	KWG1802419	
Dibenz(a,h)anthracene	**15**		0.55	0.093	1	05/14/18	06/08/18	KWG1802419	
Benzo(g,h,i)perylene	**85**		0.55	0.11	1	05/14/18	06/08/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	78	42-106	06/08/18	Acceptable
Fluoranthene-d10	93	45-109	06/08/18	Acceptable
Terphenyl-d14	103	41-102	06/08/18	Outside Control Limits

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S242	**Units:**	ug/Kg
Lab Code:	K1804181-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**2.2**		0.68	0.15	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	**2.0**		0.68	0.12	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	**2.0**		0.34	0.046	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	**5.9**		0.34	0.047	1	05/14/18	06/06/18	KWG1802419	
Fluorene	**5.9**		0.34	0.052	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	**61**		0.34	0.066	1	05/14/18	06/06/18	KWG1802419	
Anthracene	**6.1**		0.34	0.038	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	**75**		0.34	0.049	1	05/14/18	06/06/18	KWG1802419	
Pyrene	**69**		0.34	0.050	1	05/14/18	06/06/18	KWG1802419	
Benz(a)anthracene	**21**		0.34	0.038	1	05/14/18	06/06/18	KWG1802419	
Chrysene	**37**		0.34	0.055	1	05/14/18	06/06/18	KWG1802419	
Benzo(b)fluoranthene†	**45**		0.34	0.066	1	05/14/18	06/06/18	KWG1802419	
Benzo(k)fluoranthene	**15**		0.34	0.057	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	**26**		0.34	0.073	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**21**		0.34	0.096	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	**4.1**		0.34	0.086	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	**23**		0.34	0.095	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	58	42-106	06/06/18	Acceptable
Fluoranthene-d10	65	45-109	06/06/18	Acceptable
Terphenyl-d14	68	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S233	**Units:**	ug/Kg
Lab Code:	K1804181-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**19**	D	3.1	0.46	2	05/14/18	06/11/18	KWG1802419	
2-Methylnaphthalene	**12**	D	3.1	0.37	2	05/14/18	06/11/18	KWG1802419	
Acenaphthylene	**17**	D	1.6	0.14	2	05/14/18	06/11/18	KWG1802419	
Acenaphthene	**13**	D	1.6	0.15	2	05/14/18	06/11/18	KWG1802419	
Fluorene	**24**	D	1.6	0.16	2	05/14/18	06/11/18	KWG1802419	
Phenanthrene	**110**	D	1.6	0.21	2	05/14/18	06/11/18	KWG1802419	
Anthracene	**41**	D	1.6	0.12	2	05/14/18	06/11/18	KWG1802419	
Fluoranthene	**430**	D	1.6	0.15	2	05/14/18	06/11/18	KWG1802419	
Pyrene	**410**	D	1.6	0.16	2	05/14/18	06/11/18	KWG1802419	
Benz(a)anthracene	**140**	D	1.6	0.12	2	05/14/18	06/11/18	KWG1802419	
Chrysene	**250**	D	1.6	0.17	2	05/14/18	06/11/18	KWG1802419	
Benzo(b)fluoranthene†	**300**	D	1.6	0.21	2	05/14/18	06/11/18	KWG1802419	
Benzo(k)fluoranthene	**67**	D	1.6	0.18	2	05/14/18	06/11/18	KWG1802419	
Benzo(a)pyrene	**140**	D	1.6	0.23	2	05/14/18	06/11/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**120**	D	1.6	0.30	2	05/14/18	06/11/18	KWG1802419	
Dibenz(a,h)anthracene	**27**	D	1.6	0.27	2	05/14/18	06/11/18	KWG1802419	
Benzo(g,h,i)perylene	**140**	D	1.6	0.29	2	05/14/18	06/11/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	42-106	06/11/18	Acceptable
Fluoranthene-d10	83	45-109	06/11/18	Acceptable
Terphenyl-d14	82	41-102	06/11/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S037	**Units:**	ug/Kg
Lab Code:	K1804181-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**450**	D	9.3	1.5	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**150**	D	9.3	1.2	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**83**	D	4.7	0.46	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**200**	D	4.7	0.47	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**180**	D	4.7	0.52	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**1600**	D	4.7	0.66	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**280**	D	4.7	0.38	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**1700**	D	4.7	0.49	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**2100**	D	9.3	1.0	20	05/14/18	06/11/18	KWG1802419	
Benz(a)anthracene	**480**	D	4.7	0.38	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**630**	D	4.7	0.55	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**540**	D	4.7	0.66	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**170**	D	4.7	0.57	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**580**	D	4.7	0.73	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**330**	D	4.7	0.96	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**44**	D	4.7	0.86	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**390**	D	4.7	0.95	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	42-106	06/07/18	Acceptable
Fluoranthene-d10	73	45-109	06/07/18	Acceptable
Terphenyl-d14	74	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S038	**Units:**	ug/Kg
Lab Code:	K1804181-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**600**	D	45	7.5	50	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**110**	D	45	6.0	50	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**160**	D	23	2.3	50	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**190**	D	23	2.4	50	05/14/18	06/07/18	KWG1802419	
Fluorene	**150**	D	23	2.6	50	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**1700**	D	23	3.3	50	05/14/18	06/07/18	KWG1802419	
Anthracene	**330**	D	23	1.9	50	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**2700**	D	23	2.5	50	05/14/18	06/07/18	KWG1802419	
Pyrene	**3500**	D	23	2.5	50	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**890**	D	23	1.9	50	05/14/18	06/07/18	KWG1802419	
Chrysene	**1200**	D	23	2.8	50	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**1400**	D	23	3.3	50	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**450**	D	23	2.9	50	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**1600**	D	23	3.7	50	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**1100**	D	23	4.8	50	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**130**	D	23	4.3	50	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**1300**	D	23	4.8	50	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	42-106	06/07/18	Acceptable
Fluoranthene-d10	81	45-109	06/07/18	Acceptable
Terphenyl-d14	80	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S039	**Units:**	ug/Kg
Lab Code:	K1804181-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**910**	D	46	7.5	50	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**320**	D	46	6.0	50	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**230**	D	23	2.3	50	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**650**	D	23	2.4	50	05/14/18	06/07/18	KWG1802419	
Fluorene	**540**	D	23	2.6	50	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**5400**	D	23	3.3	50	05/14/18	06/07/18	KWG1802419	
Anthracene	**650**	D	23	1.9	50	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**6900**	D	23	2.5	50	05/14/18	06/07/18	KWG1802419	
Pyrene	**8700**	D	23	2.5	50	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**2200**	D	23	1.9	50	05/14/18	06/07/18	KWG1802419	
Chrysene	**2800**	D	23	2.8	50	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**2900**	D	23	3.3	50	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**910**	D	23	2.9	50	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**3400**	D	23	3.7	50	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**2000**	D	23	4.8	50	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**270**	D	23	4.3	50	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**2400**	D	23	4.8	50	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	85	42-106	06/07/18	Acceptable
Fluoranthene-d10	90	45-109	06/07/18	Acceptable
Terphenyl-d14	83	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S037-D	**Units:**	ug/Kg
Lab Code:	K1804181-008	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**440**	D	9.2	1.5	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**140**	D	9.2	1.2	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**84**	D	4.6	0.46	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**170**	D	4.6	0.47	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**150**	D	4.6	0.52	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**1400**	D	4.6	0.66	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**260**	D	4.6	0.38	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**1700**	D	4.6	0.49	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**2200**	D	9.2	1.0	20	05/14/18	06/11/18	KWG1802419	
Benz(a)anthracene	**550**	D	4.6	0.38	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**670**	D	4.6	0.55	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**570**	D	4.6	0.66	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**180**	D	4.6	0.57	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**620**	D	4.6	0.73	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**320**	D	4.6	0.96	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**47**	D	4.6	0.86	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**370**	D	4.6	0.95	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	42-106	06/07/18	Acceptable
Fluoranthene-d10	76	45-109	06/07/18	Acceptable
Terphenyl-d14	81	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S040	**Units:**	ug/Kg
Lab Code:	K1804181-009	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**5.3**	D	1.9	0.30	2	05/14/18	06/11/18	KWG1802419	
2-Methylnaphthalene	**3.7**	D	1.9	0.24	2	05/14/18	06/11/18	KWG1802419	
Acenaphthylene	**5.0**	D	0.92	0.092	2	05/14/18	06/11/18	KWG1802419	
Acenaphthene	**4.3**	D	0.92	0.094	2	05/14/18	06/11/18	KWG1802419	
Fluorene	**4.3**	D	0.92	0.11	2	05/14/18	06/11/18	KWG1802419	
Phenanthrene	**27**	D	0.92	0.14	2	05/14/18	06/11/18	KWG1802419	
Anthracene	**8.8**	D	0.92	0.076	2	05/14/18	06/11/18	KWG1802419	
Fluoranthene	**79**	D	0.92	0.098	2	05/14/18	06/11/18	KWG1802419	
Pyrene	**92**	D	0.92	0.10	2	05/14/18	06/11/18	KWG1802419	
Benz(a)anthracene	**39**	D	0.92	0.076	2	05/14/18	06/11/18	KWG1802419	
Chrysene	**57**	D	0.92	0.11	2	05/14/18	06/11/18	KWG1802419	
Benzo(b)fluoranthene†	**66**	D	0.92	0.14	2	05/14/18	06/11/18	KWG1802419	
Benzo(k)fluoranthene	**21**	D	0.92	0.12	2	05/14/18	06/11/18	KWG1802419	
Benzo(a)pyrene	**59**	D	0.92	0.15	2	05/14/18	06/11/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**37**	D	0.92	0.20	2	05/14/18	06/11/18	KWG1802419	
Dibenz(a,h)anthracene	**6.8**	D	0.92	0.18	2	05/14/18	06/11/18	KWG1802419	
Benzo(g,h,i)perylene	**38**	D	0.92	0.19	2	05/14/18	06/11/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-106	06/11/18	Acceptable
Fluoranthene-d10	75	45-109	06/11/18	Acceptable
Terphenyl-d14	77	41-102	06/11/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S041	**Units:**	ug/Kg
Lab Code:	K1804181-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**8.0**		1.2	0.17	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	**3.9**		1.2	0.14	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	**5.4**		0.56	0.051	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	**4.4**		0.56	0.053	1	05/14/18	06/06/18	KWG1802419	
Fluorene	**5.3**		0.56	0.058	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	**34**		0.56	0.074	1	05/14/18	06/06/18	KWG1802419	
Anthracene	**11**		0.56	0.043	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	**82**		0.56	0.055	1	05/14/18	06/06/18	KWG1802419	
Pyrene	**92**		0.56	0.056	1	05/14/18	06/06/18	KWG1802419	
Benz(a)anthracene	**42**		0.56	0.043	1	05/14/18	06/06/18	KWG1802419	
Chrysene	**59**		0.56	0.061	1	05/14/18	06/06/18	KWG1802419	
Benzo(b)fluoranthene†	**92**		0.56	0.074	1	05/14/18	06/06/18	KWG1802419	
Benzo(k)fluoranthene	**32**		0.56	0.064	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	**78**		0.56	0.081	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**60**		0.56	0.11	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	**10**		0.56	0.096	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	**65**		0.56	0.11	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	59	42-106	06/06/18	Acceptable
Fluoranthene-d10	68	45-109	06/06/18	Acceptable
Terphenyl-d14	75	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S043	**Units:**	ug/Kg
Lab Code:	K1804181-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**5.8**		1.2	0.18	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	**4.2**		1.2	0.14	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	**3.5**		0.59	0.054	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	**5.7**		0.59	0.055	1	05/14/18	06/06/18	KWG1802419	
Fluorene	**6.3**		0.59	0.061	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	**35**		0.59	0.077	1	05/14/18	06/06/18	KWG1802419	
Anthracene	**11**		0.59	0.045	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	**74**		0.59	0.057	1	05/14/18	06/06/18	KWG1802419	
Pyrene	**81**		0.59	0.059	1	05/14/18	06/06/18	KWG1802419	
Benz(a)anthracene	**35**		0.59	0.045	1	05/14/18	06/06/18	KWG1802419	
Chrysene	**52**		0.59	0.064	1	05/14/18	06/06/18	KWG1802419	
Benzo(b)fluoranthene†	**71**		0.59	0.077	1	05/14/18	06/06/18	KWG1802419	
Benzo(k)fluoranthene	**23**		0.59	0.067	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	**53**		0.59	0.085	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**40**		0.59	0.12	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	**7.1**		0.59	0.10	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	**42**		0.59	0.12	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	55	42-106	06/06/18	Acceptable
Fluoranthene-d10	63	45-109	06/06/18	Acceptable
Terphenyl-d14	70	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S044	**Units:**	ug/Kg
Lab Code:	K1804181-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**35**	D	11	1.6	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**64**	D	11	1.3	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**12**	D	5.3	0.49	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**45**	D	5.3	0.50	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**61**	D	5.3	0.56	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**590**	D	5.3	0.70	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**130**	D	5.3	0.41	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**1500**	D	5.3	0.52	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**1500**	D	5.3	0.53	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**800**	D	5.3	0.41	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**950**	D	5.3	0.59	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**930**	D	5.3	0.70	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**330**	D	5.3	0.61	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**670**	D	5.3	0.78	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**350**	D	5.3	1.1	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**88**	D	5.3	0.92	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**330**	D	5.3	1.1	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	42-106	06/07/18	Acceptable
Fluoranthene-d10	83	45-109	06/07/18	Acceptable
Terphenyl-d14	82	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S062	**Units:**	ug/Kg
Lab Code:	K1804181-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**9.3**		1.3	0.19	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	**6.6**		1.3	0.16	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	**6.7**		0.63	0.058	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	**12**		0.63	0.059	1	05/14/18	06/06/18	KWG1802419	
Fluorene	**15**		0.63	0.066	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	**130**		0.63	0.083	1	05/14/18	06/06/18	KWG1802419	
Anthracene	**22**		0.63	0.048	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	**220**		0.63	0.062	1	05/14/18	06/06/18	KWG1802419	
Pyrene	**220**		0.63	0.063	1	05/14/18	06/06/18	KWG1802419	
Benz(a)anthracene	**77**		0.63	0.048	1	05/14/18	06/06/18	KWG1802419	
Chrysene	**130**		0.63	0.069	1	05/14/18	06/06/18	KWG1802419	
Benzo(b)fluoranthene†	**160**		0.63	0.083	1	05/14/18	06/06/18	KWG1802419	
Benzo(k)fluoranthene	**53**		0.63	0.072	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	**130**		0.63	0.092	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**88**		0.63	0.13	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	**14**		0.63	0.11	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	**91**		0.63	0.12	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	42-106	06/06/18	Acceptable
Fluoranthene-d10	75	45-109	06/06/18	Acceptable
Terphenyl-d14	84	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S063	**Units:**	ug/Kg
Lab Code:	K1804181-014	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**8.6**		1.3	0.19	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	**7.1**		1.3	0.16	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	**18**		0.64	0.059	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	**12**		0.64	0.060	1	05/14/18	06/06/18	KWG1802419	
Fluorene	**14**		0.64	0.066	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	**90**		0.64	0.084	1	05/14/18	06/06/18	KWG1802419	
Anthracene	**24**		0.64	0.049	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	**1800**	D	6.4	0.62	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**1200**	D	6.4	0.64	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**170**		0.64	0.049	1	05/14/18	06/06/18	KWG1802419	
Chrysene	**350**	D	6.4	0.70	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**330**	D	6.4	0.84	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**120**		0.64	0.073	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	**170**		0.64	0.093	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**100**		0.64	0.13	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	**18**		0.64	0.11	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	**92**		0.64	0.13	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	60	42-106	06/06/18	Acceptable
Fluoranthene-d10	62	45-109	06/06/18	Acceptable
Terphenyl-d14	78	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S198	**Units:**	ug/Kg
Lab Code:	K1804181-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**26**	D	14	2.1	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**15**	D	14	1.7	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**21**	D	6.9	0.63	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**19**	D	6.9	0.65	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**26**	D	6.9	0.72	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**170**	D	6.9	0.91	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**48**	D	6.9	0.52	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**450**	D	6.9	0.67	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**440**	D	6.9	0.69	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**180**	D	6.9	0.52	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**300**	D	6.9	0.76	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**290**	D	6.9	0.91	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**95**	D	6.9	0.78	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**180**	D	6.9	1.0	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**120**	D	6.9	1.4	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**27**	D	6.9	1.2	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**140**	D	6.9	1.3	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	42-106	06/07/18	Acceptable
Fluoranthene-d10	80	45-109	06/07/18	Acceptable
Terphenyl-d14	85	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S201	**Units:**	ug/Kg
Lab Code:	K1804181-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**20**	D	14	2.1	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**11**	JD	14	1.7	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**20**	D	7.0	0.64	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**16**	D	7.0	0.65	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**22**	D	7.0	0.72	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**130**	D	7.0	0.92	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**43**	D	7.0	0.53	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**370**	D	7.0	0.68	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**360**	D	7.0	0.70	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**190**	D	7.0	0.53	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**300**	D	7.0	0.76	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**350**	D	7.0	0.92	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**120**	D	7.0	0.79	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**220**	D	7.0	1.1	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**130**	D	7.0	1.4	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**30**	D	7.0	1.2	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**130**	D	7.0	1.4	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	75	42-106	06/07/18	Acceptable
Fluoranthene-d10	86	45-109	06/07/18	Acceptable
Terphenyl-d14	97	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S200	**Units:**	ug/Kg
Lab Code:	K1804181-017	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**21**	D	6.5	0.97	5	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**8.9**	D	6.5	0.77	5	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**17**	D	3.3	0.30	5	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**15**	D	3.3	0.31	5	05/11/18	06/06/18	KWG1802407	
Fluorene	**23**	D	3.3	0.34	5	05/11/18	06/06/18	KWG1802407	
Phenanthrene	**120**	D	3.3	0.43	5	05/11/18	06/06/18	KWG1802407	
Anthracene	**34**	D	3.3	0.25	5	05/11/18	06/06/18	KWG1802407	
Fluoranthene	**380**	D	3.3	0.32	5	05/11/18	06/06/18	KWG1802407	
Pyrene	**340**	D	3.3	0.33	5	05/11/18	06/06/18	KWG1802407	
Benz(a)anthracene	**150**	D	3.3	0.25	5	05/11/18	06/06/18	KWG1802407	
Chrysene	**240**	D	3.3	0.36	5	05/11/18	06/06/18	KWG1802407	
Benzo(b)fluoranthene†	**240**	D	3.3	0.43	5	05/11/18	06/06/18	KWG1802407	
Benzo(k)fluoranthene	**89**	D	3.3	0.37	5	05/11/18	06/06/18	KWG1802407	
Benzo(a)pyrene	**150**	D	3.3	0.47	5	05/11/18	06/06/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**100**	D	3.3	0.62	5	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**24**	D	3.3	0.56	5	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**120**	D	3.3	0.61	5	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	42-106	06/06/18	Acceptable
Fluoranthene-d10	80	45-109	06/06/18	Acceptable
Terphenyl-d14	79	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S194	**Units:**	ug/Kg
Lab Code:	K1804181-018	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**19**	D	14	2.1	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**9.5**	JD	14	1.7	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**13**	D	6.9	0.64	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**12**	D	6.9	0.65	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**17**	D	6.9	0.72	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**110**	D	6.9	0.91	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**30**	D	6.9	0.53	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**340**	D	6.9	0.68	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**320**	D	6.9	0.69	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**110**	D	6.9	0.53	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**210**	D	6.9	0.76	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**210**	D	6.9	0.91	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**76**	D	6.9	0.79	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**120**	D	6.9	1.1	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**81**	D	6.9	1.4	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**19**	D	6.9	1.2	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**88**	D	6.9	1.4	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	42-106	06/07/18	Acceptable
Fluoranthene-d10	97	45-109	06/07/18	Acceptable
Terphenyl-d14	125	41-102	06/07/18	Outside Control Limits

