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

July 25, 2018

Analytical Report for Service Request No: K1804798A

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 21, 2018
For your reference, these analyses have been assigned our service request number **K1804798.**

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
www.alsglobal.com

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: K1804798
Date Received: 05/21/2018

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:

Sixteen sediment samples and one water sample were received for analysis at ALS Environmental on 05/21/2018. 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:

No significant anomalies were noted with this analysis.

Semivoa GC:

No significant anomalies were noted with this analysis.

Approved by _____ Date 07/25/2018

Chain of Custody

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

K1804798

SURFACE SEDIMENT
CHAIN OF CUSTODY

ALS-Environmental-Kelso 317-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 Analysis Turnaround Time Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____	Site Contact: Jennifer Ray / Michaela McCoog Laboratory Contact: Howard-Holmes	5/21/2018 Carrier: Courier	COC No: 2 1 of 2 page(s)
Client Contact AECOM 111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Sediment				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, PAHs, Total Solids, BD/IP, Tributyltin 1669M, 8270-SIM, 160.3, 8270-LL, Krone/Unger											Sample Specific Notes:
PDI-SG-B395-BL1	5/18/2018	~~1235~~	SS		MT	1		x											
PDI-SG-B397-BL1	5/18/2018	14:10	SS		ED	1		x											
PDI-SG-B412-BL1	5/18/2018	10:10	SS		MT	1		x											
PDI-SG-B402-BL1	5/18/2018	15:05	SS		ED	1		x											
PDI-SG-B416-BL1	5/19/2018	16:00	SS		ED	1		x											
PDI-SG-B413-BL1	5/19/2018	14:15	SS		ED	1		x											
PDI-SG-B411-BL1	5/19/2018	13:25	SS		ED	1		x											
PDI-SG-B407-BL1	5/19/2018	11:56	SS		ED	1		x											
PDI-SG-B406-BL1	5/19/2018	11:05	SS		MT	1		x											
PDI-SG-B403-BL1	5/19/2018	10:07 ~~1030~~	SS	MS/MSD	ED	3		x											
PDI-SG-B372-BL1	5/20/2018	~~10:31~~	SS		ED	1		x											
PDI-SG-B373-BL1	5/20/2018	11:45	SS		ED	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:

Relinquished by:	Company: AECOM	Date/Time: 5-21-18 1150	Received by:	Company: HW	Date/Time: 5/21/18 1150
Relinquished by:	Company: HW	Date/Time: 5/21/18 1310	Received by:	Company: ALS/SMO	Date/Time: 5/21/18 ~~1315~~ 1310 SM
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

K1804798

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	5/21/2018	COC No: 2
AECOM	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Howard-Holmes	Carrier: Courier	2 of 2 page(s)
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				
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[x] 21 days			
Portland, OR	[ ] Other			
Project #: 60566335 Study: Surface Sediment				

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-B217-BL1	5/20/2018	17:00	SS		AC	1		x					
PDI-SG-B215-BL1	5/20/2018	16:00	SS		AC	1		x					
PDI-SG-B211-BL1	5/20/2018	14:30	SS		AC	1		x					
PDI-SG-B210-BL1	5/20/2018	11:00	SS		AC	1		x					
PDI-SG-RB-VV-180520-1745	5/20/2018	17:45	W			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:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Michaela McCoog	AECOM	5-21-18 1150	[signature]	ALV	5/21/18 1150
[signature]	ALV	5/21/18 1310	[signature]	ALS/SMO	5/21/18 ~~1315~~ 1310
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

PC HH

Cooler Receipt and Preservation Form

Client AECOM Service Request K1804798

Received: 5/21/18 Opened: 5/21/18 By: KM Unloaded: 5/21/18 By: LK

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
6.0	6.0	2.8	2.8	0	390			
5.7	5.6	4.1	4.0	-0.1	391			

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? CG 5/21 (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: TB located close to samples and wet ice

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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 - 05/20/18
Sample Matrix:	Sediment	**Date Received:**	05/21/18
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-B395-BL1	K1804798-001	**44.5**	-	-	1	05/23/18 17:05	
PDI-SG-B397-BL1	K1804798-002	**42.6**	-	-	1	05/23/18 17:05	
PDI-SG-B412-BL1	K1804798-003	**59.4**	-	-	1	05/23/18 17:05	
PDI-SG-B402-BL1	K1804798-004	**45.6**	-	-	1	05/23/18 17:05	
PDI-SG-B416-BL1	K1804798-005	**67.3**	-	-	1	05/23/18 17:05	
PDI-SG-B413-BL1	K1804798-006	**37.5**	-	-	1	05/23/18 17:05	
PDI-SG-B411-BL1	K1804798-007	**39.3**	-	-	1	05/23/18 17:05	
PDI-SG-B407-BL1	K1804798-008	**40.5**	-	-	1	05/23/18 17:05	
PDI-SG-B406-BL1	K1804798-009	**44.5**	-	-	1	05/23/18 17:05	
PDI-SG-B403-BL1	K1804798-010	**47.9**	-	-	1	05/23/18 17:05	
PDI-SG-B372-BL1	K1804798-011	**46.1**	-	-	1	05/23/18 17:05	
PDI-SG-B373-BL1	K1804798-012	**49.0**	-	-	1	05/23/18 17:05	
PDI-SG-B217-BL1	K1804798-013	**43.8**	-	-	1	05/23/18 17:05	
PDI-SG-B215-BL1	K1804798-014	**49.7**	-	-	1	05/23/18 17:05	
PDI-SG-B211-BL1	K1804798-015	**53.7**	-	-	1	05/23/18 17:05	
PDI-SG-B210-BL1	K1804798-016	**67.1**	-	-	1	05/23/18 17:05	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 - 05/19/18
Sample Matrix:	Sediment	**Date Received:**	05/21/18
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-B395-BL1	K1804798-001DUP	-	-	44.5	44.5	44.5	<1	20	05/23/18
PDI-SG-B403-BL1	K1804798-010DUP	-	-	47.9	47.9	47.9	<1	20	05/23/18