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S193	**Units:**	ug/Kg
Lab Code:	K1804181-019	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**24**	D	15	2.3	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**13**	JD	15	1.8	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**22**	D	7.4	0.68	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**12**	D	7.4	0.70	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**21**	D	7.4	0.77	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**120**	D	7.4	0.98	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**43**	D	7.4	0.57	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**440**	D	7.4	0.73	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**450**	D	7.4	0.74	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**270**	D	7.4	0.57	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**430**	D	7.4	0.82	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**390**	D	7.4	0.98	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**140**	D	7.4	0.85	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**220**	D	7.4	1.1	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**130**	D	7.4	1.5	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**31**	D	7.4	1.3	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**130**	D	7.4	1.5	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	42-106	06/07/18	Acceptable
Fluoranthene-d10	84	45-109	06/07/18	Acceptable
Terphenyl-d14	102	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S186	**Units:**	ug/Kg
Lab Code:	K1804181-020	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**30**	D	14	2.0	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**20**	D	14	1.6	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**39**	D	6.7	0.62	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**29**	D	6.7	0.63	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**58**	D	6.7	0.70	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**250**	D	6.7	0.88	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**99**	D	6.7	0.51	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**890**	D	6.7	0.66	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**780**	D	6.7	0.67	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**410**	D	6.7	0.51	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**1400**	D	6.7	0.74	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**1100**	D	6.7	0.88	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**290**	D	6.7	0.76	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**420**	D	6.7	0.98	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**340**	D	6.7	1.3	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**88**	D	6.7	1.2	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**360**	D	6.7	1.3	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	80	42-106	06/07/18	Acceptable
Fluoranthene-d10	87	45-109	06/07/18	Acceptable
Terphenyl-d14	95	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S172	**Units:**	ug/Kg
Lab Code:	K1804181-021	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**51**	D	8.1	1.5	10	05/14/18	06/07/18	KWG1802419	
2-Methylnaphthalene	**21**	D	8.1	1.2	10	05/14/18	06/07/18	KWG1802419	
Acenaphthylene	**18**	D	4.1	0.46	10	05/14/18	06/07/18	KWG1802419	
Acenaphthene	**23**	D	4.1	0.47	10	05/14/18	06/07/18	KWG1802419	
Fluorene	**22**	D	4.1	0.52	10	05/14/18	06/07/18	KWG1802419	
Phenanthrene	**170**	D	4.1	0.66	10	05/14/18	06/07/18	KWG1802419	
Anthracene	**41**	D	4.1	0.38	10	05/14/18	06/07/18	KWG1802419	
Fluoranthene	**260**	D	4.1	0.49	10	05/14/18	06/07/18	KWG1802419	
Pyrene	**300**	D	4.1	0.50	10	05/14/18	06/07/18	KWG1802419	
Benz(a)anthracene	**100**	D	4.1	0.38	10	05/14/18	06/07/18	KWG1802419	
Chrysene	**140**	D	4.1	0.55	10	05/14/18	06/07/18	KWG1802419	
Benzo(b)fluoranthene†	**130**	D	4.1	0.66	10	05/14/18	06/07/18	KWG1802419	
Benzo(k)fluoranthene	**43**	D	4.1	0.57	10	05/14/18	06/07/18	KWG1802419	
Benzo(a)pyrene	**120**	D	4.1	0.73	10	05/14/18	06/07/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	**62**	D	4.1	0.96	10	05/14/18	06/07/18	KWG1802419	
Dibenz(a,h)anthracene	**11**	D	4.1	0.86	10	05/14/18	06/07/18	KWG1802419	
Benzo(g,h,i)perylene	**72**	D	4.1	0.95	10	05/14/18	06/07/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-106	06/07/18	Acceptable
Fluoranthene-d10	76	45-109	06/07/18	Acceptable
Terphenyl-d14	80	41-102	06/07/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S123	**Units:**	ug/Kg
Lab Code:	K1804181-022	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**88**		0.80	0.15	1	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**62**		0.80	0.12	1	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**6.5**		0.40	0.046	1	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**620**	D	4.0	0.47	10	05/11/18	06/07/18	KWG1802407	
Fluorene	**270**	D	4.0	0.52	10	05/11/18	06/07/18	KWG1802407	
Phenanthrene	**620**	D	4.0	0.66	10	05/11/18	06/07/18	KWG1802407	
Anthracene	**78**		0.40	0.038	1	05/11/18	06/06/18	KWG1802407	
Fluoranthene	**360**	D	4.0	0.49	10	05/11/18	06/07/18	KWG1802407	
Pyrene	**330**	D	4.0	0.50	10	05/11/18	06/07/18	KWG1802407	
Benz(a)anthracene	**100**		0.40	0.038	1	05/11/18	06/06/18	KWG1802407	
Chrysene	**120**		0.40	0.055	1	05/11/18	06/06/18	KWG1802407	
Benzo(b)fluoranthene†	**74**		0.40	0.066	1	05/11/18	06/06/18	KWG1802407	
Benzo(k)fluoranthene	**24**		0.40	0.057	1	05/11/18	06/06/18	KWG1802407	
Benzo(a)pyrene	**70**		0.40	0.073	1	05/11/18	06/06/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**33**		0.40	0.096	1	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**7.2**		0.40	0.086	1	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**37**		0.40	0.095	1	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	61	42-106	06/06/18	Acceptable
Fluoranthene-d10	66	45-109	06/06/18	Acceptable
Terphenyl-d14	74	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S125	**Units:**	ug/Kg
Lab Code:	K1804181-023	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**53**		1.1	0.17	1	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**25**		1.1	0.14	1	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**12**		0.55	0.051	1	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**69**		0.55	0.052	1	05/11/18	06/06/18	KWG1802407	
Fluorene	**33**		0.55	0.058	1	05/11/18	06/06/18	KWG1802407	
Phenanthrene	**160**		0.55	0.073	1	05/11/18	06/06/18	KWG1802407	
Anthracene	**30**		0.55	0.042	1	05/11/18	06/06/18	KWG1802407	
Fluoranthene	**150**		0.55	0.054	1	05/11/18	06/06/18	KWG1802407	
Pyrene	**200**		0.55	0.055	1	05/11/18	06/06/18	KWG1802407	
Benz(a)anthracene	**81**		0.55	0.042	1	05/11/18	06/06/18	KWG1802407	
Chrysene	**100**		0.55	0.061	1	05/11/18	06/06/18	KWG1802407	
Benzo(b)fluoranthene†	**110**	D	2.8	0.37	5	05/11/18	06/07/18	KWG1802407	
Benzo(k)fluoranthene	**41**	D	2.8	0.32	5	05/11/18	06/07/18	KWG1802407	
Benzo(a)pyrene	**94**		0.55	0.081	1	05/11/18	06/06/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**59**		0.55	0.11	1	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**11**		0.55	0.095	1	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**67**		0.55	0.11	1	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	65	42-106	06/06/18	Acceptable
Fluoranthene-d10	65	45-109	06/06/18	Acceptable
Terphenyl-d14	77	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S128	**Units:**	ug/Kg
Lab Code:	K1804181-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.76**		0.69	0.15	1	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**0.40**	J	0.69	0.12	1	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**0.46**		0.35	0.046	1	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**1.1**		0.35	0.047	1	05/11/18	06/06/18	KWG1802407	
Fluorene	**1.2**		0.35	0.052	1	05/11/18	06/06/18	KWG1802407	
Phenanthrene	**4.6**		0.35	0.066	1	05/11/18	06/06/18	KWG1802407	
Anthracene	**1.0**		0.35	0.038	1	05/11/18	06/06/18	KWG1802407	
Fluoranthene	**9.4**		0.35	0.049	1	05/11/18	06/06/18	KWG1802407	
Pyrene	**8.9**		0.35	0.050	1	05/11/18	06/06/18	KWG1802407	
Benz(a)anthracene	**3.3**		0.35	0.038	1	05/11/18	06/06/18	KWG1802407	
Chrysene	**4.9**		0.35	0.055	1	05/11/18	06/06/18	KWG1802407	
Benzo(b)fluoranthene†	**5.6**		0.35	0.066	1	05/11/18	06/06/18	KWG1802407	
Benzo(k)fluoranthene	**2.0**		0.35	0.057	1	05/11/18	06/06/18	KWG1802407	
Benzo(a)pyrene	**3.6**		0.35	0.073	1	05/11/18	06/06/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**2.7**		0.35	0.096	1	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**0.49**		0.35	0.086	1	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**3.1**		0.35	0.095	1	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	59	42-106	06/06/18	Acceptable
Fluoranthene-d10	72	45-109	06/06/18	Acceptable
Terphenyl-d14	73	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S126	**Units:**	ug/Kg
Lab Code:	K1804181-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**490**	D	5.1	0.77	5	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**600**	D	5.1	0.62	5	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**100**	D	2.6	0.24	5	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**19000**	D	51	4.8	100	05/11/18	06/07/18	KWG1802407	
Fluorene	**20000**	D	51	5.3	100	05/11/18	06/07/18	KWG1802407	
Phenanthrene	**48000**	D	260	34	500	05/11/18	06/08/18	KWG1802407	
Anthracene	**7100**	D	51	3.9	100	05/11/18	06/07/18	KWG1802407	
Fluoranthene	**25000**	D	260	25	500	05/11/18	06/08/18	KWG1802407	
Pyrene	**14000**	D	51	5.1	100	05/11/18	06/07/18	KWG1802407	
Benz(a)anthracene	**4600**	D	51	3.9	100	05/11/18	06/07/18	KWG1802407	
Chrysene	**5000**	D	51	5.6	100	05/11/18	06/07/18	KWG1802407	
Benzo(b)fluoranthene†	**2900**	D	51	6.8	100	05/11/18	06/07/18	KWG1802407	
Benzo(k)fluoranthene	**920**	D	51	5.8	100	05/11/18	06/07/18	KWG1802407	
Benzo(a)pyrene	**1500**	D	51	7.5	100	05/11/18	06/07/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**410**	D	2.6	0.49	5	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**160**	D	2.6	0.44	5	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**350**	D	2.6	0.49	5	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-106	06/06/18	Acceptable
Fluoranthene-d10	109	45-109	06/06/18	Acceptable
Terphenyl-d14	124	41-102	06/06/18	Outside Control Limits

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/03/2018
Sample Matrix:	Sediment	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S126-D	**Units:**	ug/Kg
Lab Code:	K1804181-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**470**	D	5.2	0.78	5	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	**550**	D	5.2	0.63	5	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**100**	D	2.6	0.24	5	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**19000**	D	52	4.9	100	05/11/18	06/07/18	KWG1802407	
Fluorene	**20000**	D	52	5.4	100	05/11/18	06/07/18	KWG1802407	
Phenanthrene	**52000**	D	260	35	500	05/11/18	06/11/18	KWG1802407	
Anthracene	**7500**	D	52	4.0	100	05/11/18	06/07/18	KWG1802407	
Fluoranthene	**27000**	D	260	26	500	05/11/18	06/11/18	KWG1802407	
Pyrene	**16000**	D	52	5.2	100	05/11/18	06/07/18	KWG1802407	
Benz(a)anthracene	**4900**	D	52	4.0	100	05/11/18	06/07/18	KWG1802407	
Chrysene	**5200**	D	52	5.8	100	05/11/18	06/07/18	KWG1802407	
Benzo(b)fluoranthene†	**3000**	D	52	6.9	100	05/11/18	06/07/18	KWG1802407	
Benzo(k)fluoranthene	**910**	D	52	6.0	100	05/11/18	06/07/18	KWG1802407	
Benzo(a)pyrene	**1500**	D	52	7.6	100	05/11/18	06/07/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	**430**	D	2.6	0.50	5	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	**160**	D	2.6	0.45	5	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	**380**	D	2.6	0.50	5	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	92	42-106	06/06/18	Acceptable
Fluoranthene-d10	97	45-109	06/07/18	Acceptable
Terphenyl-d14	119	41-102	06/06/18	Outside Control Limits

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1802407-6	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.50	0.15	1	05/11/18	06/06/18	KWG1802407	
2-Methylnaphthalene	ND	U	0.50	0.12	1	05/11/18	06/06/18	KWG1802407	
Acenaphthylene	**0.065**	J	0.25	0.046	1	05/11/18	06/06/18	KWG1802407	
Acenaphthene	**0.24**	J	0.25	0.047	1	05/11/18	06/06/18	KWG1802407	
Fluorene	**0.14**	J	0.25	0.052	1	05/11/18	06/06/18	KWG1802407	
Phenanthrene	**0.14**	J	0.25	0.066	1	05/11/18	06/06/18	KWG1802407	
Anthracene	ND	U	0.25	0.038	1	05/11/18	06/06/18	KWG1802407	
Fluoranthene	ND	U	0.25	0.049	1	05/11/18	06/06/18	KWG1802407	
Pyrene	ND	U	0.25	0.050	1	05/11/18	06/06/18	KWG1802407	
Benz(a)anthracene	ND	U	0.25	0.038	1	05/11/18	06/06/18	KWG1802407	
Chrysene	ND	U	0.25	0.055	1	05/11/18	06/06/18	KWG1802407	
Benzo(b)fluoranthene†	ND	U	0.25	0.066	1	05/11/18	06/06/18	KWG1802407	
Benzo(k)fluoranthene	ND	U	0.25	0.057	1	05/11/18	06/06/18	KWG1802407	
Benzo(a)pyrene	ND	U	0.25	0.073	1	05/11/18	06/06/18	KWG1802407	
Indeno(1,2,3-cd)pyrene	ND	U	0.25	0.096	1	05/11/18	06/06/18	KWG1802407	
Dibenz(a,h)anthracene	ND	U	0.25	0.086	1	05/11/18	06/06/18	KWG1802407	
Benzo(g,h,i)perylene	ND	U	0.25	0.095	1	05/11/18	06/06/18	KWG1802407	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	65	42-106	06/06/18	Acceptable
Fluoranthene-d10	68	45-109	06/06/18	Acceptable
Terphenyl-d14	71	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1802419-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.50	0.15	1	05/14/18	06/06/18	KWG1802419	
2-Methylnaphthalene	ND	U	0.50	0.12	1	05/14/18	06/06/18	KWG1802419	
Acenaphthylene	ND	U	0.25	0.046	1	05/14/18	06/06/18	KWG1802419	
Acenaphthene	ND	U	0.25	0.047	1	05/14/18	06/06/18	KWG1802419	
Fluorene	ND	U	0.25	0.052	1	05/14/18	06/06/18	KWG1802419	
Phenanthrene	ND	U	0.25	0.066	1	05/14/18	06/06/18	KWG1802419	
Anthracene	ND	U	0.25	0.038	1	05/14/18	06/06/18	KWG1802419	
Fluoranthene	ND	U	0.25	0.049	1	05/14/18	06/06/18	KWG1802419	
Pyrene	ND	U	0.25	0.050	1	05/14/18	06/06/18	KWG1802419	
Benz(a)anthracene	ND	U	0.25	0.038	1	05/14/18	06/06/18	KWG1802419	
Chrysene	ND	U	0.25	0.055	1	05/14/18	06/06/18	KWG1802419	
Benzo(b)fluoranthene†	ND	U	0.25	0.066	1	05/14/18	06/06/18	KWG1802419	
Benzo(k)fluoranthene	ND	U	0.25	0.057	1	05/14/18	06/06/18	KWG1802419	
Benzo(a)pyrene	ND	U	0.25	0.073	1	05/14/18	06/06/18	KWG1802419	
Indeno(1,2,3-cd)pyrene	ND	U	0.25	0.096	1	05/14/18	06/06/18	KWG1802419	
Dibenz(a,h)anthracene	ND	U	0.25	0.086	1	05/14/18	06/06/18	KWG1802419	
Benzo(g,h,i)perylene	ND	U	0.25	0.095	1	05/14/18	06/06/18	KWG1802419	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	59	42-106	06/06/18	Acceptable
Fluoranthene-d10	64	45-109	06/06/18	Acceptable
Terphenyl-d14	65	41-102	06/06/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

QA/QC Report

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: 8270D SIM **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	
PDI-SG-S239	K1804181-001	70 D	80 D	77 D	
PDI-SG-S236	K1804181-002	78	93	103	*
PDI-SG-S242	K1804181-003	58	65	68	
PDI-SG-S233	K1804181-004	73 D	83 D	82 D	
PDI-SG-S037	K1804181-005	67 D	73 D	74 D	
PDI-SG-S038	K1804181-006	74 D	81 D	80 D	
PDI-SG-S039	K1804181-007	85 D	90 D	83 D	
PDI-SG-S037-D	K1804181-008	67 D	76 D	81 D	
PDI-SG-S040	K1804181-009	66 D	75 D	77 D	
PDI-SG-S041	K1804181-010	59	68	75	
PDI-SG-S043	K1804181-011	55	63	70	
PDI-SG-S044	K1804181-012	70 D	83 D	82 D	
PDI-SG-S062	K1804181-013	67	75	84	
PDI-SG-S063	K1804181-014	60	62	78	
PDI-SG-S198	K1804181-015	70 D	80 D	85 D	
PDI-SG-S201	K1804181-016	75 D	86 D	97 D	
PDI-SG-S200	K1804181-017	71 D	80 D	79 D	
PDI-SG-S194	K1804181-018	76 D	97 D	125 D	*
PDI-SG-S193	K1804181-019	72 D	84 D	102 D	
PDI-SG-S186	K1804181-020	80 D	87 D	95 D	
PDI-SG-S172	K1804181-021	66 D	76 D	80 D	
PDI-SG-S123	K1804181-022	61	66	74	
PDI-SG-S125	K1804181-023	65	65	77	
PDI-SG-S128	K1804181-024	59	72	73	
PDI-SG-S126	K1804181-025	92 D	109 D	124 D	*
PDI-SG-S126-D	K1804181-026	92 D	97 D	119 D	*
Method Blank	KWG1802407-6	65	68	71	
Method Blank	KWG1802419-4	59	64	65	
PDI-SG-S200MS	KWG1802407-3	72 D	79 D	81 D	
PDI-SG-S200DMS	KWG1802407-4	61 D	72 D	76 D	
PDI-SG-S236MS	KWG1802419-1	78 D	84 D	85 D	
PDI-SG-S236DMS	KWG1802419-2	76 D	86 D	87 D	
Lab Control Sample	KWG1802407-5	67	74	77	
Lab Control Sample	KWG1802419-3	59	69	72	

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-106
Sur2	=	Fluoranthene-d10	45-109
Sur3	=	Terphenyl-d14	41-102

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/06/2018
Time Analyzed: 12:53

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060618\0606F015.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802915-2
Analysis Lot: KWG1802915

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	58,032	4.74	28,216	6.29	66,564	7.53
	Upper Limit ==>	116,064	5.24	56,432	6.79	133,128	8.03
	Lower Limit ==>	29,016	4.24	14,108	5.79	33,282	7.03
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
Method Blank	KWG1802419-4	70,853	4.73	35,977	6.29	77,453	7.53
Lab Control Sample	KWG1802419-3	74,334	4.73	35,845	6.29	75,158	7.53
PDI-SG-S041	K1804181-010	78,169	4.73	38,681	6.29	74,311	7.53
PDI-SG-S043	K1804181-011	75,377	4.74	38,009	6.30	71,065	7.54
PDI-SG-S062	K1804181-013	69,181	4.74	37,010	6.30	69,313	7.54
PDI-SG-S063	K1804181-014	72,201	4.74	36,629	6.30	68,374	7.54
Method Blank	KWG1802407-6	61,422	4.74	33,146	6.30	70,587	7.54
Lab Control Sample	KWG1802407-5	62,967	4.74	31,853	6.30	66,858	7.54
PDI-SG-S123	K1804181-022	56,764	4.74	29,756	6.30	55,790	7.55
PDI-SG-S125	K1804181-023	56,577	4.74	28,509	6.31	48,544	7.55
PDI-SG-S128	K1804181-024	61,301	4.74	31,809	6.30	62,599	7.54
PDI-SG-S242	K1804181-003	57,042	4.74	28,340	6.30	51,410	7.55
PDI-SG-S200MS	KWG1802407-3	49,800	4.74	26,058	6.31	56,242	7.54
PDI-SG-S200DMS	KWG1802407-4	49,718	4.74	27,052	6.31	54,007	7.54
PDI-SG-S200	K1804181-017	45,296	4.74	24,257	6.30	51,119	7.54
PDI-SG-S126	K1804181-025	43,394	4.74	23,274	6.31	33,791	7.57
PDI-SG-S126-D	K1804181-026	39,611	4.74	22,597	6.31	32,511*	7.57

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/06/2018
Time Analyzed: 12:53

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060618\0606F015.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802915-2
Analysis Lot: KWG1802915

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	69,237	10.05	74,032	13.07
	Upper Limit ==>	138,474	10.55	148,064	13.57
	Lower Limit ==>	34,619	9.55	37,016	12.57
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
Method Blank	KWG1802419-4	75,224	10.04	83,401	13.06
Lab Control Sample	KWG1802419-3	71,159	10.05	80,945	13.07
PDI-SG-S041	K1804181-010	67,603	10.07	64,554	13.14
PDI-SG-S043	K1804181-011	64,706	10.08	65,646	13.19
PDI-SG-S062	K1804181-013	62,612	10.09	55,733	13.20
PDI-SG-S063	K1804181-014	59,561	10.09	67,334	13.22
Method Blank	KWG1802407-6	69,691	10.07	80,482	13.12
Lab Control Sample	KWG1802407-5	63,909	10.07	74,866	13.13
PDI-SG-S123	K1804181-022	45,321	10.11	65,044	13.29
PDI-SG-S125	K1804181-023	40,042	10.12	52,176	13.35
PDI-SG-S128	K1804181-024	63,097	10.08	71,683	13.16
PDI-SG-S242	K1804181-003	53,845	10.09	59,314	13.22
PDI-SG-S200MS	KWG1802407-3	56,204	10.08	68,493	13.19
PDI-SG-S200DMS	KWG1802407-4	52,536	10.09	65,589	13.19
PDI-SG-S200	K1804181-017	52,887	10.08	63,927	13.18
PDI-SG-S126	K1804181-025	38,714	10.14	60,709	13.27
PDI-SG-S126-D	K1804181-026	37,403	10.14	58,233	13.27

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 06:49

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060718\0607F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802952-2
Analysis Lot: KWG1802952

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	42,964	4.75	21,052	6.30	45,446	7.54
	Upper Limit ==>	85,928	5.25	42,104	6.80	90,892	8.04
	Lower Limit ==>	21,482	4.25	10,526	5.80	22,723	7.04
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
PDI-SG-S126DL	K1804181-025	45,151	4.74	22,262	6.30	46,574	7.54
PDI-SG-S126-DDL	K1804181-026	43,786	4.75	21,650	6.30	46,366	7.54
PDI-SG-S063DL	K1804181-014	47,037	4.75	24,474	6.31	48,711	7.54
PDI-SG-S123DL	K1804181-022	43,390	4.75	23,056	6.30	46,537	7.54
PDI-SG-S125DL	K1804181-023	42,763	4.75	22,825	6.30	46,900	7.54
PDI-SG-S236MS	KWG1802419-1	41,237	4.75	22,618	6.30	46,802	7.54
PDI-SG-S236DMS	KWG1802419-2	43,545	4.75	23,554	6.30	46,874	7.54
PDI-SG-S236DL	K1804181-002	41,001	4.75	22,955	6.30	46,567	7.54
PDI-SG-S037	K1804181-005	40,166	4.75	21,200	6.30	44,087	7.54
PDI-SG-S038	K1804181-006	40,864	4.75	22,300	6.30	45,771	7.54
PDI-SG-S039	K1804181-007	40,421	4.75	21,560	6.30	43,736	7.54
PDI-SG-S037-D	K1804181-008	41,514	4.74	22,093	6.30	44,940	7.54
PDI-SG-S044	K1804181-012	42,389	4.74	23,733	6.30	46,067	7.54
PDI-SG-S198	K1804181-015	41,393	4.74	23,490	6.30	47,568	7.54
PDI-SG-S201	K1804181-016	41,406	4.74	23,490	6.30	47,270	7.54
PDI-SG-S194	K1804181-018	40,510	4.74	22,990	6.30	46,756	7.54
PDI-SG-S193	K1804181-019	41,270	4.74	23,276	6.30	47,724	7.54
PDI-SG-S186	K1804181-020	42,065	4.74	23,871	6.30	47,613	7.54
PDI-SG-S172	K1804181-021	44,599	4.74	24,183	6.30	46,405	7.54

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 06:49

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060718\0607F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802952-2
Analysis Lot: KWG1802952

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	47,923	10.06	53,818	13.12
	Upper Limit ==>	95,846	10.56	107,636	13.62
	Lower Limit ==>	23,962	9.56	26,909	12.62
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
PDI-SG-S126DL	K1804181-025	48,200	10.07	57,177	13.12
PDI-SG-S126-DDL	K1804181-026	47,728	10.06	56,519	13.12
PDI-SG-S063DL	K1804181-014	48,164	10.08	56,958	13.16
PDI-SG-S123DL	K1804181-022	47,330	10.08	55,729	13.16
PDI-SG-S125DL	K1804181-023	48,846	10.08	56,990	13.19
PDI-SG-S236MS	KWG1802419-1	46,713	10.08	54,334	13.16
PDI-SG-S236DMS	KWG1802419-2	46,360	10.08	54,219	13.17
PDI-SG-S236DL	K1804181-002	45,704	10.07	52,894	13.16
PDI-SG-S037	K1804181-005	42,375	10.07	50,374	13.16
PDI-SG-S038	K1804181-006	43,659	10.07	50,473	13.14
PDI-SG-S039	K1804181-007	42,182	10.07	49,061	13.14
PDI-SG-S037-D	K1804181-008	42,113	10.07	49,861	13.14
PDI-SG-S044	K1804181-012	44,462	10.08	52,653	13.19
PDI-SG-S198	K1804181-015	45,310	10.07	51,467	13.16
PDI-SG-S201	K1804181-016	44,423	10.07	50,642	13.16
PDI-SG-S194	K1804181-018	44,014	10.07	49,955	13.15
PDI-SG-S193	K1804181-019	44,238	10.07	50,216	13.15
PDI-SG-S186	K1804181-020	43,282	10.07	49,404	13.15
PDI-SG-S172	K1804181-021	43,932	10.07	49,948	13.16

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 21:51

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\060718\0607F021.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1802944-2
Analysis Lot: KWG1802944

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	53,656	5.95	29,144	8.27	61,199	11.45
	Upper Limit ==>	107,312	6.45	58,288	8.77	122,398	11.95
	Lower Limit ==>	26,828	5.45	14,572	7.77	30,600	10.95
	ICAL Result ==>	90,101	6.06	44,197	8.42	87,517	11.64
Associated Analyses							
PDI-SG-S236	K1804181-002	50,673	5.94	27,693	8.26	54,742	11.44

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 21:51

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\060718\0607F021.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1802944-2
Analysis Lot: KWG1802944

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	66,839	18.81	75,117	23.10
	Upper Limit ==>	133,678	19.31	150,234	23.60
	Lower Limit ==>	33,420	18.31	37,559	22.60
	ICAL Result ==>	105,110	19.00	102,151	23.35
Associated Analyses					
PDI-SG-S236	K1804181-002	58,529	18.83	68,915	23.16

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/08/2018
Time Analyzed: 06:09

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060818\0608F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802974-2
Analysis Lot: KWG1802974

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	52,250	4.74	26,541	6.30	56,027	7.54
	Upper Limit ==>	104,500	5.24	53,082	6.80	112,054	8.04
	Lower Limit ==>	26,125	4.24	13,271	5.80	28,014	7.04
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
PDI-SG-S126DL	K1804181-025	50,509	4.74	26,890	6.30	55,067	7.54

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/08/2018
Time Analyzed: 06:09

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060818\0608F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802974-2
Analysis Lot: KWG1802974

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	56,961	10.06	61,487	13.13
	Upper Limit ==>	113,922	10.56	122,974	13.63
	Lower Limit ==>	28,481	9.56	30,744	12.63
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
PDI-SG-S126DL	K1804181-025	54,068	10.06	61,848	13.13

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/11/2018
Time Analyzed: 05:50

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\061118\0611F003.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802969-2
Analysis Lot: KWG1802969

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	51,757	4.74	25,821	6.29	55,328	7.53
	Upper Limit ==>	103,514	5.24	51,642	6.79	110,656	8.03
	Lower Limit ==>	25,879	4.24	12,911	5.79	27,664	7.03
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
PDI-SG-S126-DDL	K1804181-026	54,302	4.74	28,532	6.29	56,411	7.53
PDI-SG-S239	K1804181-001	52,301	4.74	28,754	6.29	55,069	7.53
PDI-SG-S233	K1804181-004	51,006	4.73	27,960	6.29	54,048	7.54
PDI-SG-S037DL	K1804181-005	48,817	4.74	27,042	6.30	51,319	7.54
PDI-SG-S037-DDL	K1804181-008	50,856	4.74	28,266	6.30	55,487	7.54
PDI-SG-S040	K1804181-009	50,161	4.73	28,402	6.29	56,473	7.54

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/11/2018
Time Analyzed: 05:50

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\061118\0611F003.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802969-2
Analysis Lot: KWG1802969

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	55,173	10.06	56,989	13.13
	Upper Limit ==>	110,346	10.56	113,978	13.63
	Lower Limit ==>	27,587	9.56	28,495	12.63
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
PDI-SG-S126-DDL	K1804181-026	55,658	10.06	61,056	13.12
PDI-SG-S239	K1804181-001	53,382	10.07	56,867	13.21
PDI-SG-S233	K1804181-004	51,996	10.10	56,910	13.28
PDI-SG-S037DL	K1804181-005	45,949	10.07	53,389	13.17
PDI-SG-S037-DDL	K1804181-008	49,255	10.07	56,429	13.16
PDI-SG-S040	K1804181-009	51,960	10.08	56,336	13.20

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/11/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S200	**Units:**	ug/Kg
Lab Code:	K1804181-017	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802407

		PDI-SG-S200MS KWG1802407-3 Matrix Spike			PDI-SG-S200DMS KWG1802407-4 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	21	87.8	129	52	104	129	65	37-104	17	40
2-Methylnaphthalene	8.9	93.1	129	65	96.3	129	68	39-115	3	40
Acenaphthylene	17	106	129	70	109	129	72	39-115	2	40
Acenaphthene	15	119	129	81	123	129	85	41-116	4	40
Fluorene	23	134	129	86	128	129	82	43-117	4	40
Phenanthrene	120	226	129	79	252	129	99	42-119	11	40
Anthracene	34	140	129	82	150	129	90	42-124	7	40
Fluoranthene	380	483	129	83	677	129	234 *	42-130	33	40
Pyrene	340	453	129	86	637	129	229 *	33-125	34	40
Benz(a)anthracene	150	256	129	79	429	129	214 *	42-123	50 *	40
Chrysene	240	346	129	80	542	129	233 *	40-134	44 *	40
Benzo(b)fluoranthene	240	326	129	63	465	129	171 *	27-139	35	40
Benzo(k)fluoranthene	89	186	129	75	222	129	103	40-125	18	40
Benzo(a)pyrene	150	256	129	79	316	129	125	39-130	21	40
Indeno(1,2,3-cd)pyrene	100	206	129	79	222	129	92	37-143	8	40
Dibenz(a,h)anthracene	24	124	129	77	128	129	81	39-141	4	40
Benzo(g,h,i)perylene	120	208	129	71	218	129	79	35-140	5	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/14/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/07/2018

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-S236	**Units:**	ug/Kg
Lab Code:	K1804181-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802419

		PDI-SG-S236MS KWG1802419-1 Matrix Spike			PDI-SG-S236DMS KWG1802419-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	15	96.7	109	75	86.0	108	66	37-104	12	40
2-Methylnaphthalene	6.2	99.0	109	85	94.4	108	81	39-115	5	40
Acenaphthylene	8.7	105	109	88	100	108	84	39-115	5	40
Acenaphthene	6.1	119	109	104	100	108	87	41-116	17	40
Fluorene	11	120	109	100	109	108	91	43-117	9	40
Phenanthrene	77	235	109	145 *	180	108	95	42-119	27	40
Anthracene	22	132	109	101	126	108	96	42-124	5	40
Fluoranthene	240	387	109	131 *	326	108	75	42-130	17	40
Pyrene	240	386	109	133 *	330	108	82	33-125	16	40
Benz(a)anthracene	81	191	109	101	183	108	94	42-123	4	40
Chrysene	150	271	109	112	243	108	86	40-134	11	40
Benzo(b)fluoranthene	140	274	109	121	240	108	90	27-139	13	40
Benzo(k)fluoranthene	46	160	109	105	148	108	94	40-125	8	40
Benzo(a)pyrene	82	220	109	127	192	108	102	39-130	14	40
Indeno(1,2,3-cd)pyrene	71	183	109	103	155	108	78	37-143	16	40
Dibenz(a,h)anthracene	15	110	109	87	103	108	81	39-141	6	40
Benzo(g,h,i)perylene	85	206	109	112	173	108	82	35-140	18	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/11/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1802407