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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 12:35
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B395-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-001	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.2	0.97	1	06/19/18 18:09	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	45	10 - 120	06/19/18 18:09	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 14:10
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B397-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-002	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.3	1.1	1	06/19/18 18:27	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	44	10 - 120	06/19/18 18:27	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 10:10
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B412-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-003	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	1.7	0.72	1	06/19/18 18:46	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	49	10 - 120	06/19/18 18:46	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 15:05
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B402-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-004	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.2	0.95	1	06/19/18 19:04	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	46	10 - 120	06/19/18 19:04	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 16:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B416-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-005	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	1.5	0.64	1	06/19/18 19:23	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	44	10 - 120	06/19/18 19:23	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 14:15
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B413-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-006	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.6	1.2	1	06/19/18 19:41	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	48	10 - 120	06/19/18 19:41	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 13:25
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B411-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-007	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.5	1.1	1	06/19/18 20:00	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	42	10 - 120	06/19/18 20:00	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 11:56
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B407-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-008	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.4	1.1	1	06/19/18 20:18	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	52	10 - 120	06/19/18 20:18	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 11:05
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B406-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-009	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.2	0.95	1	06/19/18 21:13	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	47	10 - 120	06/19/18 21:13	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 10:07
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.1	0.90	1	06/19/18 21:32	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	51	10 - 120	06/19/18 21:32	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 10:30
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B372-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-011	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.1	0.92	1	06/19/18 22:27	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	53	10 - 120	06/19/18 22:27	

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 11:45
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B373-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-012	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	2.0	0.87	1	06/19/18 22:45	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	49	10 - 120	06/19/18 22:45	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 17:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B217-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-013	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	**6.3**	2.2	0.97	1	06/19/18 23:04	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	52	10 - 120	06/19/18 23:04	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 16:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B215-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-014	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	**6.4**	2.0	0.86	1	06/19/18 23:22	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	51	10 - 120	06/19/18 23:22	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 14:30
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B211-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-015	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	**2.8**	1.9	0.80	1	06/19/18 23:41	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	35	10 - 120	06/19/18 23:41	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 11:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B210-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-016	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	**80**	1.5	0.63	1	06/19/18 23:59	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	57	10 - 120	06/19/18 23:59	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 17:45
Sample Matrix:	Water	**Date Received:**	05/21/18 16:24
Sample Name:	PDI-SG-RB-VV-180520-1745	**Units:**	ug/L
Lab Code:	K1804798-017	**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	06/14/18 02:15	5/23/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	52	31 - 137	06/14/18 02:15	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1806867-04	**Basis:**	Dry

Butyltins

Analysis Method: ALS SOP
Prep Method: Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Tri-n-butyltin Cation	ND U	0.98	0.43	1	06/20/18 00:36	5/31/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	48	10 - 120	06/20/18 00:36	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
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:	KQ1806873-03	**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	06/14/18 03:10	5/23/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	52	31 - 137	06/14/18 03:10	

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/20/18 17:00
Date Received: 5/21/18

Sample Name: PDI-SG-B217-BL1
Lab Code: K1804798-013

Units: ug/Kg
Basis: Dry
Percent Solids: 43.8

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.97	6.3	6.4	2		1	06/19/18 23:04

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/20/18 16:00
Date Received: 5/21/18

Sample Name: PDI-SG-B215-BL1
Lab Code: K1804798-014

Units: ug/Kg
Basis: Dry
Percent Solids: 49.7

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.86	6.4	6.9	8		1	06/19/18 23:22

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/20/18 14:30
Date Received: 5/21/18

Sample Name: PDI-SG-B211-BL1
Lab Code: K1804798-015

Units: ug/Kg
Basis: Dry
Percent Solids: 53.7

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.80	2.8	3.0	7		1	06/19/18 23:41

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/20/18 11:00
Date Received: 5/21/18

Sample Name: PDI-SG-B210-BL1
Lab Code: K1804798-016

Units: ug/Kg
Basis: Dry
Percent Solids: 67.1

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.63	80	100	22		1	06/19/18 23:59

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/19/18 10:07
Date Received: 5/21/18

Sample Name: PDI-SG-B403-BL1
Lab Code: KQ1806867-01

Units: ug/Kg
Basis: Dry
Percent Solids: 47.9

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.90	46.3	40.2	14		1	06/19/18 21:50

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: 05/19/18 10:07
Date Received: 5/21/18

Sample Name: PDI-SG-B403-BL1
Lab Code: KQ1806867-02

Units: ug/Kg
Basis: Dry
Percent Solids: 47.9

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.90	42.9	38.5	11		1	06/19/18 22:08

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Sediment

Service Request: K1804798
Date Collected: NA
Date Received:

Sample Name: Lab Control Sample
Lab Code: KQ1806867-03

Units: ug/Kg
Basis: Dry

Butyltins

Analytical Method: ALS SOP
Prep Method: Method

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.43	21.7	22.8	5		1	06/20/18 00:17

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Water

Service Request: K1804798
Date Collected: NA
Date Received:

Sample Name: Lab Control Sample
Lab Code: KQ1806873-01

Units: ug/L
Basis: NA

Butyltins

Analytical Method: ALS SOP
Prep Method: EPA 3520C

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.012	0.515	0.535	4		1	06/14/18 02:33

Confirmation Results

Client: AECOM
Project: Portland Harbor Pre-Remedial Design
SRM Matrix: Water

Service Request: K1804798
Date Collected: NA
Date Received:

Sample Name: Duplicate Lab Control Sample
Lab Code: KQ1806873-02

Units: ug/L
Basis: NA

Butyltins

Analytical Method: ALS SOP
Prep Method: EPA 3520C

	MDL	Primary Result	Confirmation Result	RPD	Q	Dilution Factor	Date Analyzed
Tri-n-butyltin Cation	0.012	0.497	0.519	4		1	06/14/18 02:52

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Butyltins

Analysis Method: ALS SOP
Extraction Method: Method

Sample Name	Lab Code	Tri-n-propyltin 10-120
PDI-SG-B395-BL1	K1804798-001	45
PDI-SG-B397-BL1	K1804798-002	44
PDI-SG-B412-BL1	K1804798-003	49
PDI-SG-B402-BL1	K1804798-004	46
PDI-SG-B416-BL1	K1804798-005	44
PDI-SG-B413-BL1	K1804798-006	48
PDI-SG-B411-BL1	K1804798-007	42
PDI-SG-B407-BL1	K1804798-008	52
PDI-SG-B406-BL1	K1804798-009	47
PDI-SG-B403-BL1	K1804798-010	51
PDI-SG-B372-BL1	K1804798-011	53
PDI-SG-B373-BL1	K1804798-012	49
PDI-SG-B217-BL1	K1804798-013	52
PDI-SG-B215-BL1	K1804798-014	51
PDI-SG-B211-BL1	K1804798-015	35
PDI-SG-B210-BL1	K1804798-016	57
Method Blank	KQ1806867-04	48
Lab Control Sample	KQ1806867-03	48
PDI-SG-B403-BL1	KQ1806867-01	53
PDI-SG-B403-BL1	KQ1806867-02	52