Lab Control Sample
KWG1802407-5
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Naphthalene	65.4	100	65	42-107
2-Methylnaphthalene	65.5	100	65	40-116
Acenaphthylene	66.8	100	67	41-112
Acenaphthene	67.0	100	67	43-113
Fluorene	66.1	100	66	44-114
Phenanthrene	68.0	100	68	44-115
Anthracene	70.1	100	70	45-121
Fluoranthene	70.6	100	71	47-123
Pyrene	74.1	100	74	41-121
Benz(a)anthracene	78.9	100	79	42-123
Chrysene	77.8	100	78	46-130
Benzo(b)fluoranthene	80.5	100	80	46-125
Benzo(k)fluoranthene	77.9	100	78	47-125
Benzo(a)pyrene	79.7	100	80	45-128
Indeno(1,2,3-cd)pyrene	79.2	100	79	45-128
Dibenz(a,h)anthracene	76.8	100	77	44-128
Benzo(g,h,i)perylene	73.8	100	74	43-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/14/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1802419

Lab Control Sample
KWG1802419-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Naphthalene	65.7	100	66	42-107
2-Methylnaphthalene	64.9	100	65	40-116
Acenaphthylene	67.3	100	67	41-112
Acenaphthene	67.0	100	67	43-113
Fluorene	66.0	100	66	44-114
Phenanthrene	69.5	100	70	44-115
Anthracene	71.8	100	72	45-121
Fluoranthene	73.4	100	73	47-123
Pyrene	77.8	100	78	41-121
Benz(a)anthracene	80.7	100	81	42-123
Chrysene	80.5	100	81	46-130
Benzo(b)fluoranthene	85.1	100	85	46-125
Benzo(k)fluoranthene	84.2	100	84	47-125
Benzo(a)pyrene	82.9	100	83	45-128
Indeno(1,2,3-cd)pyrene	79.2	100	79	45-128
Dibenz(a,h)anthracene	79.0	100	79	44-128
Benzo(g,h,i)perylene	76.9	100	77	43-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/11/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018
		Time Analyzed:	17:34

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1802407-6	**File ID:**	J:\MS14\DATA\060618\0606F026.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802407

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1802407-5	J:\MS14\DATA\060618\0606F027.D	06/06/18	17:57
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060618\0606F029.D	06/06/18	18:45
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060618\0606F030.D	06/06/18	19:09
PDI-SG-S128	K1804181-024	J:\MS14\DATA\060618\0606F031.D	06/06/18	19:34
PDI-SG-S200MS	KWG1802407-3	J:\MS14\DATA\060618\0606F033.D	06/06/18	20:21
PDI-SG-S200DMS	KWG1802407-4	J:\MS14\DATA\060618\0606F034.D	06/06/18	20:46
PDI-SG-S200	K1804181-017	J:\MS14\DATA\060618\0606F035.D	06/06/18	21:09
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060618\0606F036.D	06/06/18	21:33
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060618\0606F037.D	06/06/18	21:56
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060718\0607F004.D	06/07/18	07:39
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060718\0607F005.D	06/07/18	08:03
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060718\0607F010.D	06/07/18	10:04
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060718\0607F011.D	06/07/18	10:27
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060818\0608F030.D	06/08/18	17:24
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\061118\0611F009.D	06/11/18	08:15

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/14/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018
		Time Analyzed:	13:19

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1802419-4	**File ID:**	J:\MS14\DATA\060618\0606F016.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802419

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1802419-3	J:\MS14\DATA\060618\0606F017.D	06/06/18	13:45
PDI-SG-S041	K1804181-010	J:\MS14\DATA\060618\0606F018.D	06/06/18	14:11
PDI-SG-S043	K1804181-011	J:\MS14\DATA\060618\0606F023.D	06/06/18	16:19
PDI-SG-S062	K1804181-013	J:\MS14\DATA\060618\0606F024.D	06/06/18	16:45
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060618\0606F025.D	06/06/18	17:10
PDI-SG-S242	K1804181-003	J:\MS14\DATA\060618\0606F032.D	06/06/18	19:57
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060718\0607F009.D	06/07/18	09:40
PDI-SG-S236MS	KWG1802419-1	J:\MS14\DATA\060718\0607F012.D	06/07/18	10:50
PDI-SG-S236DMS	KWG1802419-2	J:\MS14\DATA\060718\0607F013.D	06/07/18	11:15
PDI-SG-S236	K1804181-002	J:\MS14\DATA\060718\0607F014.D	06/07/18	11:38
PDI-SG-S037	K1804181-005	J:\MS14\DATA\060718\0607F017.D	06/07/18	12:48
PDI-SG-S038	K1804181-006	J:\MS14\DATA\060718\0607F018.D	06/07/18	13:12
PDI-SG-S039	K1804181-007	J:\MS14\DATA\060718\0607F019.D	06/07/18	13:35
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\060718\0607F020.D	06/07/18	13:58
PDI-SG-S044	K1804181-012	J:\MS14\DATA\060718\0607F022.D	06/07/18	14:45
PDI-SG-S198	K1804181-015	J:\MS14\DATA\060718\0607F023.D	06/07/18	15:09
PDI-SG-S201	K1804181-016	J:\MS14\DATA\060718\0607F024.D	06/07/18	15:32
PDI-SG-S194	K1804181-018	J:\MS14\DATA\060718\0607F025.D	06/07/18	15:55
PDI-SG-S193	K1804181-019	J:\MS14\DATA\060718\0607F026.D	06/07/18	16:19
PDI-SG-S186	K1804181-020	J:\MS14\DATA\060718\0607F027.D	06/07/18	16:42
PDI-SG-S172	K1804181-021	J:\MS14\DATA\060718\0607F028.D	06/07/18	17:07
PDI-SG-S236	K1804181-002	J:\MS20\DATA\060718\0607F035.D	06/08/18	07:02
PDI-SG-S239	K1804181-001	J:\MS14\DATA\061118\0611F010.D	06/11/18	08:38
PDI-SG-S233	K1804181-004	J:\MS14\DATA\061118\0611F011.D	06/11/18	09:02
PDI-SG-S037	K1804181-005	J:\MS14\DATA\061118\0611F012.D	06/11/18	09:26
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\061118\0611F013.D	06/11/18	09:50
PDI-SG-S040	K1804181-009	J:\MS14\DATA\061118\0611F014.D	06/11/18	10:13

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/11/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018
		Time Analyzed:	17:57

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1802407-5	**File ID:**	J:\MS14\DATA\060618\0606F027.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802407

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1802407-6	J:\MS14\DATA\060618\0606F026.D	06/06/18	17:34
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060618\0606F029.D	06/06/18	18:45
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060618\0606F030.D	06/06/18	19:09
PDI-SG-S128	K1804181-024	J:\MS14\DATA\060618\0606F031.D	06/06/18	19:34
PDI-SG-S200MS	KWG1802407-3	J:\MS14\DATA\060618\0606F033.D	06/06/18	20:21
PDI-SG-S200DMS	KWG1802407-4	J:\MS14\DATA\060618\0606F034.D	06/06/18	20:46
PDI-SG-S200	K1804181-017	J:\MS14\DATA\060618\0606F035.D	06/06/18	21:09
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060618\0606F036.D	06/06/18	21:33
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060618\0606F037.D	06/06/18	21:56
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060718\0607F004.D	06/07/18	07:39
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060718\0607F005.D	06/07/18	08:03
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060718\0607F010.D	06/07/18	10:04
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060718\0607F011.D	06/07/18	10:27
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060818\0608F030.D	06/08/18	17:24
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\061118\0611F009.D	06/11/18	08:15

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/14/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/06/2018
		Time Analyzed:	13:45

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1802419-3	**File ID:**	J:\MS14\DATA\060618\0606F017.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802419

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1802419-4	J:\MS14\DATA\060618\0606F016.D	06/06/18	13:19
PDI-SG-S041	K1804181-010	J:\MS14\DATA\060618\0606F018.D	06/06/18	14:11
PDI-SG-S043	K1804181-011	J:\MS14\DATA\060618\0606F023.D	06/06/18	16:19
PDI-SG-S062	K1804181-013	J:\MS14\DATA\060618\0606F024.D	06/06/18	16:45
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060618\0606F025.D	06/06/18	17:10
PDI-SG-S242	K1804181-003	J:\MS14\DATA\060618\0606F032.D	06/06/18	19:57
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060718\0607F009.D	06/07/18	09:40
PDI-SG-S236MS	KWG1802419-1	J:\MS14\DATA\060718\0607F012.D	06/07/18	10:50
PDI-SG-S236DMS	KWG1802419-2	J:\MS14\DATA\060718\0607F013.D	06/07/18	11:15
PDI-SG-S236	K1804181-002	J:\MS14\DATA\060718\0607F014.D	06/07/18	11:38
PDI-SG-S037	K1804181-005	J:\MS14\DATA\060718\0607F017.D	06/07/18	12:48
PDI-SG-S038	K1804181-006	J:\MS14\DATA\060718\0607F018.D	06/07/18	13:12
PDI-SG-S039	K1804181-007	J:\MS14\DATA\060718\0607F019.D	06/07/18	13:35
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\060718\0607F020.D	06/07/18	13:58
PDI-SG-S044	K1804181-012	J:\MS14\DATA\060718\0607F022.D	06/07/18	14:45
PDI-SG-S198	K1804181-015	J:\MS14\DATA\060718\0607F023.D	06/07/18	15:09
PDI-SG-S201	K1804181-016	J:\MS14\DATA\060718\0607F024.D	06/07/18	15:32
PDI-SG-S194	K1804181-018	J:\MS14\DATA\060718\0607F025.D	06/07/18	15:55
PDI-SG-S193	K1804181-019	J:\MS14\DATA\060718\0607F026.D	06/07/18	16:19
PDI-SG-S186	K1804181-020	J:\MS14\DATA\060718\0607F027.D	06/07/18	16:42
PDI-SG-S172	K1804181-021	J:\MS14\DATA\060718\0607F028.D	06/07/18	17:07
PDI-SG-S236	K1804181-002	J:\MS20\DATA\060718\0607F035.D	06/08/18	07:02
PDI-SG-S239	K1804181-001	J:\MS14\DATA\061118\0611F010.D	06/11/18	08:38
PDI-SG-S233	K1804181-004	J:\MS14\DATA\061118\0611F011.D	06/11/18	09:02
PDI-SG-S037	K1804181-005	J:\MS14\DATA\061118\0611F012.D	06/11/18	09:26
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\061118\0611F013.D	06/11/18	09:50
PDI-SG-S040	K1804181-009	J:\MS14\DATA\061118\0611F014.D	06/11/18	10:13

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/06/2018
Time Analyzed: 12:26

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060618\0606F014.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802915

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	22.0	21397	PASS
68	69	0	2	1.8	467	PASS
69	198	0	100	26.7	26029	PASS
70	69	0	2	0.4	106	PASS
127	198	10	80	41.1	40008	PASS
197	198	0	2	0.4	416	PASS
198	442	30	100	36.7	97373	PASS
199	198	5	9	6.6	6458	PASS
275	198	10	60	36.0	35082	PASS
365	442	1	50	2.1	5660	PASS
441	443	0	100	73.1	36968	PASS
442	442	100	100	100.0	265216	PASS
443	442	15	24	19.1	50602	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802915-2	J:\MS14\DATA\060618\0606F015.D	06/06/2018	12:53	
Method Blank	KWG1802419-4	J:\MS14\DATA\060618\0606F016.D	06/06/2018	13:19	
Lab Control Sample	KWG1802419-3	J:\MS14\DATA\060618\0606F017.D	06/06/2018	13:45	
PDI-SG-S041	K1804181-010	J:\MS14\DATA\060618\0606F018.D	06/06/2018	14:11	
PDI-SG-S043	K1804181-011	J:\MS14\DATA\060618\0606F023.D	06/06/2018	16:19	
PDI-SG-S062	K1804181-013	J:\MS14\DATA\060618\0606F024.D	06/06/2018	16:45	
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060618\0606F025.D	06/06/2018	17:10	
Method Blank	KWG1802407-6	J:\MS14\DATA\060618\0606F026.D	06/06/2018	17:34	
Lab Control Sample	KWG1802407-5	J:\MS14\DATA\060618\0606F027.D	06/06/2018	17:57	
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060618\0606F029.D	06/06/2018	18:45	
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060618\0606F030.D	06/06/2018	19:09	
PDI-SG-S128	K1804181-024	J:\MS14\DATA\060618\0606F031.D	06/06/2018	19:34	
PDI-SG-S242	K1804181-003	J:\MS14\DATA\060618\0606F032.D	06/06/2018	19:57	
PDI-SG-S200MS	KWG1802407-3	J:\MS14\DATA\060618\0606F033.D	06/06/2018	20:21	
PDI-SG-S200DMS	KWG1802407-4	J:\MS14\DATA\060618\0606F034.D	06/06/2018	20:46	
PDI-SG-S200	K1804181-017	J:\MS14\DATA\060618\0606F035.D	06/06/2018	21:09	
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060618\0606F036.D	06/06/2018	21:33	
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060618\0606F037.D	06/06/2018	21:56	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 06:25

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060718\0607F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802952

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	26.4	25840	PASS
68	69	0	2	1.9	596	PASS
69	198	0	100	31.5	30776	PASS
70	69	0	2	0.7	213	PASS
127	198	10	80	43.9	42912	PASS
197	198	0	2	0.6	612	PASS
198	442	30	100	42.0	97800	PASS
199	198	5	9	6.7	6549	PASS
275	198	10	60	34.9	34096	PASS
365	442	1	50	2.1	4907	PASS
441	443	0	100	73.5	32824	PASS
442	442	100	100	100.0	232896	PASS
443	442	15	24	19.2	44672	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802952-2	J:\MS14\DATA\060718\0607F002.D	06/07/2018	06:49	
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060718\0607F004.D	06/07/2018	07:39	
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\060718\0607F005.D	06/07/2018	08:03	
PDI-SG-S063	K1804181-014	J:\MS14\DATA\060718\0607F009.D	06/07/2018	09:40	
PDI-SG-S123	K1804181-022	J:\MS14\DATA\060718\0607F010.D	06/07/2018	10:04	
PDI-SG-S125	K1804181-023	J:\MS14\DATA\060718\0607F011.D	06/07/2018	10:27	
PDI-SG-S236MS	KWG1802419-1	J:\MS14\DATA\060718\0607F012.D	06/07/2018	10:50	
PDI-SG-S236DMS	KWG1802419-2	J:\MS14\DATA\060718\0607F013.D	06/07/2018	11:15	
PDI-SG-S236	K1804181-002	J:\MS14\DATA\060718\0607F014.D	06/07/2018	11:38	
PDI-SG-S037	K1804181-005	J:\MS14\DATA\060718\0607F017.D	06/07/2018	12:48	
PDI-SG-S038	K1804181-006	J:\MS14\DATA\060718\0607F018.D	06/07/2018	13:12	
PDI-SG-S039	K1804181-007	J:\MS14\DATA\060718\0607F019.D	06/07/2018	13:35	
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\060718\0607F020.D	06/07/2018	13:58	
PDI-SG-S044	K1804181-012	J:\MS14\DATA\060718\0607F022.D	06/07/2018	14:45	
PDI-SG-S198	K1804181-015	J:\MS14\DATA\060718\0607F023.D	06/07/2018	15:09	
PDI-SG-S201	K1804181-016	J:\MS14\DATA\060718\0607F024.D	06/07/2018	15:32	
PDI-SG-S194	K1804181-018	J:\MS14\DATA\060718\0607F025.D	06/07/2018	15:55	
PDI-SG-S193	K1804181-019	J:\MS14\DATA\060718\0607F026.D	06/07/2018	16:19	
PDI-SG-S186	K1804181-020	J:\MS14\DATA\060718\0607F027.D	06/07/2018	16:42	
PDI-SG-S172	K1804181-021	J:\MS14\DATA\060718\0607F028.D	06/07/2018	17:07	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/07/2018
Time Analyzed: 21:11

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\060718\0607F020.D
Instrument ID: MS20
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802944

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	22.8	50866	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	24.2	53821	PASS
70	69	0	2	0.7	388	PASS
127	198	10	80	36.8	81858	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	38.3	222677	PASS
199	198	5	9	7.0	15501	PASS
275	198	10	60	37.4	83368	PASS
365	442	1	50	2.3	13486	PASS
441	443	0	100	82.3	93501	PASS
442	442	100	100	100.0	581354	PASS
443	442	15	24	19.5	113621	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802944-2	J:\MS20\DATA\060718\0607F021.D	06/07/2018	21:51	
PDI-SG-S236	K1804181-002	J:\MS20\DATA\060718\0607F035.D	06/08/2018	07:02	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/08/2018
Time Analyzed: 05:44

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\060818\0608F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802974

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	27.2	25310	PASS
68	69	0	2	0.3	95	PASS
69	198	0	100	32.8	30553	PASS
70	69	0	2	0.5	148	PASS
127	198	10	80	42.2	39341	PASS
197	198	0	2	0.6	584	PASS
198	442	30	100	40.0	93192	PASS
199	198	5	9	6.6	6143	PASS
275	198	10	60	35.2	32837	PASS
365	442	1	50	2.0	4778	PASS
441	443	0	100	73.0	32570	PASS
442	442	100	100	100.0	233109	PASS
443	442	15	24	19.1	44600	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802974-2	J:\MS14\DATA\060818\0608F002.D	06/08/2018	06:09	
PDI-SG-S126	K1804181-025	J:\MS14\DATA\060818\0608F030.D	06/08/2018	17:24	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/11/2018
Time Analyzed: 05:26

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\061118\0611F002.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802969

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
69	198	0	100	33.7	31752	PASS
70	69	0	2	0.6	186	PASS
51	198	10	80	28.0	26325	PASS
68	69	0	2	1.2	390	PASS
127	198	10	80	43.2	40634	PASS
197	198	0	2	0.5	457	PASS
198	442	30	100	46.1	94133	PASS
199	198	5	9	6.6	6226	PASS
275	198	10	60	33.4	31472	PASS
365	442	1	50	2.3	4690	PASS
441	443	0	100	74.2	28912	PASS
442	442	100	100	100.0	204074	PASS
443	442	15	24	19.1	38962	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802969-2	J:\MS14\DATA\061118\0611F003.D	06/11/2018	05:50	
PDI-SG-S126-D	K1804181-026	J:\MS14\DATA\061118\0611F009.D	06/11/2018	08:15	
PDI-SG-S239	K1804181-001	J:\MS14\DATA\061118\0611F010.D	06/11/2018	08:38	
PDI-SG-S233	K1804181-004	J:\MS14\DATA\061118\0611F011.D	06/11/2018	09:02	
PDI-SG-S037	K1804181-005	J:\MS14\DATA\061118\0611F012.D	06/11/2018	09:26	
PDI-SG-S037-D	K1804181-008	J:\MS14\DATA\061118\0611F013.D	06/11/2018	09:50	
PDI-SG-S040	K1804181-009	J:\MS14\DATA\061118\0611F014.D	06/11/2018	10:13	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 06/06/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15753 **Column:** MS
Instrument ID: MS14

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\060618\0606F003.D	G	J:\MS14\DATA\060618\0606F009.D
B	J:\MS14\DATA\060618\0606F004.D	H	J:\MS14\DATA\060618\0606F010.D
C	J:\MS14\DATA\060618\0606F005.D	I	J:\MS14\DATA\060618\0606F011.D
D	J:\MS14\DATA\060618\0606F006.D	J	J:\MS14\DATA\060618\0606F012.D
E	J:\MS14\DATA\060618\0606F007.D		
F	J:\MS14\DATA\060618\0606F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	2.0	1.11	B	4.0	1.14	C	8.0	1.09	D	20	1.07	E	100	1.07
	F	200	1.05	G	400	1.04	H	1000	1.01	I	1600	1.00	J	2000	0.950
2-Methylnaphthalene	A	2.0	0.771	B	4.0	0.731	C	8.0	0.722	D	20	0.707	E	100	0.700
	F	200	0.678	G	400	0.648	H	1000	0.598	I	1600	0.580	J	2000	0.552
Acenaphthylene	A	2.0	2.39	B	4.0	2.33	C	8.0	2.24	D	20	2.20	E	100	2.19
	F	200	2.20	G	400	2.15	H	1000	2.08	I	1600	2.00	J	2000	1.88
Acenaphthene	A	2.0	1.37	B	4.0	1.32	C	8.0	1.29	D	20	1.29	E	100	1.27
	F	200	1.25	G	400	1.23	H	1000	1.18	I	1600	1.13	J	2000	1.05
Fluorene	A	2.0	1.79	B	4.0	1.70	C	8.0	1.67	D	20	1.64	E	100	1.62
	F	200	1.59	G	400	1.54	H	1000	1.44	I	1600	1.36	J	2000	1.27
Phenanthrene	A	2.0	1.32	B	4.0	1.25	C	8.0	1.22	D	20	1.16	E	100	1.15
	F	200	1.13	G	400	1.10	H	1000	1.02	I	1600	0.952	J	2000	0.892
Anthracene	A	2.0	1.21	B	4.0	1.16	C	8.0	1.16	D	20	1.12	E	100	1.14
	F	200	1.13	G	400	1.10	H	1000	1.02	I	1600	0.957	J	2000	0.892
Fluoranthene	A	2.0	1.44	B	4.0	1.37	C	8.0	1.37	D	20	1.33	E	100	1.37
	F	200	1.33	G	400	1.28	H	1000	1.18	I	1600	1.08	J	2000	0.994
Pyrene	A	2.0	1.54	B	4.0	1.47	C	8.0	1.46	D	20	1.40	E	100	1.38
	F	200	1.38	G	400	1.35	H	1000	1.30	I	1600	1.28	J	2000	1.21
Benz(a)anthracene	A	2.0	1.55	B	4.0	1.36	C	8.0	1.29	D	20	1.22	E	100	1.20
	F	200	1.23	G	400	1.23	H	1000	1.23	I	1600	1.22	J	2000	1.17
Chrysene	A	2.0	1.27	B	4.0	1.23	C	8.0	1.22	D	20	1.20	E	100	1.18
	F	200	1.19	G	400	1.16	H	1000	1.14	I	1600	1.13	J	2000	1.08
Benzo(b)fluoranthene	A	2.0	1.25	B	4.0	1.19	C	8.0	1.16	D	20	1.14	E	100	1.19
	F	200	1.22	G	400	1.26	H	1000	1.24	I	1600	1.22	J	2000	1.15
Benzo(k)fluoranthene	A	2.0	1.22	B	4.0	1.15	C	8.0	1.16	D	20	1.15	E	100	1.19
	F	200	1.22	G	400	1.22	H	1000	1.17	I	1600	1.15	J	2000	1.09
Benzo(a)pyrene	A	2.0	1.14	B	4.0	1.08	C	8.0	1.07	D	20	1.02	E	100	1.06
	F	200	1.07	G	400	1.09	H	1000	1.08	I	1600	1.08	J	2000	1.03

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 06/06/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15753 **Column:** MS
Instrument ID: MS14

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Indeno(1,2,3-cd)pyrene	A	2.0	1.44	B	4.0	1.34	C	8.0	1.29	D	20	1.30	E	100	1.35
	F	200	1.27	G	400	1.31	H	1000	1.26	I	1600	1.21	J	2000	1.14
Dibenz(a,h)anthracene	A	2.0	1.34	B	4.0	1.35	C	8.0	1.30	D	20	1.35	E	100	1.37
	F	200	1.29	G	400	1.30	H	1000	1.24	I	1600	1.19	J	2000	1.13
Benzo(g,h,i)perylene	A	2.0	1.67	B	4.0	1.55	C	8.0	1.51	D	20	1.51	E	100	1.50
	F	200	1.42	G	400	1.42	H	1000	1.33	I	1600	1.27	J	2000	1.20
Fluorene-d10				B	4.0	1.67	C	8.0	1.50	D	20	1.38	E	100	1.31
	F	200	1.30	G	400	1.26	H	1000	1.19	I	1600	1.12	J	2000	1.05
Fluoranthene-d10	A	2.0	1.26	B	4.0	1.20	C	8.0	1.20	D	20	1.14	E	100	1.20
	F	200	1.17	G	400	1.15	H	1000	1.09	I	1600	1.01	J	2000	0.938
Terphenyl-d14				B	4.0	1.17	C	8.0	1.04	D	20	0.944	E	100	0.902
	F	200	0.880	G	400	0.858	H	1000	0.821	I	1600	0.802	J	2000	0.754

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 06/06/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15753 **Column:** MS
Instrument ID: MS14

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Naphthalene	MS	AverageRF	% RSD	5.3		≤ 20	1.05		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	10.8		≤ 20	0.669		0.40
Acenaphthylene	MS	AverageRF	% RSD	7.0		≤ 20	2.17		0.90
Acenaphthene	MS	AverageRF	% RSD	7.6		≤ 20	1.24		0.90
Fluorene	MS	AverageRF	% RSD	10.4		≤ 20	1.56		0.90
Phenanthrene	MS	AverageRF	% RSD	12.0		≤ 20	1.12		0.70
Anthracene	MS	AverageRF	% RSD	9.2		≤ 20	1.09		0.70
Fluoranthene	MS	AverageRF	% RSD	11.3		≤ 20	1.28		0.60
Pyrene	MS	AverageRF	% RSD	7.2		≤ 20	1.38		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	8.8		≤ 20	1.27		0.80
Chrysene	MS	AverageRF	% RSD	4.7		≤ 20	1.18		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	3.4		≤ 20	1.20		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	3.6		≤ 20	1.17		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	3.2		≤ 20	1.07		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	6.3		≤ 20	1.29		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	6.1		≤ 20	1.29		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	9.8		≤ 20	1.44		0.50
Fluorene-d10	SURR	AverageRF	% RSD	14.6		≤ 20	1.31		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	8.6		≤ 20	1.14		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	14.3		≤ 20	0.908		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Calibration Date: 06/06/2018
Date Analyzed: 06/06/2018

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15753
Units: ng/ml

File ID: J:\MS14\DATA\060618\0606F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	410	1.05	1.07	1	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	400	0.669	0.670	0	NA	± 30 %	AverageRF
Acenaphthylene	400	390	2.17	2.10	-3	NA	± 30 %	AverageRF
Acenaphthene	400	390	1.24	1.20	-3	NA	± 30 %	AverageRF
Fluorene	400	380	1.56	1.50	-4	NA	± 30 %	AverageRF
Phenanthrene	400	380	1.12	1.06	-5	NA	± 30 %	AverageRF
Anthracene	400	400	1.09	1.08	-1	NA	± 30 %	AverageRF
Fluoranthene	400	420	1.28	1.32	4	NA	± 30 %	AverageRF
Pyrene	400	380	1.38	1.30	-6	NA	± 30 %	AverageRF
Benz(a)anthracene	400	370	1.27	1.16	-8	NA	± 30 %	AverageRF
Chrysene	400	380	1.18	1.12	-5	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	410	1.20	1.23	3	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	420	1.17	1.23	5	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	400	1.07	1.07	0	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	1.29	1.21	-6	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	380	1.29	1.23	-4	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	370	1.44	1.31	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

Level ID	File ID	Level ID	File ID
A	J:\MS20\DATA\110217\1102F003.D	G	J:\MS20\DATA\110217\1102F009.D
B	J:\MS20\DATA\110217\1102F004.D	H	J:\MS20\DATA\110217\1102F010.D
C	J:\MS20\DATA\110217\1102F005.D	I	J:\MS20\DATA\110217\1102F011.D
D	J:\MS20\DATA\110217\1102F006.D	J	J:\MS20\DATA\110217\1102F012.D
E	J:\MS20\DATA\110217\1102F007.D		
F	J:\MS20\DATA\110217\1102F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	2.0	1.21	B	4.0	1.04	C	8.0	1.03	D	20	0.996	E	100	0.990
	F	200	0.989	G	400	1.02	H	1000	1.01	I	1600	0.972	J	2000	0.967
2-Methylnaphthalene	A	2.0	0.781	B	4.0	0.671	C	8.0	0.661	D	20	0.679	E	100	0.678
	F	200	0.694	G	400	0.692	H	1000	0.678	I	1600	0.645	J	2000	0.644
Acenaphthylene	A	2.0	2.23	B	4.0	1.95	C	8.0	1.92	D	20	1.97	E	100	1.97
	F	200	2.00	G	400	2.07	H	1000	2.08	I	1600	2.05	J	2000	2.02
Acenaphthene	A	2.0	1.45	B	4.0	1.25	C	8.0	1.25	D	20	1.24	E	100	1.21
	F	200	1.22	G	400	1.25	H	1000	1.23	I	1600	1.21	J	2000	1.19
Fluorene	A	2.0	1.81	B	4.0	1.46	C	8.0	1.44	D	20	1.44	E	100	1.46
	F	200	1.47	G	400	1.51	H	1000	1.48	I	1600	1.45	J	2000	1.44
Phenanthrene	A	2.0	1.50	B	4.0	1.16	C	8.0	1.16	D	20	1.16	E	100	1.12
	F	200	1.13	G	400	1.15	H	1000	1.14	I	1600	1.10	J	2000	1.09
Anthracene	A	2.0	1.32	B	4.0	1.05	C	8.0	1.04	D	20	1.03	E	100	1.03
	F	200	1.06	G	400	1.10	H	1000	1.11	I	1600	1.08	J	2000	1.06
Fluoranthene	A	2.0	1.51	B	4.0	1.20	C	8.0	1.19	D	20	1.24	E	100	1.23
	F	200	1.27	G	400	1.32	H	1000	1.30	I	1600	1.25	J	2000	1.24
Pyrene	A	2.0	1.34	B	4.0	1.10	C	8.0	1.09	D	20	1.10	E	100	1.08
	F	200	1.09	G	400	1.12	H	1000	1.13	I	1600	1.12	J	2000	1.11
Benz(a)anthracene	A	2.0	1.36	B	4.0	1.13	C	8.0	1.03	D	20	1.02	E	100	0.986
	F	200	1.01	G	400	1.05	H	1000	1.09	I	1600	1.09	J	2000	1.10
Chrysene	A	2.0	1.26	B	4.0	1.06	C	8.0	1.08	D	20	1.07	E	100	1.06
	F	200	1.06	G	400	1.07	H	1000	1.06	I	1600	1.06	J	2000	1.04
Benzo(b)fluoranthene	A	2.0	1.22	B	4.0	1.06	C	8.0	1.06	D	20	1.10	E	100	1.10
	F	200	1.12	G	400	1.17	H	1000	1.19	I	1600	1.20	J	2000	1.18
Benzo(k)fluoranthene	A	2.0	1.19	B	4.0	1.07	C	8.0	1.09	D	20	1.09	E	100	1.15
	F	200	1.18	G	400	1.20	H	1000	1.19	I	1600	1.19	J	2000	1.18
Benzo(a)pyrene	A	2.0	0.956	B	4.0	0.883	C	8.0	0.866	D	20	0.903	E	100	0.955
	F	200	1.00	G	400	1.06	H	1000	1.06	I	1600	1.08	J	2000	1.08

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Indeno(1,2,3-cd)pyrene	A	2.0	1.05	B	4.0	0.927	C	8.0	0.901	D	20	0.943	E	100	0.987
	F	200	1.03	G	400	1.10	H	1000	1.08	I	1600	1.07	J	2000	1.07
Dibenz(a,h)anthracene	A	2.0	1.02	B	4.0	0.967	C	8.0	0.953	D	20	1.01	E	100	1.05
	F	200	1.08	G	400	1.13	H	1000	1.11	I	1600	1.10	J	2000	1.10
Benzo(g,h,i)perylene	A	2.0	1.36	B	4.0	1.19	C	8.0	1.17	D	20	1.25	E	100	1.21
	F	200	1.23	G	400	1.27	H	1000	1.18	I	1600	1.17	J	2000	1.16
Fluorene-d10				B	4.0	1.51	C	8.0	1.31	D	20	1.26	E	100	1.23
	F	200	1.23	G	400	1.27	H	1000	1.25	I	1600	1.23	J	2000	1.21
Fluoranthene-d10	A	2.0	1.49	B	4.0	1.12	C	8.0	1.07	D	20	1.08	E	100	1.06
	F	200	1.10	G	400	1.15	H	1000	1.17	I	1600	1.16	J	2000	1.15
Terphenyl-d14	A	2.0	1.04	B	4.0	0.848	C	8.0	0.825	D	20	0.837	E	100	0.817
	F	200	0.826	G	400	0.831	H	1000	0.840	I	1600	0.837	J	2000	0.829

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Naphthalene	MS	AverageRF	% RSD	6.8		≤ 20	1.02		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	5.7		≤ 20	0.682		0.40
Acenaphthylene	MS	AverageRF	% RSD	4.4		≤ 20	2.03		0.90
Acenaphthene	MS	AverageRF	% RSD	5.8		≤ 20	1.25		0.90
Fluorene	MS	AverageRF	% RSD	7.5		≤ 20	1.50		0.90
Phenanthrene	MS	AverageRF	% RSD	10.0		≤ 20	1.17		0.70
Anthracene	MS	AverageRF	% RSD	7.9		≤ 20	1.09		0.70
Fluoranthene	MS	AverageRF	% RSD	7.2		≤ 20	1.27		0.60
Pyrene	MS	AverageRF	% RSD	6.7		≤ 20	1.13		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	9.8		≤ 20	1.09		0.80
Chrysene	MS	AverageRF	% RSD	5.7		≤ 20	1.08		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	5.0		≤ 20	1.14		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	4.4		≤ 20	1.15		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	8.4		≤ 20	0.984		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	7.1		≤ 20	1.02		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	5.9		≤ 20	1.05		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	5.1		≤ 20	1.22		0.50
Fluorene-d10	SURR	AverageRF	% RSD	7.1		≤ 20	1.28		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	10.7		≤ 20	1.15		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	7.7		≤ 20	0.853		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Calibration Date: 11/02/2017
Date Analyzed: 11/02/2017

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15594
Units: ng/ml

File ID: J:\MS20\DATA\110217\1102F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	360	1.02	0.924	-10	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	380	0.682	0.644	-6	NA	± 30 %	AverageRF
Acenaphthylene	400	380	2.03	1.93	-5	NA	± 30 %	AverageRF
Acenaphthene	400	380	1.25	1.17	-6	NA	± 30 %	AverageRF
Fluorene	400	370	1.50	1.39	-7	NA	± 30 %	AverageRF
Phenanthrene	400	370	1.17	1.08	-8	NA	± 30 %	AverageRF
Anthracene	400	380	1.09	1.03	-6	NA	± 30 %	AverageRF
Fluoranthene	400	400	1.27	1.28	0	NA	± 30 %	AverageRF
Pyrene	400	380	1.13	1.08	-5	NA	± 30 %	AverageRF
Benz(a)anthracene	400	370	1.09	0.996	-8	NA	± 30 %	AverageRF
Chrysene	400	380	1.08	1.03	-5	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	380	1.14	1.10	-4	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	390	1.15	1.13	-2	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	400	0.984	0.973	-1	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	1.02	0.946	-7	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	380	1.05	1.00	-5	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	360	1.22	1.11	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/06/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 06/06/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15753
Analysis Lot: KWG1802915
Units: ng/ml