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18
Sample Matrix:	Sediment	**Date Received:**	05/21/18
		Date Analyzed:	06/19/18
		Date Extracted:	05/31/18

Duplicate Matrix Spike Summary
Butyltins

Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	Method		

		Matrix Spike KQ1806867-01			Duplicate Matrix Spike KQ1806867-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Tri-n-butyltin Cation	ND U	46.3	46.3	100	42.9	46.4	92	10-115	8	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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/20/18
Sample Matrix:	Sediment	**Date Extracted:**	05/31/18

Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	595392

Lab Control Sample
KQ1806867-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Tri-n-butyltin Cation	21.7	22.3	98	10-122

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/14/18
Sample Matrix:	Water	**Date Extracted:**	05/23/18

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 KQ1806873-01			Duplicate Lab Control Sample KQ1806873-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Tri-n-butyltin Cation	0.515	0.446	116	0.497	0.446	112	32-122	4	30

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/20/18 00:36
Sample Matrix:	Sediment	**Date Extracted:**	05/31/18

Method Blank Summary
Butyltins

Sample Name:	Method Blank	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806867-04	**File ID:**	J:\GC26\DATA\061918\0619F044.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	595392
Prep Method:	Method	**Extraction Lot:**	314547

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-SG-B395-BL1	K1804798-001	J:\GC26\DATA\061918\0619F023.D\	06/19/18 18:09
PDI-SG-B397-BL1	K1804798-002	J:\GC26\DATA\061918\0619F024.D\	06/19/18 18:27
PDI-SG-B412-BL1	K1804798-003	J:\GC26\DATA\061918\0619F025.D\	06/19/18 18:46
PDI-SG-B402-BL1	K1804798-004	J:\GC26\DATA\061918\0619F026.D\	06/19/18 19:04
PDI-SG-B416-BL1	K1804798-005	J:\GC26\DATA\061918\0619F027.D\	06/19/18 19:23
PDI-SG-B413-BL1	K1804798-006	J:\GC26\DATA\061918\0619F028.D\	06/19/18 19:41
PDI-SG-B411-BL1	K1804798-007	J:\GC26\DATA\061918\0619F029.D\	06/19/18 20:00
PDI-SG-B407-BL1	K1804798-008	J:\GC26\DATA\061918\0619F030.D\	06/19/18 20:18
PDI-SG-B406-BL1	K1804798-009	J:\GC26\DATA\061918\0619F033.D\	06/19/18 21:13
PDI-SG-B403-BL1	K1804798-010	J:\GC26\DATA\061918\0619F034.D\	06/19/18 21:32
PDI-SG-B403-BL1MS	KQ1806867-01	J:\GC26\DATA\061918\0619F035.D\	06/19/18 21:50
PDI-SG-B403-BL1DMS	KQ1806867-02	J:\GC26\DATA\061918\0619F036.D\	06/19/18 22:08
PDI-SG-B372-BL1	K1804798-011	J:\GC26\DATA\061918\0619F037.D\	06/19/18 22:27
PDI-SG-B373-BL1	K1804798-012	J:\GC26\DATA\061918\0619F038.D\	06/19/18 22:45
PDI-SG-B217-BL1	K1804798-013	J:\GC26\DATA\061918\0619F039.D\	06/19/18 23:04
PDI-SG-B215-BL1	K1804798-014	J:\GC26\DATA\061918\0619F040.D\	06/19/18 23:22
PDI-SG-B211-BL1	K1804798-015	J:\GC26\DATA\061918\0619F041.D\	06/19/18 23:41
PDI-SG-B210-BL1	K1804798-016	J:\GC26\DATA\061918\0619F042.D\	06/19/18 23:59
Lab Control Sample	KQ1806867-03	J:\GC26\DATA\061918\0619F043.D\	06/20/18 00:17

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/14/18 03:10
Sample Matrix:	Water	**Date Extracted:**	05/23/18

Method Blank Summary
Butyltins

Sample Name:	Method Blank	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806873-03	**File ID:**	J:\GC26\DATA\061318\0613F054.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	594642
Prep Method:	EPA 3520C	**Extraction Lot:**	314552

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\GC26\DATA\061318\0613F051.D\	06/14/18 02:15
Lab Control Sample	KQ1806873-01	J:\GC26\DATA\061318\0613F052.D\	06/14/18 02:33
Duplicate Lab Control Sample	KQ1806873-02	J:\GC26\DATA\061318\0613F053.D\	06/14/18 02:52

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/20/18 00:17
Sample Matrix:	Sediment	**Date Extracted:**	05/31/18

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806867-03	**File ID:**	J:\GC26\DATA\061918\0619F043.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	595392
Prep Method:	Method	**Extraction Lot:**	314547