File ID: J:\MS14\DATA\060618\0606F015.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	400	0.70	1.05	1.06	1	NA	± 20	AverageRF
2-Methylnaphthalene	400	400	0.40	0.669	0.665	-1	NA	± 20	AverageRF
Acenaphthylene	400	390	0.90	2.17	2.10	-3	NA	± 20	AverageRF
Acenaphthene	400	390	0.90	1.24	1.21	-2	NA	± 20	AverageRF
Fluorene	400	380	0.90	1.56	1.50	-4	NA	± 20	AverageRF
Phenanthrene	400	380	0.70	1.12	1.06	-6	NA	± 20	AverageRF
Anthracene	400	400	0.70	1.09	1.08	-1	NA	± 20	AverageRF
Fluoranthene	400	420	0.60	1.28	1.35	6	NA	± 20	AverageRF
Pyrene	400	380	0.60	1.38	1.29	-6	NA	± 20	AverageRF
Benz(a)anthracene	400	370	0.80	1.27	1.16	-9	NA	± 20	AverageRF
Chrysene	400	380	0.70	1.18	1.13	-4	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	400	0.70	1.20	1.21	1	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	420	0.70	1.17	1.23	5	NA	± 20	AverageRF
Benzo(a)pyrene	400	400	0.70	1.07	1.07	-1	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	0.50	1.29	1.20	-7	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	380	0.40	1.29	1.22	-5	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	360	0.50	1.44	1.30	-9	NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.31	1.27	-3	NA	± 20	AverageRF
Fluoranthene-d10	400	420	0.01	1.14	1.18	4	NA	± 20	AverageRF
Terphenyl-d14	400	380	0.01	0.908	0.864	-5	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/07/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 06/06/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15753
Analysis Lot: KWG1802952
Units: ng/ml

File ID: J:\MS14\DATA\060718\0607F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	400	0.70	1.05	1.06	1	NA	± 20	AverageRF
2-Methylnaphthalene	400	410	0.40	0.669	0.685	2	NA	± 20	AverageRF
Acenaphthylene	400	420	0.90	2.17	2.26	4	NA	± 20	AverageRF
Acenaphthene	400	420	0.90	1.24	1.31	6	NA	± 20	AverageRF
Fluorene	400	420	0.90	1.56	1.65	6	NA	± 20	AverageRF
Phenanthrene	400	420	0.70	1.12	1.17	4	NA	± 20	AverageRF
Anthracene	400	430	0.70	1.09	1.16	6	NA	± 20	AverageRF
Fluoranthene	400	430	0.60	1.28	1.37	8	NA	± 20	AverageRF
Pyrene	400	400	0.60	1.38	1.36	-1	NA	± 20	AverageRF
Benz(a)anthracene	400	420	0.80	1.27	1.32	4	NA	± 20	AverageRF
Chrysene	400	420	0.70	1.18	1.23	4	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	430	0.70	1.20	1.29	7	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	430	0.70	1.17	1.26	7	NA	± 20	AverageRF
Benzo(a)pyrene	400	440	0.70	1.07	1.17	9	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	410	0.50	1.29	1.31	2	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	390	0.40	1.29	1.26	-2	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	380	0.50	1.44	1.37	-5	NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.31	1.29	-1	NA	± 20	AverageRF
Fluoranthene-d10	400	410	0.01	1.14	1.18	3	NA	± 20	AverageRF
Terphenyl-d14	400	370	0.01	0.908	0.844	-7	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/07/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 11/02/2017
Analysis Method: 8270D SIM **Calibration ID:** CAL15594
Analysis Lot: KWG1802944
Units: ng/ml

File ID: J:\MS20\DATA\060718\0607F021.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	410	0.70	1.02	1.04	2	NA	± 20	AverageRF
2-Methylnaphthalene	400	420	0.40	0.682	0.719	5	NA	± 20	AverageRF
Acenaphthylene	400	400	0.90	2.03	2.04	1	NA	± 20	AverageRF
Acenaphthene	400	400	0.90	1.25	1.24	-1	NA	± 20	AverageRF
Fluorene	400	400	0.90	1.50	1.50	1	NA	± 20	AverageRF
Phenanthrene	400	380	0.70	1.17	1.12	-4	NA	± 20	AverageRF
Anthracene	400	360	0.70	1.09	0.987	-9	NA	± 20	AverageRF
Fluoranthene	400	420	0.60	1.27	1.32	4	NA	± 20	AverageRF
Pyrene	400	450	0.60	1.13	1.28	13	NA	± 20	AverageRF
Benz(a)anthracene	400	450	0.80	1.09	1.23	13	NA	± 20	AverageRF
Chrysene	400	430	0.70	1.08	1.17	8	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	430	0.70	1.14	1.22	7	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	410	0.70	1.15	1.18	2	NA	± 20	AverageRF
Benzo(a)pyrene	400	440	0.70	0.984	1.07	9	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	450	0.50	1.02	1.13	11	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	440	0.40	1.05	1.16	11	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	390	0.50	1.22	1.18	-3	NA	± 20	AverageRF
Fluorene-d10	400	410	0.01	1.28	1.31	3	NA	± 20	AverageRF
Fluoranthene-d10	400	440	0.01	1.15	1.26	9	NA	± 20	AverageRF
Terphenyl-d14	400	440	0.01	0.853	0.935	10	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/08/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 06/06/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15753
Analysis Lot: KWG1802974
Units: ng/ml

File ID: J:\MS14\DATA\060818\0608F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	390	0.70	1.05	1.01	-4	NA	± 20	AverageRF
2-Methylnaphthalene	400	400	0.40	0.669	0.668	0	NA	± 20	AverageRF
Acenaphthylene	400	390	0.90	2.17	2.12	-2	NA	± 20	AverageRF
Acenaphthene	400	400	0.90	1.24	1.24	0	NA	± 20	AverageRF
Fluorene	400	400	0.90	1.56	1.55	-1	NA	± 20	AverageRF
Phenanthrene	400	400	0.70	1.12	1.11	-1	NA	± 20	AverageRF
Anthracene	400	400	0.70	1.09	1.10	1	NA	± 20	AverageRF
Fluoranthene	400	410	0.60	1.28	1.31	2	NA	± 20	AverageRF
Pyrene	400	390	0.60	1.38	1.35	-2	NA	± 20	AverageRF
Benz(a)anthracene	400	420	0.80	1.27	1.32	4	NA	± 20	AverageRF
Chrysene	400	410	0.70	1.18	1.22	4	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	450	0.70	1.20	1.36	13	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	440	0.70	1.17	1.29	10	NA	± 20	AverageRF
Benzo(a)pyrene	400	450	0.70	1.07	1.21	13	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	400	0.50	1.29	1.29	0	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	360	0.40	1.29	1.17	-9	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	350	0.50	1.44	1.27	-12	NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.31	1.29	-1	NA	± 20	AverageRF
Fluoranthene-d10	400	410	0.01	1.14	1.16	2	NA	± 20	AverageRF
Terphenyl-d14	400	360	0.01	0.908	0.819	-10	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 06/11/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 06/06/2018
Calibration ID: CAL15753
Analysis Lot: KWG1802969
Units: ng/ml

File ID: J:\MS14\DATA\061118\0611F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	380	0.70	1.05	0.992	-6	NA	± 20	AverageRF
2-Methylnaphthalene	400	390	0.40	0.669	0.659	-1	NA	± 20	AverageRF
Acenaphthylene	400	380	0.90	2.17	2.08	-4	NA	± 20	AverageRF
Acenaphthene	400	390	0.90	1.24	1.22	-1	NA	± 20	AverageRF
Fluorene	400	390	0.90	1.56	1.53	-2	NA	± 20	AverageRF
Phenanthrene	400	390	0.70	1.12	1.09	-2	NA	± 20	AverageRF
Anthracene	400	390	0.70	1.09	1.07	-2	NA	± 20	AverageRF
Fluoranthene	400	400	0.60	1.28	1.28	0	NA	± 20	AverageRF
Pyrene	400	390	0.60	1.38	1.35	-2	NA	± 20	AverageRF
Benz(a)anthracene	400	410	0.80	1.27	1.30	2	NA	± 20	AverageRF
Chrysene	400	420	0.70	1.18	1.23	4	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	460	0.70	1.20	1.37	14	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	450	0.70	1.17	1.33	13	NA	± 20	AverageRF
Benzo(a)pyrene	400	450	0.70	1.07	1.21	13	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	400	0.50	1.29	1.28	-1	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	360	0.40	1.29	1.15	-11	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	360	0.50	1.44	1.29	-10	NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.31	1.28	-2	NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.14	1.14	1	NA	± 20	AverageRF
Terphenyl-d14	400	360	0.01	0.908	0.821	-10	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802915
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0606F014.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802915-1	6/6/2018	12:26		6/6/2018	12:46
0606F015.D	Continuing Calibration Verification	KWG1802915-2	6/6/2018	12:53		6/6/2018	13:12
0606F016.D	Method Blank	KWG1802419-4	6/6/2018	13:19		6/6/2018	13:38
0606F017.D	Lab Control Sample	KWG1802419-3	6/6/2018	13:45		6/6/2018	14:04
0606F018.D	PDI-SG-S041	K1804181-010	6/6/2018	14:11		6/6/2018	14:30
0606F019.D	ZZZZZZ	ZZZZZZ	6/6/2018	14:37		6/6/2018	14:56
0606F020.D	ZZZZZZ	ZZZZZZ	6/6/2018	15:03		6/6/2018	15:22
0606F021.D	ZZZZZZ	ZZZZZZ	6/6/2018	15:28		6/6/2018	15:47
0606F022.D	ZZZZZZ	ZZZZZZ	6/6/2018	15:54		6/6/2018	16:13
0606F023.D	PDI-SG-S043	K1804181-011	6/6/2018	16:19		6/6/2018	16:38
0606F024.D	PDI-SG-S062	K1804181-013	6/6/2018	16:45		6/6/2018	17:04
0606F025.D	PDI-SG-S063	K1804181-014	6/6/2018	17:10		6/6/2018	17:29
0606F026.D	Method Blank	KWG1802407-6	6/6/2018	17:34		6/6/2018	17:53
0606F027.D	Lab Control Sample	KWG1802407-5	6/6/2018	17:57		6/6/2018	18:16
0606F028.D	ZZZZZZ	ZZZZZZ	6/6/2018	18:22		6/6/2018	18:41
0606F029.D	PDI-SG-S123	K1804181-022	6/6/2018	18:45		6/6/2018	19:04
0606F030.D	PDI-SG-S125	K1804181-023	6/6/2018	19:09		6/6/2018	19:28
0606F031.D	PDI-SG-S128	K1804181-024	6/6/2018	19:34		6/6/2018	19:53
0606F032.D	PDI-SG-S242	K1804181-003	6/6/2018	19:57		6/6/2018	20:16
0606F033.D	PDI-SG-S200MS	KWG1802407-3	6/6/2018	20:21		6/6/2018	20:40
0606F034.D	PDI-SG-S200DMS	KWG1802407-4	6/6/2018	20:46		6/6/2018	21:05
0606F035.D	PDI-SG-S200	K1804181-017	6/6/2018	21:09		6/6/2018	21:28
0606F036.D	PDI-SG-S126	K1804181-025	6/6/2018	21:33		6/6/2018	21:52
0606F037.D	PDI-SG-S126-D	K1804181-026	6/6/2018	21:56		6/6/2018	22:15
0606F040.D	ZZZZZZ	ZZZZZZ	6/6/2018	23:07		6/6/2018	23:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802952
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0607F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802952-1	6/7/2018	06:25		6/7/2018	06:45
0607F002.D	Continuing Calibration Verification	KWG1802952-2	6/7/2018	06:49		6/7/2018	07:08
0607F004.D	PDI-SG-S126	K1804181-025	6/7/2018	07:39		6/7/2018	07:58
0607F005.D	PDI-SG-S126-D	K1804181-026	6/7/2018	08:03		6/7/2018	08:22
0607F006.D	ZZZZZZ	ZZZZZZ	6/7/2018	08:28		6/7/2018	08:47
0607F007.D	ZZZZZZ	ZZZZZZ	6/7/2018	08:51		6/7/2018	09:10
0607F008.D	ZZZZZZ	ZZZZZZ	6/7/2018	09:14		6/7/2018	09:33
0607F009.D	PDI-SG-S063	K1804181-014	6/7/2018	09:40		6/7/2018	09:59
0607F010.D	PDI-SG-S123	K1804181-022	6/7/2018	10:04		6/7/2018	10:23
0607F011.D	PDI-SG-S125	K1804181-023	6/7/2018	10:27		6/7/2018	10:46
0607F012.D	PDI-SG-S236MS	KWG1802419-1	6/7/2018	10:50		6/7/2018	11:09
0607F013.D	PDI-SG-S236DMS	KWG1802419-2	6/7/2018	11:15		6/7/2018	11:34
0607F014.D	PDI-SG-S236	K1804181-002	6/7/2018	11:38		6/7/2018	11:57
0607F015.D	ZZZZZZ	ZZZZZZ	6/7/2018	12:02		6/7/2018	12:21
0607F016.D	ZZZZZZ	ZZZZZZ	6/7/2018	12:25		6/7/2018	12:44
0607F017.D	PDI-SG-S037	K1804181-005	6/7/2018	12:48		6/7/2018	13:07
0607F018.D	PDI-SG-S038	K1804181-006	6/7/2018	13:12		6/7/2018	13:31
0607F019.D	PDI-SG-S039	K1804181-007	6/7/2018	13:35		6/7/2018	13:54
0607F020.D	PDI-SG-S037-D	K1804181-008	6/7/2018	13:58		6/7/2018	14:17
0607F021.D	ZZZZZZ	ZZZZZZ	6/7/2018	14:22		6/7/2018	14:41
0607F022.D	PDI-SG-S044	K1804181-012	6/7/2018	14:45		6/7/2018	15:04
0607F023.D	PDI-SG-S198	K1804181-015	6/7/2018	15:09		6/7/2018	15:28
0607F024.D	PDI-SG-S201	K1804181-016	6/7/2018	15:32		6/7/2018	15:51
0607F025.D	PDI-SG-S194	K1804181-018	6/7/2018	15:55		6/7/2018	16:14
0607F026.D	PDI-SG-S193	K1804181-019	6/7/2018	16:19		6/7/2018	16:38
0607F027.D	PDI-SG-S186	K1804181-020	6/7/2018	16:42		6/7/2018	17:01
0607F028.D	PDI-SG-S172	K1804181-021	6/7/2018	17:07		6/7/2018	17:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802969
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0611F002.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802969-1	6/11/2018	05:26		6/11/2018	05:46
0611F003.D	Continuing Calibration Verification	KWG1802969-2	6/11/2018	05:50		6/11/2018	06:09
0611F004.D	ZZZZZZ	ZZZZZZ	6/11/2018	06:14		6/11/2018	06:33
0611F005.D	ZZZZZZ	ZZZZZZ	6/11/2018	06:38		6/11/2018	06:57
0611F006.D	ZZZZZZ	ZZZZZZ	6/11/2018	07:02		6/11/2018	07:21
0611F007.D	ZZZZZZ	ZZZZZZ	6/11/2018	07:26		6/11/2018	07:45
0611F008.D	ZZZZZZ	ZZZZZZ	6/11/2018	07:50		6/11/2018	08:09
0611F009.D	PDI-SG-S126-D	K1804181-026	6/11/2018	08:15		6/11/2018	08:34
0611F010.D	PDI-SG-S239	K1804181-001	6/11/2018	08:38		6/11/2018	08:57
0611F011.D	PDI-SG-S233	K1804181-004	6/11/2018	09:02		6/11/2018	09:21
0611F012.D	PDI-SG-S037	K1804181-005	6/11/2018	09:26		6/11/2018	09:45
0611F013.D	PDI-SG-S037-D	K1804181-008	6/11/2018	09:50		6/11/2018	10:09
0611F014.D	PDI-SG-S040	K1804181-009	6/11/2018	10:13		6/11/2018	10:32
0611F015.D	ZZZZZZ	ZZZZZZ	6/11/2018	10:38		6/11/2018	10:57
0611F016.D	ZZZZZZ	ZZZZZZ	6/11/2018	11:02		6/11/2018	11:21
0611F017.D	ZZZZZZ	ZZZZZZ	6/11/2018	11:25		6/11/2018	11:44
0611F018.D	ZZZZZZ	ZZZZZZ	6/11/2018	11:49		6/11/2018	12:08
0611F019.D	ZZZZZZ	ZZZZZZ	6/11/2018	12:13		6/11/2018	12:32
0611F020.D	ZZZZZZ	ZZZZZZ	6/11/2018	12:37		6/11/2018	12:56
0611F021.D	ZZZZZZ	ZZZZZZ	6/11/2018	13:00		6/11/2018	13:19
0611F022.D	ZZZZZZ	ZZZZZZ	6/11/2018	13:24		6/11/2018	13:43
0611F023.D	ZZZZZZ	ZZZZZZ	6/11/2018	13:48		6/11/2018	14:07
0611F024.D	ZZZZZZ	ZZZZZZ	6/11/2018	14:11		6/11/2018	14:30
0611F025.D	ZZZZZZ	ZZZZZZ	6/11/2018	14:35		6/11/2018	14:54
0611F026.D	ZZZZZZ	ZZZZZZ	6/11/2018	14:58		6/11/2018	15:17
0611F027.D	ZZZZZZ	ZZZZZZ	6/11/2018	15:22		6/11/2018	15:41
0611F028.D	ZZZZZZ	ZZZZZZ	6/11/2018	15:45		6/11/2018	16:04
0611F029.D	ZZZZZZ	ZZZZZZ	6/11/2018	16:09		6/11/2018	16:28
0611F030.D	ZZZZZZ	ZZZZZZ	6/11/2018	16:32		6/11/2018	16:51
0611F031.D	ZZZZZZ	ZZZZZZ	6/11/2018	16:55		6/11/2018	17:14

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QA/QC Results

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802974
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0608F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802974-1	6/8/2018	05:44		6/8/2018	06:04
0608F002.D	Continuing Calibration Verification	KWG1802974-2	6/8/2018	06:09		6/8/2018	06:28
0608F003.D	ZZZZZZ	ZZZZZZ	6/8/2018	06:38		6/8/2018	06:57
0608F004.D	ZZZZZZ	ZZZZZZ	6/8/2018	07:02		6/8/2018	07:21
0608F008.D	ZZZZZZ	ZZZZZZ	6/8/2018	08:36		6/8/2018	08:55
0608F009.D	ZZZZZZ	ZZZZZZ	6/8/2018	09:00		6/8/2018	09:19
0608F010.D	ZZZZZZ	ZZZZZZ	6/8/2018	09:24		6/8/2018	09:43
0608F011.D	ZZZZZZ	ZZZZZZ	6/8/2018	09:48		6/8/2018	10:07
0608F012.D	ZZZZZZ	ZZZZZZ	6/8/2018	10:11		6/8/2018	10:30
0608F013.D	ZZZZZZ	ZZZZZZ	6/8/2018	10:35		6/8/2018	10:54
0608F014.D	ZZZZZZ	ZZZZZZ	6/8/2018	10:59		6/8/2018	11:18
0608F015.D	ZZZZZZ	ZZZZZZ	6/8/2018	11:22		6/8/2018	11:41
0608F016.D	ZZZZZZ	ZZZZZZ	6/8/2018	11:46		6/8/2018	12:05
0608F017.D	ZZZZZZ	ZZZZZZ	6/8/2018	12:09		6/8/2018	12:28
0608F018.D	ZZZZZZ	ZZZZZZ	6/8/2018	12:33		6/8/2018	12:52
0608F019.D	ZZZZZZ	ZZZZZZ	6/8/2018	12:56		6/8/2018	13:15
0608F020.D	ZZZZZZ	ZZZZZZ	6/8/2018	13:20		6/8/2018	13:39
0608F021.D	ZZZZZZ	ZZZZZZ	6/8/2018	13:44		6/8/2018	14:03
0608F022.D	ZZZZZZ	ZZZZZZ	6/8/2018	14:09		6/8/2018	14:28
0608F023.D	ZZZZZZ	ZZZZZZ	6/8/2018	14:34		6/8/2018	14:53
0608F024.D	ZZZZZZ	ZZZZZZ	6/8/2018	14:58		6/8/2018	15:17
0608F025.D	ZZZZZZ	ZZZZZZ	6/8/2018	15:24		6/8/2018	15:43
0608F026.D	ZZZZZZ	ZZZZZZ	6/8/2018	15:47		6/8/2018	16:06
0608F027.D	ZZZZZZ	ZZZZZZ	6/8/2018	16:11		6/8/2018	16:30
0608F028.D	ZZZZZZ	ZZZZZZ	6/8/2018	16:37		6/8/2018	16:56
0608F029.D	ZZZZZZ	ZZZZZZ	6/8/2018	17:01		6/8/2018	17:20
0608F030.D	PDI-SG-S126	K1804181-025	6/8/2018	17:24		6/8/2018	17:43

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802944
Instrument ID: MS20

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0607F020.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802944-1	6/7/2018	21:11		6/7/2018	21:41
0607F021.D	Continuing Calibration Verification	KWG1802944-2	6/7/2018	21:51		6/7/2018	22:20
0607F022.D	ZZZZZZ	ZZZZZZ	6/7/2018	22:30		6/7/2018	22:59
0607F023.D	ZZZZZZ	ZZZZZZ	6/7/2018	23:09		6/7/2018	23:38
0607F024.D	ZZZZZZ	ZZZZZZ	6/7/2018	23:49		6/8/2018	00:18
0607F025.D	ZZZZZZ	ZZZZZZ	6/8/2018	00:28		6/8/2018	00:57
0607F026.D	ZZZZZZ	ZZZZZZ	6/8/2018	01:07		6/8/2018	01:36
0607F027.D	ZZZZZZ	ZZZZZZ	6/8/2018	01:47		6/8/2018	02:16
0607F028.D	ZZZZZZ	ZZZZZZ	6/8/2018	02:26		6/8/2018	02:55
0607F029.D	ZZZZZZ	ZZZZZZ	6/8/2018	03:06		6/8/2018	03:35
0607F030.D	ZZZZZZ	ZZZZZZ	6/8/2018	03:45		6/8/2018	04:14
0607F031.D	ZZZZZZ	ZZZZZZ	6/8/2018	04:25		6/8/2018	04:54
0607F032.D	ZZZZZZ	ZZZZZZ	6/8/2018	05:04		6/8/2018	05:33
0607F033.D	ZZZZZZ	ZZZZZZ	6/8/2018	05:44		6/8/2018	06:13
0607F034.D	ZZZZZZ	ZZZZZZ	6/8/2018	06:23		6/8/2018	06:52
0607F035.D	PDI-SG-S236	K1804181-002	6/8/2018	07:02		6/8/2018	07:31
0607F036.D	ZZZZZZ	ZZZZZZ	6/8/2018	07:42		6/8/2018	08:11
0607F037.D	ZZZZZZ	ZZZZZZ	6/8/2018	08:21		6/8/2018	08:50
0607F038.D	ZZZZZZ	ZZZZZZ	6/8/2018	09:01		6/8/2018	09:30

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Service Request: K1804181
Date Extracted: 05/11/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1802407
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
PDI-SG-S200	K1804181-017	05/03/18	05/04/18	40.283g	2mL	38.7	
PDI-SG-S123	K1804181-022	05/03/18	05/04/18	40.323g	2mL	62	
PDI-SG-S123DL	K1804181-022	05/03/18	05/04/18	40.323g	2mL	62	
PDI-SG-S125	K1804181-023	05/03/18	05/04/18	40.237g	2mL	45.2	
PDI-SG-S125DL	K1804181-023	05/03/18	05/04/18	40.237g	2mL	45.2	
PDI-SG-S128	K1804181-024	05/03/18	05/04/18	40.180g	2mL	72.5	
PDI-SG-S126	K1804181-025	05/03/18	05/04/18	40.310g	2mL	48.8	
PDI-SG-S126DL	K1804181-025	05/03/18	05/04/18	40.310g	2mL	48.8	
PDI-SG-S126-D	K1804181-026	05/03/18	05/04/18	40.480g	2mL	47.6	
PDI-SG-S126-DDL	K1804181-026	05/03/18	05/04/18	40.480g	2mL	47.6	
Method Blank	KWG1802407-6	NA	NA	40.480g	2mL	NA	
PDI-SG-S200MS	KWG1802407-3	05/03/18	05/04/18	40.028g	2mL	38.7	
PDI-SG-S200DMS	KWG1802407-4	05/03/18	05/04/18	40.214g	2mL	38.7	
Lab Control Sample	KWG1802407-5	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Service Request: K1804181
Date Extracted: 05/14/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1802419
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
PDI-SG-S239	K1804181-001	05/02/18	05/04/18	40.107g	2mL	33.2	
PDI-SG-S236DL	K1804181-002	05/02/18	05/04/18	40.499g	2mL	45.7	
PDI-SG-S236	K1804181-002	05/02/18	05/04/18	40.499g	2mL	45.7	
PDI-SG-S242	K1804181-003	05/02/18	05/04/18	40.044g	2mL	73.8	
PDI-SG-S233	K1804181-004	05/02/18	05/04/18	40.306g	2mL	32.7	
PDI-SG-S037DL	K1804181-005	05/02/18	05/04/18	40.131g	2mL	53.8	
PDI-SG-S037	K1804181-005	05/02/18	05/04/18	40.131g	2mL	53.8	
PDI-SG-S038	K1804181-006	05/02/18	05/04/18	40.120g	2mL	55.4	
PDI-SG-S039	K1804181-007	05/02/18	05/04/18	40.179g	2mL	54.2	
PDI-SG-S037-DDL	K1804181-008	05/02/18	05/04/18	40.237g	2mL	54.6	
PDI-SG-S037-D	K1804181-008	05/02/18	05/04/18	40.237g	2mL	54.6	
PDI-SG-S040	K1804181-009	05/02/18	05/04/18	40.229g	2mL	54.4	
PDI-SG-S041	K1804181-010	05/02/18	05/04/18	40.342g	2mL	44.8	
PDI-SG-S043	K1804181-011	05/02/18	05/04/18	40.128g	2mL	42.9	
PDI-SG-S044	K1804181-012	05/02/18	05/04/18	40.423g	2mL	46.7	
PDI-SG-S062	K1804181-013	05/02/18	05/04/18	40.143g	2mL	39.8	
PDI-SG-S063DL	K1804181-014	05/03/18	05/04/18	40.269g	2mL	39.3	
PDI-SG-S063	K1804181-014	05/03/18	05/04/18	40.269g	2mL	39.3	
PDI-SG-S198	K1804181-015	05/03/18	05/04/18	40.200g	2mL	36.4	
PDI-SG-S201	K1804181-016	05/03/18	05/04/18	40.211g	2mL	36	
PDI-SG-S194	K1804181-018	05/03/18	05/04/18	40.221g	2mL	36.1	
PDI-SG-S193	K1804181-019	05/03/18	05/04/18	40.183g	2mL	33.7	
PDI-SG-S186	K1804181-020	05/03/18	05/04/18	40.223g	2mL	37.4	
PDI-SG-S172	K1804181-021	05/03/18	05/04/18	40.265g	2mL	62	
Method Blank	KWG1802419-4	NA	NA	40.499g	2mL	NA	
PDI-SG-S236MS	KWG1802419-1	05/02/18	05/04/18	40.231g	2mL	45.7	
PDI-SG-S236DMS	KWG1802419-2	05/02/18	05/04/18	40.373g	2mL	45.7	
Lab Control Sample	KWG1802419-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
PDI-RB-VV-180502-1700	K1804181-027	05/02/2018	05/04/2018
PDI-RB-VV-180502-1730	K1804181-028	05/02/2018	05/04/2018

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Water	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-RB-VV-180502-1700	**Units:**	ug/L
Lab Code:	K1804181-027	**Basis:**	NA
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0098**	J	0.021	0.0015	1	05/09/18	05/10/18	KWG1802347	
2-Methylnaphthalene	**0.0074**	J	0.021	0.0014	1	05/09/18	05/10/18	KWG1802347	
Acenaphthylene	ND	U	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Acenaphthene	ND	U	0.021	0.0013	1	05/09/18	05/10/18	KWG1802347	
Fluorene	**0.0013**	J	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Phenanthrene	**0.0038**	J	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Anthracene	ND	U	0.021	0.00083	1	05/09/18	05/10/18	KWG1802347	
Fluoranthene	**0.0013**	J	0.021	0.00083	1	05/09/18	05/10/18	KWG1802347	
Pyrene	**0.0018**	J	0.021	0.0011	1	05/09/18	05/10/18	KWG1802347	
Benz(a)anthracene	**0.0022**	J	0.021	0.00099	1	05/09/18	05/10/18	KWG1802347	
Chrysene	ND	U	0.021	0.00077	1	05/09/18	05/10/18	KWG1802347	
Benzo(b)fluoranthene†	ND	U	0.021	0.00084	1	05/09/18	05/10/18	KWG1802347	
Benzo(k)fluoranthene	ND	U	0.021	0.00096	1	05/09/18	05/10/18	KWG1802347	
Benzo(a)pyrene	ND	U	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Indeno(1,2,3-cd)pyrene	ND	U	0.021	0.00091	1	05/09/18	05/10/18	KWG1802347	
Dibenz(a,h)anthracene	ND	U	0.021	0.0014	1	05/09/18	05/10/18	KWG1802347	
Benzo(g,h,i)perylene	**0.00099**	J	0.021	0.00087	1	05/09/18	05/10/18	KWG1802347	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	90	42-131	05/10/18	Acceptable
Fluoranthene-d10	96	42-133	05/10/18	Acceptable
Terphenyl-d14	86	32-129	05/10/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/02/2018
Sample Matrix:	Water	**Date Received:**	05/04/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-RB-VV-180502-1730	**Units:**	ug/L
Lab Code:	K1804181-028	**Basis:**	NA
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0029**	J	0.021	0.0015	1	05/09/18	05/10/18	KWG1802347	
2-Methylnaphthalene	ND	U	0.021	0.0014	1	05/09/18	05/10/18	KWG1802347	
Acenaphthylene	ND	U	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Acenaphthene	ND	U	0.021	0.0013	1	05/09/18	05/10/18	KWG1802347	
Fluorene	ND	U	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Phenanthrene	**0.0025**	J	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Anthracene	ND	U	0.021	0.00086	1	05/09/18	05/10/18	KWG1802347	
Fluoranthene	ND	U	0.021	0.00086	1	05/09/18	05/10/18	KWG1802347	
Pyrene	ND	U	0.021	0.0011	1	05/09/18	05/10/18	KWG1802347	
Benz(a)anthracene	**0.0025**	J	0.021	0.0011	1	05/09/18	05/10/18	KWG1802347	
Chrysene	ND	U	0.021	0.00080	1	05/09/18	05/10/18	KWG1802347	
Benzo(b)fluoranthene†	ND	U	0.021	0.00087	1	05/09/18	05/10/18	KWG1802347	
Benzo(k)fluoranthene	ND	U	0.021	0.00099	1	05/09/18	05/10/18	KWG1802347	
Benzo(a)pyrene	ND	U	0.021	0.0012	1	05/09/18	05/10/18	KWG1802347	
Indeno(1,2,3-cd)pyrene	ND	U	0.021	0.00094	1	05/09/18	05/10/18	KWG1802347	
Dibenz(a,h)anthracene	ND	U	0.021	0.0014	1	05/09/18	05/10/18	KWG1802347	
Benzo(g,h,i)perylene	ND	U	0.021	0.00091	1	05/09/18	05/10/18	KWG1802347	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	93	42-131	05/10/18	Acceptable
Fluoranthene-d10	99	42-133	05/10/18	Acceptable
Terphenyl-d14	90	32-129	05/10/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1802347-3	**Basis:**	NA
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0015**	J	0.020	0.0014	1	05/09/18	05/10/18	KWG1802347	
2-Methylnaphthalene	ND	U	0.020	0.0013	1	05/09/18	05/10/18	KWG1802347	
Acenaphthylene	ND	U	0.020	0.0011	1	05/09/18	05/10/18	KWG1802347	
Acenaphthene	ND	U	0.020	0.0012	1	05/09/18	05/10/18	KWG1802347	
Fluorene	ND	U	0.020	0.0011	1	05/09/18	05/10/18	KWG1802347	
Phenanthrene	**0.0014**	J	0.020	0.0011	1	05/09/18	05/10/18	KWG1802347	
Anthracene	ND	U	0.020	0.00082	1	05/09/18	05/10/18	KWG1802347	
Fluoranthene	ND	U	0.020	0.00082	1	05/09/18	05/10/18	KWG1802347	
Pyrene	ND	U	0.020	0.0010	1	05/09/18	05/10/18	KWG1802347	
Benz(a)anthracene	**0.0022**	J	0.020	0.00097	1	05/09/18	05/10/18	KWG1802347	
Chrysene	ND	U	0.020	0.00076	1	05/09/18	05/10/18	KWG1802347	
Benzo(b)fluoranthene†	ND	U	0.020	0.00083	1	05/09/18	05/10/18	KWG1802347	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	05/09/18	05/10/18	KWG1802347	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	05/09/18	05/10/18	KWG1802347	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	05/09/18	05/10/18	KWG1802347	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	05/09/18	05/10/18	KWG1802347	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	05/09/18	05/10/18	KWG1802347	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	96	42-131	05/10/18	Acceptable
Fluoranthene-d10	100	42-133	05/10/18	Acceptable
Terphenyl-d14	93	32-129	05/10/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

QA/QC Report

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3511 **Units:** Percent
Analysis Method: 8270D SIM **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
PDI-RB-VV-180502-1700	K1804181-027	90	96	86
PDI-RB-VV-180502-1730	K1804181-028	93	99	90
Method Blank	KWG1802347-3	96	100	93
Lab Control Sample	KWG1802347-1	92	96	89
Duplicate Lab Control Sample	KWG1802347-2	96	102	96

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 05/10/2018
Time Analyzed: 06:55

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\051018\0510F003.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1802406-2
Analysis Lot: KWG1802406

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	72,218	5.97	38,055	8.28	81,267	11.47
	Upper Limit ==>	144,436	6.47	76,110	8.78	162,534	11.97
	Lower Limit ==>	36,109	5.47	19,028	7.78	40,634	10.97
	ICAL Result ==>	90,101	6.06	44,197	8.42	87,517	11.64
Associated Analyses							
Method Blank	KWG1802347-3	80,469	5.97	43,076	8.28	88,485	11.47
Lab Control Sample	KWG1802347-1	86,378	5.97	42,922	8.28	90,305	11.46
Duplicate Lab Control Sample	KWG1802347-2	84,183	5.97	42,454	8.28	87,756	11.46
PDI-RB-VV-180502-1700	K1804181-027	91,271	5.97	46,445	8.28	93,288	11.47
PDI-RB-VV-180502-1730	K1804181-028	87,095	5.96	45,040	8.28	89,910	11.47