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-SG-B395-BL1	K1804798-001	J:\GC26\DATA\061918\0619F023.D\	06/19/18 18:09
PDI-SG-B397-BL1	K1804798-002	J:\GC26\DATA\061918\0619F024.D\	06/19/18 18:27
PDI-SG-B412-BL1	K1804798-003	J:\GC26\DATA\061918\0619F025.D\	06/19/18 18:46
PDI-SG-B402-BL1	K1804798-004	J:\GC26\DATA\061918\0619F026.D\	06/19/18 19:04
PDI-SG-B416-BL1	K1804798-005	J:\GC26\DATA\061918\0619F027.D\	06/19/18 19:23
PDI-SG-B413-BL1	K1804798-006	J:\GC26\DATA\061918\0619F028.D\	06/19/18 19:41
PDI-SG-B411-BL1	K1804798-007	J:\GC26\DATA\061918\0619F029.D\	06/19/18 20:00
PDI-SG-B407-BL1	K1804798-008	J:\GC26\DATA\061918\0619F030.D\	06/19/18 20:18
PDI-SG-B406-BL1	K1804798-009	J:\GC26\DATA\061918\0619F033.D\	06/19/18 21:13
PDI-SG-B403-BL1	K1804798-010	J:\GC26\DATA\061918\0619F034.D\	06/19/18 21:32
PDI-SG-B403-BL1MS	KQ1806867-01	J:\GC26\DATA\061918\0619F035.D\	06/19/18 21:50
PDI-SG-B403-BL1DMS	KQ1806867-02	J:\GC26\DATA\061918\0619F036.D\	06/19/18 22:08
PDI-SG-B372-BL1	K1804798-011	J:\GC26\DATA\061918\0619F037.D\	06/19/18 22:27
PDI-SG-B373-BL1	K1804798-012	J:\GC26\DATA\061918\0619F038.D\	06/19/18 22:45
PDI-SG-B217-BL1	K1804798-013	J:\GC26\DATA\061918\0619F039.D\	06/19/18 23:04
PDI-SG-B215-BL1	K1804798-014	J:\GC26\DATA\061918\0619F040.D\	06/19/18 23:22
PDI-SG-B211-BL1	K1804798-015	J:\GC26\DATA\061918\0619F041.D\	06/19/18 23:41
PDI-SG-B210-BL1	K1804798-016	J:\GC26\DATA\061918\0619F042.D\	06/19/18 23:59
Method Blank	KQ1806867-04	J:\GC26\DATA\061918\0619F044.D\	06/20/18 00:36

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/14/18 02:33
Sample Matrix:	Water	**Date Extracted:**	05/23/18

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1806873-01	**File ID:**	J:\GC26\DATA\061318\0613F052.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	594642
Prep Method:	EPA 3520C	**Extraction Lot:**	314552

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\GC26\DATA\061318\0613F051.D\	06/14/18 02:15
Duplicate Lab Control Sample	KQ1806873-02	J:\GC26\DATA\061318\0613F053.D\	06/14/18 02:52
Method Blank	KQ1806873-03	J:\GC26\DATA\061318\0613F054.D\	06/14/18 03:10

Client: AECOM **Service Request:** K1804798
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:** K1804798
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:** K1804798
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:** K1804798
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:** K1804798
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:** K1804798
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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/19/18 16:18

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F017.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-1	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	47.4	5.455E4	5.805E4	6.4	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	53.3	4.354E4	4.644E4	6.7	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/19/18 16:18

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F017.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-35	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	48.0	1.163E5	1.253E5	7.8	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	53.0	9.938E4	1.053E5	5.9	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/19/18 20:36

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F031.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-35	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	46.9	1.163E5	1.225E5	5.3	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	48.9	9.938E4	9.726E4	-2.1	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/19/18 20:36

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F031.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-1	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	52.3	5.455E4	6.403E4	17.4	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	55.5	4.354E4	4.83E4	10.9	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/20/18 00:54

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F045.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-35	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	46.1	1.163E5	1.203E5	3.4	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	53.4	9.938E4	1.062E5	6.8	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/20/18 00:54

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061918\0619F045.D\	**Calibration ID:**	KC1800264
Signal ID:	RTX-1	**Analysis Lot:**	595392
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	51.4	5.455E4	6.289E4	15.3	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	53.3	4.354E4	4.644E4	6.7	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
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:**	K1804798
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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/14/18 05:01

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F060.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	47.6	5.455E4	5.832E4	6.9	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	53.5	4.354E4	4.66E4	7.0	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/14/18 05:01

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	6/13/2018
File ID:	J:\GC26\DATA\061318\0613F060.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	48.6	1.163E5	1.268E5	9.0	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	50.0	9.938E4	9.935E4	0.0	NA	±25	Average RF

Client: AECOM **Service Request:**K1804798

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\	ZZZZZZZ	ZZZZZZZ	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\	ZZZZZZZ	ZZZZZZZ	6/13/2018	21:18:00	
J:\GC26\DATA\061318\0613F036.D\	ZZZZZZZ	ZZZZZZZ	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\	ZZZZZZZ	ZZZZZZZ	6/13/2018	22:14:00	
J:\GC26\DATA\061318\0613F039.D\	ZZZZZZZ	ZZZZZZZ	6/13/2018	22:32:00	
J:\GC26\DATA\061318\0613F040.D\	ZZZZZZZ	ZZZZZZZ	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\	PDI-SG-RB-VV-180520-1745	K1804798-017	6/14/2018	02:15:00	
J:\GC26\DATA\061318\0613F052.D\	Lab Control Sample	KQ1806873-01	6/14/2018	02:33:00	
J:\GC26\DATA\061318\0613F053.D\	Duplicate Lab Control Sample	KQ1806873-02	6/14/2018	02:52:00	
J:\GC26\DATA\061318\0613F054.D\	Method Blank	KQ1806873-03	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:**K1804798
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\	Continuing Calibration Verification	KQ1808469-12	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	

Client: AECOM **Service Request:**K1804798

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Butyltins

Analysis Method: **Analysis Lot:**595392

Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\061918\0619F003.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	11:59:00	
J:\GC26\DATA\061918\0619F004.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	12:18:00	
J:\GC26\DATA\061918\0619F005.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	12:37:00	
J:\GC26\DATA\061918\0619F006.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	12:56:00	
J:\GC26\DATA\061918\0619F007.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	13:14:00	
J:\GC26\DATA\061918\0619F008.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	13:32:00	
J:\GC26\DATA\061918\0619F009.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	13:51:00	
J:\GC26\DATA\061918\0619F010.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	14:09:00	
J:\GC26\DATA\061918\0619F011.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	14:28:00	
J:\GC26\DATA\061918\0619F012.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	14:46:00	
J:\GC26\DATA\061918\0619F013.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	15:05:00	
J:\GC26\DATA\061918\0619F014.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	15:23:00	
J:\GC26\DATA\061918\0619F015.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	15:41:00	
J:\GC26\DATA\061918\0619F016.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	16:00:00	
J:\GC26\DATA\061918\0619F017.D\	Continuing Calibration Verification	KQ1808341-02	6/19/2018	16:18:00	
J:\GC26\DATA\061918\0619F019.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	16:55:00	
J:\GC26\DATA\061918\0619F020.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	17:14:00	
J:\GC26\DATA\061918\0619F021.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	17:32:00	
J:\GC26\DATA\061918\0619F022.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	17:50:00	
J:\GC26\DATA\061918\0619F023.D\	PDI-SG-B395-BL1	K1804798-001	6/19/2018	18:09:00	
J:\GC26\DATA\061918\0619F024.D\	PDI-SG-B397-BL1	K1804798-002	6/19/2018	18:27:00	
J:\GC26\DATA\061918\0619F025.D\	PDI-SG-B412-BL1	K1804798-003	6/19/2018	18:46:00	
J:\GC26\DATA\061918\0619F026.D\	PDI-SG-B402-BL1	K1804798-004	6/19/2018	19:04:00	
J:\GC26\DATA\061918\0619F027.D\	PDI-SG-B416-BL1	K1804798-005	6/19/2018	19:23:00	
J:\GC26\DATA\061918\0619F028.D\	PDI-SG-B413-BL1	K1804798-006	6/19/2018	19:41:00	
J:\GC26\DATA\061918\0619F029.D\	PDI-SG-B411-BL1	K1804798-007	6/19/2018	20:00:00	
J:\GC26\DATA\061918\0619F030.D\	PDI-SG-B407-BL1	K1804798-008	6/19/2018	20:18:00	
J:\GC26\DATA\061918\0619F031.D\	Continuing Calibration Verification	KQ1808341-03	6/19/2018	20:36:00	
J:\GC26\DATA\061918\0619F032.D\	ZZZZZZZ	ZZZZZZZ	6/19/2018	20:55:00	
J:\GC26\DATA\061918\0619F033.D\	PDI-SG-B406-BL1	K1804798-009	6/19/2018	21:13:00	
J:\GC26\DATA\061918\0619F034.D\	PDI-SG-B403-BL1	K1804798-010	6/19/2018	21:32:00	
J:\GC26\DATA\061918\0619F035.D\	PDI-SG-B403-BL1 MS	KQ1806867-01	6/19/2018	21:50:00	
J:\GC26\DATA\061918\0619F036.D\	PDI-SG-B403-BL1 DMS	KQ1806867-02	6/19/2018	22:08:00	
J:\GC26\DATA\061918\0619F037.D\	PDI-SG-B372-BL1	K1804798-011	6/19/2018	22:27:00	
J:\GC26\DATA\061918\0619F038.D\	PDI-SG-B373-BL1	K1804798-012	6/19/2018	22:45:00	
J:\GC26\DATA\061918\0619F039.D\	PDI-SG-B217-BL1	K1804798-013	6/19/2018	23:04:00	
J:\GC26\DATA\061918\0619F040.D\	PDI-SG-B215-BL1	K1804798-014	6/19/2018	23:22:00	
J:\GC26\DATA\061918\0619F041.D\	PDI-SG-B211-BL1	K1804798-015	6/19/2018	23:41:00	
J:\GC26\DATA\061918\0619F042.D\	PDI-SG-B210-BL1	K1804798-016	6/19/2018	23:59:00	
J:\GC26\DATA\061918\0619F043.D\	Lab Control Sample	KQ1806867-03	6/20/2018	00:17:00	
J:\GC26\DATA\061918\0619F044.D\	Method Blank	KQ1806867-04	6/20/2018	00:36:00	
J:\GC26\DATA\061918\0619F045.D\	Continuing Calibration Verification	KQ1808341-04	6/20/2018	00:54:00	
J:\GC26\DATA\061918\0619F046.D\	ZZZZZZZ	ZZZZZZZ	6/20/2018	01:13:00	
J:\GC26\DATA\061918\0619F047.D\	ZZZZZZZ	ZZZZZZZ	6/20/2018	01:32:00	
J:\GC26\DATA\061918\0619F048.D\	ZZZZZZZ	ZZZZZZZ	6/20/2018	01:51:00	
J:\GC26\DATA\061918\0619F049.D\	ZZZZZZZ	ZZZZZZZ	6/20/2018	02:10:00	

Prep Summary Report

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Butyltins

Prep Method: Method **Extraction Lot:** 314547
Analytical Method: ALS SOP **Extraction Date:** 05/31/18 14:04

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-SG-B395-BL1	K1804798-001	5/18/18	5/21/18	20.049 g	4 mL	44.5
PDI-SG-B397-BL1	K1804798-002	5/18/18	5/21/18	20.110 g	4 mL	42.6
PDI-SG-B412-BL1	K1804798-003	5/18/18	5/21/18	20.276 g	4 mL	59.4
PDI-SG-B402-BL1	K1804798-004	5/18/18	5/21/18	20.048 g	4 mL	45.6
PDI-SG-B416-BL1	K1804798-005	5/19/18	5/21/18	20.241 g	4 mL	67.3
PDI-SG-B413-BL1	K1804798-006	5/19/18	5/21/18	20.371 g	4 mL	37.5
PDI-SG-B411-BL1	K1804798-007	5/19/18	5/21/18	20.122 g	4 mL	39.3
PDI-SG-B407-BL1	K1804798-008	5/19/18	5/21/18	20.227 g	4 mL	40.5
PDI-SG-B406-BL1	K1804798-009	5/19/18	5/21/18	20.354 g	4 mL	44.5
PDI-SG-B403-BL1	K1804798-010	5/19/18	5/21/18	20.070 g	4 mL	47.9
PDI-SG-B372-BL1	K1804798-011	5/20/18	5/21/18	20.394 g	4 mL	46.1
PDI-SG-B373-BL1	K1804798-012	5/20/18	5/21/18	20.317 g	4 mL	49.0
PDI-SG-B217-BL1	K1804798-013	5/20/18	5/21/18	20.322 g	4 mL	43.8
PDI-SG-B215-BL1	K1804798-014	5/20/18	5/21/18	20.215 g	4 mL	49.7
PDI-SG-B211-BL1	K1804798-015	5/20/18	5/21/18	20.045 g	4 mL	53.7
PDI-SG-B210-BL1	K1804798-016	5/20/18	5/21/18	20.373 g	4 mL	67.1
Matrix Spike	KQ1806867-01MS	5/19/18	5/21/18	20.086 g	4 mL	47.9
Duplicate Matrix Spike	KQ1806867-02DMS	5/19/18	5/21/18	20.033 g	4 mL	47.9
Lab Control Sample	KQ1806867-03LCS	NA	NA	20.00 g	4 mL	
Method Blank	KQ1806867-04MB	NA	NA	20.3940 g	4 mL	

Prep Summary Report

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Butyltins

Prep Method: EPA 3520C **Extraction Lot:** 314552
Analytical Method: ALS SOP **Extraction Date:** 05/23/18 20:17

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-SG-RB-VV-180520-1745	K1804798-017	5/20/18	5/21/18	500 mL	1 mL	
Lab Control Sample	KQ1806873-01LCS	NA	NA	500 mL	1 mL	
Duplicate Lab Control Sample	KQ1806873-02DLCS	NA	NA	500 mL	1 mL	
Method Blank	KQ1806873-03MB	NA	NA	500 mL	1 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:** K1804798
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-B395-BL1	K1804798-001	05/18/2018	05/21/2018
PDI-SG-B397-BL1	K1804798-002	05/18/2018	05/21/2018
PDI-SG-B412-BL1	K1804798-003	05/18/2018	05/21/2018
PDI-SG-B402-BL1	K1804798-004	05/18/2018	05/21/2018
PDI-SG-B416-BL1	K1804798-005	05/19/2018	05/21/2018
PDI-SG-B413-BL1	K1804798-006	05/19/2018	05/21/2018
PDI-SG-B411-BL1	K1804798-007	05/19/2018	05/21/2018
PDI-SG-B407-BL1	K1804798-008	05/19/2018	05/21/2018
PDI-SG-B406-BL1	K1804798-009	05/19/2018	05/21/2018
PDI-SG-B403-BL1	K1804798-010	05/19/2018	05/21/2018
PDI-SG-B372-BL1	K1804798-011	05/20/2018	05/21/2018
PDI-SG-B373-BL1	K1804798-012	05/20/2018	05/21/2018
PDI-SG-B217-BL1	K1804798-013	05/20/2018	05/21/2018
PDI-SG-B215-BL1	K1804798-014	05/20/2018	05/21/2018
PDI-SG-B211-BL1	K1804798-015	05/20/2018	05/21/2018
PDI-SG-B210-BL1	K1804798-016	05/20/2018	05/21/2018
PDI-SG-B403-BL1MS	KWG1802719-1	05/19/2018	05/21/2018
PDI-SG-B403-BL1DMS	KWG1802719-2	05/19/2018	05/21/2018

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B395-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-001	**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	**3.1**		1.2	0.17	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**1.7**		1.2	0.14	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**1.6**		0.57	0.052	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**2.0**		0.57	0.053	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**2.5**		0.57	0.059	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**18**		0.57	0.075	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**4.5**		0.57	0.043	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**34**		0.57	0.056	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**36**		0.57	0.057	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**18**		0.57	0.043	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**24**		0.57	0.062	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**29**		0.57	0.075	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**10**		0.57	0.065	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**32**		0.57	0.082	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**13**		0.57	0.11	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**3.0**		0.57	0.097	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**16**		0.57	0.11	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	64	42-106	06/21/18	Acceptable
Fluoranthene-d10	75	45-109	06/21/18	Acceptable
Terphenyl-d14	75	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B397-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-002	**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	**2.6**		1.2	0.18	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**1.8**		1.2	0.15	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**1.8**		0.59	0.054	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**2.1**		0.59	0.056	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**2.4**		0.59	0.061	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**15**		0.59	0.078	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**3.6**		0.59	0.045	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**27**		0.59	0.058	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**31**		0.59	0.059	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**11**		0.59	0.045	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**20**		0.59	0.065	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**21**		0.59	0.078	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**6.4**		0.59	0.067	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**28**		0.59	0.086	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**10**		0.59	0.12	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**2.2**		0.59	0.11	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**13**		0.59	0.12	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	42-106	06/21/18	Acceptable
Fluoranthene-d10	80	45-109	06/21/18	Acceptable
Terphenyl-d14	81	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B412-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-003	**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	**1.9**		0.85	0.15	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**1.0**		0.85	0.12	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**1.3**		0.43	0.046	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**1.5**		0.43	0.047	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**1.8**		0.43	0.052	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**9.5**		0.43	0.066	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**2.5**		0.43	0.038	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**18**		0.43	0.049	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**19**		0.43	0.050	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**7.8**		0.43	0.038	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**11**		0.43	0.055	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**13**		0.43	0.066	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**4.7**		0.43	0.057	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**15**		0.43	0.073	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**6.2**		0.43	0.096	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**1.3**		0.43	0.086	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**7.2**		0.43	0.095	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	42-106	06/21/18	Acceptable
Fluoranthene-d10	75	45-109	06/21/18	Acceptable
Terphenyl-d14	78	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B402-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-004	**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	**2.6**		1.1	0.17	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**2.1**		1.1	0.14	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**2.3**		0.55	0.051	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**1.8**		0.55	0.052	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**2.5**		0.55	0.057	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**19**		0.55	0.073	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**5.5**		0.55	0.042	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**47**		0.55	0.054	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**52**		0.55	0.055	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**27**		0.55	0.042	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**32**		0.55	0.061	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**36**		0.55	0.073	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**13**		0.55	0.063	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**42**		0.55	0.081	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**15**		0.55	0.11	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**4.0**		0.55	0.095	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**16**		0.55	0.11	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	68	42-106	06/21/18	Acceptable
Fluoranthene-d10	78	45-109	06/21/18	Acceptable
Terphenyl-d14	81	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B416-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-005	**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	**4.9**		0.75	0.15	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**1.2**		0.75	0.12	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**2.9**		0.38	0.046	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**8.6**		0.38	0.047	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**2.4**		0.38	0.052	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**27**		0.38	0.066	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**4.6**		0.38	0.038	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**35**		0.38	0.049	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**45**		0.38	0.050	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**12**		0.38	0.038	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**14**		0.38	0.055	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**20**		0.38	0.066	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**6.3**		0.38	0.057	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**25**		0.38	0.073	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**12**		0.38	0.096	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**1.9**		0.38	0.086	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**14**		0.38	0.095	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-106	06/21/18	Acceptable
Fluoranthene-d10	76	45-109	06/21/18	Acceptable
Terphenyl-d14	80	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B413-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-006	**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	**2.9**		1.4	0.20	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**2.2**		1.4	0.16	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**1.4**		0.67	0.062	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**2.3**		0.67	0.063	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**3.0**		0.67	0.070	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**14**		0.67	0.088	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**3.9**		0.67	0.051	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**22**		0.67	0.066	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**22**		0.67	0.067	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**8.1**		0.67	0.051	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**14**		0.67	0.074	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**17**		0.67	0.088	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**5.4**		0.67	0.076	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**23**		0.67	0.098	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**7.6**		0.67	0.13	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**1.8**		0.67	0.12	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**9.3**		0.67	0.13	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	42-106	06/21/18	Acceptable
Fluoranthene-d10	78	45-109	06/21/18	Acceptable
Terphenyl-d14	80	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B411-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-007	**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	**1.5**		1.3	0.19	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**1.3**	J	1.3	0.16	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**1.3**		0.64	0.058	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**1.8**		0.64	0.060	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**2.3**		0.64	0.066	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**9.4**		0.64	0.084	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**3.3**		0.64	0.048	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**16**		0.64	0.062	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**18**		0.64	0.064	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**6.7**		0.64	0.048	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**12**		0.64	0.070	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**14**		0.64	0.084	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**4.5**		0.64	0.072	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**22**		0.64	0.093	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**6.4**		0.64	0.13	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**1.3**		0.64	0.11	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**7.9**		0.64	0.12	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	65	42-106	06/21/18	Acceptable
Fluoranthene-d10	77	45-109	06/21/18	Acceptable
Terphenyl-d14	81	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B407-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-008	**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	**4.3**	D	2.5	0.37	2	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**3.3**	D	2.5	0.30	2	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**3.7**	D	1.3	0.12	2	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**2.3**	D	1.3	0.12	2	05/30/18	06/21/18	KWG1802719	
Fluorene	**3.5**	D	1.3	0.13	2	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**24**	D	1.3	0.17	2	05/30/18	06/21/18	KWG1802719	
Anthracene	**6.1**	D	1.3	0.093	2	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**42**	D	1.3	0.12	2	05/30/18	06/21/18	KWG1802719	
Pyrene	**54**	D	1.3	0.13	2	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**21**	D	1.3	0.093	2	05/30/18	06/21/18	KWG1802719	
Chrysene	**36**	D	1.3	0.14	2	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**33**	D	1.3	0.17	2	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**11**	D	1.3	0.14	2	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**44**	D	1.3	0.18	2	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**16**	D	1.3	0.24	2	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**4.1**	D	1.3	0.22	2	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**22**	D	1.3	0.24	2	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	42-106	06/21/18	Acceptable
Fluoranthene-d10	85	45-109	06/21/18	Acceptable
Terphenyl-d14	84	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B406-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-009	**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	**4.6**		1.2	0.17	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**3.9**		1.2	0.14	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**11**		0.56	0.052	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**13**		0.56	0.053	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**12**		0.56	0.059	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**91**		0.56	0.074	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**23**		0.56	0.043	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**190**		0.56	0.055	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**170**		0.56	0.056	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**72**		0.56	0.043	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**110**		0.56	0.062	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**77**		0.56	0.074	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**27**		0.56	0.064	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**65**		0.56	0.082	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**30**		0.56	0.11	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**6.6**		0.56	0.097	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**32**		0.56	0.11	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	42-106	06/25/18	Acceptable
Fluoranthene-d10	76	45-109	06/25/18	Acceptable
Terphenyl-d14	81	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**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	**5.1**		1.1	0.16	1	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	**5.6**		1.1	0.13	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	**3.9**		0.52	0.048	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	**3.4**		0.52	0.049	1	05/30/18	06/21/18	KWG1802719	
Fluorene	**3.9**		0.52	0.054	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**32**		0.52	0.069	1	05/30/18	06/21/18	KWG1802719	
Anthracene	**7.6**		0.52	0.040	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**52**		0.52	0.051	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**60**		0.52	0.052	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**23**		0.52	0.040	1	05/30/18	06/21/18	KWG1802719	
Chrysene	**33**		0.52	0.057	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	**32**		0.52	0.069	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	**11**		0.52	0.060	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	**38**		0.52	0.076	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**16**		0.52	0.10	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	**3.8**		0.52	0.090	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	**19**		0.52	0.099	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	42-106	06/21/18	Acceptable
Fluoranthene-d10	89	45-109	06/21/18	Acceptable
Terphenyl-d14	88	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B372-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-011	**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	**3.8**		1.1	0.17	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**1.9**		1.1	0.13	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**2.6**		0.54	0.050	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**1.9**		0.54	0.051	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**2.9**		0.54	0.057	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**15**		0.54	0.072	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**4.1**		0.54	0.042	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**29**		0.54	0.053	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**25**		0.54	0.054	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**9.1**		0.54	0.042	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**16**		0.54	0.060	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**20**		0.54	0.072	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**7.2**		0.54	0.062	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**21**		0.54	0.079	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**12**		0.54	0.11	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**2.5**		0.54	0.093	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**14**		0.54	0.11	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	65	42-106	06/25/18	Acceptable
Fluoranthene-d10	73	45-109	06/25/18	Acceptable
Terphenyl-d14	78	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B373-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-012	**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	**2.7**		1.1	0.16	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**3.8**		1.1	0.13	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**1.9**		0.51	0.047	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**3.6**		0.51	0.048	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**3.9**		0.51	0.053	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**15**		0.51	0.067	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**4.0**		0.51	0.039	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**32**		0.51	0.050	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**27**		0.51	0.051	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**13**		0.51	0.039	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**20**		0.51	0.056	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**23**		0.51	0.067	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**7.6**		0.51	0.058	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**20**		0.51	0.074	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**9.9**		0.51	0.098	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**2.2**		0.51	0.088	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**11**		0.51	0.097	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	42-106	06/25/18	Acceptable
Fluoranthene-d10	76	45-109	06/25/18	Acceptable
Terphenyl-d14	81	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B217-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-013	**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	**9.4**		1.2	0.18	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**6.0**		1.2	0.14	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**2.8**		0.57	0.053	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**4.4**		0.57	0.054	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**6.4**		0.57	0.060	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**22**		0.57	0.076	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**8.9**		0.57	0.044	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**50**		0.57	0.056	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**42**		0.57	0.057	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**18**		0.57	0.044	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**27**		0.57	0.063	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**30**		0.57	0.076	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**10**		0.57	0.065	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**26**		0.57	0.084	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**15**		0.57	0.11	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**3.3**		0.57	0.098	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**16**		0.57	0.11	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	42-106	06/25/18	Acceptable
Fluoranthene-d10	73	45-109	06/25/18	Acceptable
Terphenyl-d14	77	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B215-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-014	**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	**4.8**		1.1	0.16	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**2.1**		1.1	0.13	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**2.4**		0.51	0.047	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**4.1**		0.51	0.048	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**3.2**		0.51	0.053	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**19**		0.51	0.067	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**5.4**		0.51	0.039	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**38**		0.51	0.050	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**36**		0.51	0.051	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**14**		0.51	0.039	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**19**		0.51	0.056	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**22**		0.51	0.067	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**7.9**		0.51	0.058	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**22**		0.51	0.074	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**12**		0.51	0.097	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**2.2**		0.51	0.087	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**14**		0.51	0.096	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	64	42-106	06/25/18	Acceptable
Fluoranthene-d10	74	45-109	06/25/18	Acceptable
Terphenyl-d14	78	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B211-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-015	**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	**86**	D	1.9	0.30	2	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**69**	D	1.9	0.24	2	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**14**	D	0.93	0.092	2	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**270**	D	0.93	0.094	2	05/30/18	06/25/18	KWG1802719	
Fluorene	**150**	D	0.93	0.11	2	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**1400**	D	9.3	1.4	20	05/30/18	06/27/18	KWG1802719	
Anthracene	**160**	D	0.93	0.076	2	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**1500**	D	9.3	0.98	20	05/30/18	06/27/18	KWG1802719	
Pyrene	**1100**	D	9.3	1.0	20	05/30/18	06/27/18	KWG1802719	
Benz(a)anthracene	**300**	D	0.93	0.076	2	05/30/18	06/25/18	KWG1802719	
Chrysene	**300**	D	0.93	0.11	2	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**190**	D	0.93	0.14	2	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**70**	D	0.93	0.12	2	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**130**	D	0.93	0.15	2	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**63**	D	0.93	0.20	2	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**15**	D	0.93	0.18	2	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**55**	D	0.93	0.19	2	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	61	42-106	06/25/18	Acceptable
Fluoranthene-d10	72	45-109	06/25/18	Acceptable
Terphenyl-d14	75	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Sediment	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B210-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-016	**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	**18**		0.74	0.15	1	05/30/18	06/25/18	KWG1802719	
2-Methylnaphthalene	**5.5**		0.74	0.12	1	05/30/18	06/25/18	KWG1802719	
Acenaphthylene	**2.9**		0.37	0.046	1	05/30/18	06/25/18	KWG1802719	
Acenaphthene	**8.9**		0.37	0.047	1	05/30/18	06/25/18	KWG1802719	
Fluorene	**6.2**		0.37	0.052	1	05/30/18	06/25/18	KWG1802719	
Phenanthrene	**33**		0.37	0.066	1	05/30/18	06/25/18	KWG1802719	
Anthracene	**6.2**		0.37	0.038	1	05/30/18	06/25/18	KWG1802719	
Fluoranthene	**33**		0.37	0.049	1	05/30/18	06/25/18	KWG1802719	
Pyrene	**32**		0.37	0.050	1	05/30/18	06/25/18	KWG1802719	
Benz(a)anthracene	**12**		0.37	0.038	1	05/30/18	06/25/18	KWG1802719	
Chrysene	**15**		0.37	0.055	1	05/30/18	06/25/18	KWG1802719	
Benzo(b)fluoranthene†	**17**		0.37	0.066	1	05/30/18	06/25/18	KWG1802719	
Benzo(k)fluoranthene	**6.1**		0.37	0.057	1	05/30/18	06/25/18	KWG1802719	
Benzo(a)pyrene	**15**		0.37	0.073	1	05/30/18	06/25/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	**8.0**		0.37	0.096	1	05/30/18	06/25/18	KWG1802719	
Dibenz(a,h)anthracene	**2.0**		0.37	0.086	1	05/30/18	06/25/18	KWG1802719	
Benzo(g,h,i)perylene	**8.6**		0.37	0.095	1	05/30/18	06/25/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	42-106	06/25/18	Acceptable
Fluoranthene-d10	73	45-109	06/25/18	Acceptable
Terphenyl-d14	74	41-102	06/25/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
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:	KWG1802719-4	**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	05/30/18	06/21/18	KWG1802719	
2-Methylnaphthalene	ND	U	0.50	0.12	1	05/30/18	06/21/18	KWG1802719	
Acenaphthylene	ND	U	0.25	0.046	1	05/30/18	06/21/18	KWG1802719	
Acenaphthene	ND	U	0.25	0.047	1	05/30/18	06/21/18	KWG1802719	
Fluorene	ND	U	0.25	0.052	1	05/30/18	06/21/18	KWG1802719	
Phenanthrene	**0.11**	J	0.25	0.066	1	05/30/18	06/21/18	KWG1802719	
Anthracene	ND	U	0.25	0.038	1	05/30/18	06/21/18	KWG1802719	
Fluoranthene	**0.099**	J	0.25	0.049	1	05/30/18	06/21/18	KWG1802719	
Pyrene	**0.057**	J	0.25	0.050	1	05/30/18	06/21/18	KWG1802719	
Benz(a)anthracene	**0.043**	J	0.25	0.038	1	05/30/18	06/21/18	KWG1802719	
Chrysene	ND	U	0.25	0.055	1	05/30/18	06/21/18	KWG1802719	
Benzo(b)fluoranthene†	ND	U	0.25	0.066	1	05/30/18	06/21/18	KWG1802719	
Benzo(k)fluoranthene	ND	U	0.25	0.057	1	05/30/18	06/21/18	KWG1802719	
Benzo(a)pyrene	ND	U	0.25	0.073	1	05/30/18	06/21/18	KWG1802719	
Indeno(1,2,3-cd)pyrene	ND	U	0.25	0.096	1	05/30/18	06/21/18	KWG1802719	
Dibenz(a,h)anthracene	ND	U	0.25	0.086	1	05/30/18	06/21/18	KWG1802719	
Benzo(g,h,i)perylene	ND	U	0.25	0.095	1	05/30/18	06/21/18	KWG1802719	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	42-106	06/21/18	Acceptable
Fluoranthene-d10	76	45-109	06/21/18	Acceptable
Terphenyl-d14	74	41-102	06/21/18	Acceptable

† Analyte Comments

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

Comments:

QA/QC Report

Client: AECOM **Service Request:** K1804798
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-B395-BL1	K1804798-001	64	75	75
PDI-