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 05/10/2018
Time Analyzed: 06:55

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\051018\0510F003.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1802406-2
Analysis Lot: KWG1802406

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	95,694	18.82	106,099	23.11
	Upper Limit ==>	191,388	19.32	212,198	23.61
	Lower Limit ==>	47,847	18.32	53,050	22.61
	ICAL Result ==>	105,110	19.00	102,151	23.35
Associated Analyses					
Method Blank	KWG1802347-3	100,243	18.82	115,103	23.11
Lab Control Sample	KWG1802347-1	99,966	18.81	112,667	23.10
Duplicate Lab Control Sample	KWG1802347-2	98,652	18.82	110,725	23.10
PDI-RB-VV-180502-1700	K1804181-027	103,092	18.82	119,288	23.11
PDI-RB-VV-180502-1730	K1804181-028	99,428	18.82	113,242	23.11

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/09/2018
Sample Matrix:	Water	**Date Analyzed:**	05/10/2018

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3511	**Units:**	ug/L
Analysis Method:	8270D SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1802347

	Lab Control Sample KWG1802347-1 Lab Control Spike			Duplicate Lab Control Sample KWG1802347-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	2.26	2.78	81	2.51	2.78	90	52-115	10	30
2-Methylnaphthalene	2.32	2.78	83	2.56	2.78	92	48-120	10	30
Acenaphthylene	2.54	2.78	91	2.72	2.78	98	58-124	7	30
Acenaphthene	2.43	2.78	87	2.58	2.78	93	63-121	6	30
Fluorene	2.44	2.78	88	2.64	2.78	95	68-121	8	30
Phenanthrene	2.36	2.78	85	2.59	2.78	93	64-126	9	30
Anthracene	2.47	2.78	89	2.73	2.78	98	68-127	10	30
Fluoranthene	2.48	2.78	89	2.72	2.78	98	70-127	9	30
Pyrene	2.71	2.78	98	2.94	2.78	106	72-127	8	30
Benz(a)anthracene	2.82	2.78	102	3.06	2.78	110	74-124	8	30
Chrysene	2.62	2.78	94	2.86	2.78	103	74-132	9	30
Benzo(b)fluoranthene	2.56	2.78	92	2.84	2.78	102	73-136	10	30
Benzo(k)fluoranthene	2.54	2.78	92	2.71	2.78	98	74-134	6	30
Benzo(a)pyrene	2.65	2.78	95	2.88	2.78	104	75-131	8	30
Indeno(1,2,3-cd)pyrene	2.69	2.78	97	2.91	2.78	105	63-136	8	30
Dibenz(a,h)anthracene	2.63	2.78	95	2.87	2.78	103	59-135	9	30
Benzo(g,h,i)perylene	2.36	2.78	85	2.57	2.78	92	63-127	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/09/2018
Sample Matrix:	Water	**Date Analyzed:**	05/10/2018
		Time Analyzed:	10:56

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS20
Lab Code:	KWG1802347-3	**File ID:**	J:\MS20\DATA\051018\0510F009.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802347

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1802347-1	J:\MS20\DATA\051018\0510F010.D	05/10/18	11:35
Duplicate Lab Control Sample	KWG1802347-2	J:\MS20\DATA\051018\0510F011.D	05/10/18	12:14
PDI-RB-VV-180502-1700	K1804181-027	J:\MS20\DATA\051018\0510F013.D	05/10/18	13:33
PDI-RB-VV-180502-1730	K1804181-028	J:\MS20\DATA\051018\0510F014.D	05/10/18	14:13

QA/QC Report

Client:	AECOM	**Service Request:**	K1804181
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/09/2018
Sample Matrix:	Water	**Date Analyzed:**	05/10/2018
		Time Analyzed:	11:35

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS20
Lab Code:	KWG1802347-1	**File ID:**	J:\MS20\DATA\051018\0510F010.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802347

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1802347-3	J:\MS20\DATA\051018\0510F009.D	05/10/18	10:56
PDI-RB-VV-180502-1700	K1804181-027	J:\MS20\DATA\051018\0510F013.D	05/10/18	13:33
PDI-RB-VV-180502-1730	K1804181-028	J:\MS20\DATA\051018\0510F014.D	05/10/18	14:13

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Date Analyzed: 05/10/2018
Time Analyzed: 06:15

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\051018\0510F002.D
Instrument ID: MS20
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802406

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	24.5	95170	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	26.9	104416	PASS
70	69	0	2	0.4	439	PASS
127	198	10	80	38.3	148906	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	41.0	388522	PASS
199	198	5	9	6.8	26298	PASS
275	198	10	60	35.1	136362	PASS
365	442	1	50	2.2	20693	PASS
441	443	0	100	79.8	152138	PASS
442	442	100	100	100.0	948309	PASS
443	442	15	24	20.1	190570	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802406-2	J:\MS20\DATA\051018\0510F003.D	05/10/2018	06:55	
Method Blank	KWG1802347-3	J:\MS20\DATA\051018\0510F009.D	05/10/2018	10:56	
Lab Control Sample	KWG1802347-1	J:\MS20\DATA\051018\0510F010.D	05/10/2018	11:35	
Duplicate Lab Control Sample	KWG1802347-2	J:\MS20\DATA\051018\0510F011.D	05/10/2018	12:14	
PDI-RB-VV-180502-1700	K1804181-027	J:\MS20\DATA\051018\0510F013.D	05/10/2018	13:33	
PDI-RB-VV-180502-1730	K1804181-028	J:\MS20\DATA\051018\0510F014.D	05/10/2018	14:13	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

Level ID	File ID	Level ID	File ID
A	J:\MS20\DATA\110217\1102F003.D	G	J:\MS20\DATA\110217\1102F009.D
B	J:\MS20\DATA\110217\1102F004.D	H	J:\MS20\DATA\110217\1102F010.D
C	J:\MS20\DATA\110217\1102F005.D	I	J:\MS20\DATA\110217\1102F011.D
D	J:\MS20\DATA\110217\1102F006.D	J	J:\MS20\DATA\110217\1102F012.D
E	J:\MS20\DATA\110217\1102F007.D		
F	J:\MS20\DATA\110217\1102F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	2.0	1.21	B	4.0	1.04	C	8.0	1.03	D	20	0.996	E	100	0.990
	F	200	0.989	G	400	1.02	H	1000	1.01	I	1600	0.972	J	2000	0.967
2-Methylnaphthalene	A	2.0	0.781	B	4.0	0.671	C	8.0	0.661	D	20	0.679	E	100	0.678
	F	200	0.694	G	400	0.692	H	1000	0.678	I	1600	0.645	J	2000	0.644
Acenaphthylene	A	2.0	2.23	B	4.0	1.95	C	8.0	1.92	D	20	1.97	E	100	1.97
	F	200	2.00	G	400	2.07	H	1000	2.08	I	1600	2.05	J	2000	2.02
Acenaphthene	A	2.0	1.45	B	4.0	1.25	C	8.0	1.25	D	20	1.24	E	100	1.21
	F	200	1.22	G	400	1.25	H	1000	1.23	I	1600	1.21	J	2000	1.19
Fluorene	A	2.0	1.81	B	4.0	1.46	C	8.0	1.44	D	20	1.44	E	100	1.46
	F	200	1.47	G	400	1.51	H	1000	1.48	I	1600	1.45	J	2000	1.44
Phenanthrene	A	2.0	1.50	B	4.0	1.16	C	8.0	1.16	D	20	1.16	E	100	1.12
	F	200	1.13	G	400	1.15	H	1000	1.14	I	1600	1.10	J	2000	1.09
Anthracene	A	2.0	1.32	B	4.0	1.05	C	8.0	1.04	D	20	1.03	E	100	1.03
	F	200	1.06	G	400	1.10	H	1000	1.11	I	1600	1.08	J	2000	1.06
Fluoranthene	A	2.0	1.51	B	4.0	1.20	C	8.0	1.19	D	20	1.24	E	100	1.23
	F	200	1.27	G	400	1.32	H	1000	1.30	I	1600	1.25	J	2000	1.24
Pyrene	A	2.0	1.34	B	4.0	1.10	C	8.0	1.09	D	20	1.10	E	100	1.08
	F	200	1.09	G	400	1.12	H	1000	1.13	I	1600	1.12	J	2000	1.11
Benz(a)anthracene	A	2.0	1.36	B	4.0	1.13	C	8.0	1.03	D	20	1.02	E	100	0.986
	F	200	1.01	G	400	1.05	H	1000	1.09	I	1600	1.09	J	2000	1.10
Chrysene	A	2.0	1.26	B	4.0	1.06	C	8.0	1.08	D	20	1.07	E	100	1.06
	F	200	1.06	G	400	1.07	H	1000	1.06	I	1600	1.06	J	2000	1.04
Benzo(b)fluoranthene	A	2.0	1.22	B	4.0	1.06	C	8.0	1.06	D	20	1.10	E	100	1.10
	F	200	1.12	G	400	1.17	H	1000	1.19	I	1600	1.20	J	2000	1.18
Benzo(k)fluoranthene	A	2.0	1.19	B	4.0	1.07	C	8.0	1.09	D	20	1.09	E	100	1.15
	F	200	1.18	G	400	1.20	H	1000	1.19	I	1600	1.19	J	2000	1.18
Benzo(a)pyrene	A	2.0	0.956	B	4.0	0.883	C	8.0	0.866	D	20	0.903	E	100	0.955
	F	200	1.00	G	400	1.06	H	1000	1.06	I	1600	1.08	J	2000	1.08

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Indeno(1,2,3-cd)pyrene	A	2.0	1.05	B	4.0	0.927	C	8.0	0.901	D	20	0.943	E	100	0.987
	F	200	1.03	G	400	1.10	H	1000	1.08	I	1600	1.07	J	2000	1.07
Dibenz(a,h)anthracene	A	2.0	1.02	B	4.0	0.967	C	8.0	0.953	D	20	1.01	E	100	1.05
	F	200	1.08	G	400	1.13	H	1000	1.11	I	1600	1.10	J	2000	1.10
Benzo(g,h,i)perylene	A	2.0	1.36	B	4.0	1.19	C	8.0	1.17	D	20	1.25	E	100	1.21
	F	200	1.23	G	400	1.27	H	1000	1.18	I	1600	1.17	J	2000	1.16
Fluorene-d10				B	4.0	1.51	C	8.0	1.31	D	20	1.26	E	100	1.23
	F	200	1.23	G	400	1.27	H	1000	1.25	I	1600	1.23	J	2000	1.21
Fluoranthene-d10	A	2.0	1.49	B	4.0	1.12	C	8.0	1.07	D	20	1.08	E	100	1.06
	F	200	1.10	G	400	1.15	H	1000	1.17	I	1600	1.16	J	2000	1.15
Terphenyl-d14	A	2.0	1.04	B	4.0	0.848	C	8.0	0.825	D	20	0.837	E	100	0.817
	F	200	0.826	G	400	0.831	H	1000	0.840	I	1600	0.837	J	2000	0.829

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 11/02/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15594 **Column:** MS
Instrument ID: MS20

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Naphthalene	MS	AverageRF	% RSD	6.8		≤ 20	1.02		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	5.7		≤ 20	0.682		0.40
Acenaphthylene	MS	AverageRF	% RSD	4.4		≤ 20	2.03		0.90
Acenaphthene	MS	AverageRF	% RSD	5.8		≤ 20	1.25		0.90
Fluorene	MS	AverageRF	% RSD	7.5		≤ 20	1.50		0.90
Phenanthrene	MS	AverageRF	% RSD	10.0		≤ 20	1.17		0.70
Anthracene	MS	AverageRF	% RSD	7.9		≤ 20	1.09		0.70
Fluoranthene	MS	AverageRF	% RSD	7.2		≤ 20	1.27		0.60
Pyrene	MS	AverageRF	% RSD	6.7		≤ 20	1.13		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	9.8		≤ 20	1.09		0.80
Chrysene	MS	AverageRF	% RSD	5.7		≤ 20	1.08		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	5.0		≤ 20	1.14		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	4.4		≤ 20	1.15		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	8.4		≤ 20	0.984		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	7.1		≤ 20	1.02		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	5.9		≤ 20	1.05		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	5.1		≤ 20	1.22		0.50
Fluorene-d10	SURR	AverageRF	% RSD	7.1		≤ 20	1.28		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	10.7		≤ 20	1.15		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	7.7		≤ 20	0.853		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Service Request: K1804181
Calibration Date: 11/02/2017
Date Analyzed: 11/02/2017

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15594
Units: ng/ml

File ID: J:\MS20\DATA\110217\1102F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	360	1.02	0.924	-10	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	380	0.682	0.644	-6	NA	± 30 %	AverageRF
Acenaphthylene	400	380	2.03	1.93	-5	NA	± 30 %	AverageRF
Acenaphthene	400	380	1.25	1.17	-6	NA	± 30 %	AverageRF
Fluorene	400	370	1.50	1.39	-7	NA	± 30 %	AverageRF
Phenanthrene	400	370	1.17	1.08	-8	NA	± 30 %	AverageRF
Anthracene	400	380	1.09	1.03	-6	NA	± 30 %	AverageRF
Fluoranthene	400	400	1.27	1.28	0	NA	± 30 %	AverageRF
Pyrene	400	380	1.13	1.08	-5	NA	± 30 %	AverageRF
Benz(a)anthracene	400	370	1.09	0.996	-8	NA	± 30 %	AverageRF
Chrysene	400	380	1.08	1.03	-5	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	380	1.14	1.10	-4	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	390	1.15	1.13	-2	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	400	0.984	0.973	-1	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	1.02	0.946	-7	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	380	1.05	1.00	-5	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	360	1.22	1.11	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 05/10/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 11/02/2017
Analysis Method: 8270D SIM **Calibration ID:** CAL15594
Analysis Lot: KWG1802406
Units: ng/ml

File ID: J:\MS20\DATA\051018\0510F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	400	0.70	1.02	1.01	-1	NA	± 20	AverageRF
2-Methylnaphthalene	400	400	0.40	0.682	0.679	0	NA	± 20	AverageRF
Acenaphthylene	400	410	0.90	2.03	2.09	3	NA	± 20	AverageRF
Acenaphthene	400	390	0.90	1.25	1.23	-2	NA	± 20	AverageRF
Fluorene	400	410	0.90	1.50	1.52	2	NA	± 20	AverageRF
Phenanthrene	400	390	0.70	1.17	1.13	-3	NA	± 20	AverageRF
Anthracene	400	370	0.70	1.09	1.01	-7	NA	± 20	AverageRF
Fluoranthene	400	420	0.60	1.27	1.35	6	NA	± 20	AverageRF
Pyrene	400	420	0.60	1.13	1.19	5	NA	± 20	AverageRF
Benz(a)anthracene	400	440	0.80	1.09	1.19	10	NA	± 20	AverageRF
Chrysene	400	420	0.70	1.08	1.13	5	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	410	0.70	1.14	1.16	1	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	400	0.70	1.15	1.17	1	NA	± 20	AverageRF
Benzo(a)pyrene	400	420	0.70	0.984	1.04	5	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	420	0.50	1.02	1.06	4	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	420	0.40	1.05	1.11	5	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	370	0.50	1.22	1.13	-7	NA	± 20	AverageRF
Fluorene-d10	400	400	0.01	1.28	1.29	1	NA	± 20	AverageRF
Fluoranthene-d10	400	430	0.01	1.15	1.23	7	NA	± 20	AverageRF
Terphenyl-d14	400	420	0.01	0.853	0.888	4	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804181
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802406
Instrument ID: MS20

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0510F002.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802406-1	5/10/2018	06:15		5/10/2018	06:45
0510F003.D	Continuing Calibration Verification	KWG1802406-2	5/10/2018	06:55		5/10/2018	07:24
0510F005.D	ZZZZZZ	ZZZZZZ	5/10/2018	08:18		5/10/2018	08:47
0510F006.D	ZZZZZZ	ZZZZZZ	5/10/2018	08:58		5/10/2018	09:27
0510F007.D	ZZZZZZ	ZZZZZZ	5/10/2018	09:37		5/10/2018	10:06
0510F008.D	ZZZZZZ	ZZZZZZ	5/10/2018	10:16		5/10/2018	10:45
0510F009.D	Method Blank	KWG1802347-3	5/10/2018	10:56		5/10/2018	11:25
0510F010.D	Lab Control Sample	KWG1802347-1	5/10/2018	11:35		5/10/2018	12:04
0510F011.D	Duplicate Lab Control Sample	KWG1802347-2	5/10/2018	12:14		5/10/2018	12:43
0510F012.D	ZZZZZZ	ZZZZZZ	5/10/2018	12:54		5/10/2018	13:23
0510F013.D	PDI-RB-VV-180502-1700	K1804181-027	5/10/2018	13:33		5/10/2018	14:02
0510F014.D	PDI-RB-VV-180502-1730	K1804181-028	5/10/2018	14:13		5/10/2018	14:42
0510F015.D	ZZZZZZ	ZZZZZZ	5/10/2018	14:52		5/10/2018	15:21

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Service Request: K1804181
Date Extracted: 05/09/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3511
Analysis Method: 8270D SIM

Extraction Lot: KWG1802347
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
PDI-RB-VV-180502-1700	K1804181-027	05/02/18	05/04/18	445ml	2ml	NA	
PDI-RB-VV-180502-1730	K1804181-028	05/02/18	05/04/18	430ml	2ml	NA	
Method Blank	KWG1802347-3	NA	NA	450ml	2ml	NA	
Lab Control Sample	KWG1802347-1	NA	NA	450ml	2ml	NA	
Duplicate Lab Control Sample	KWG1802347-2	NA	NA	450ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis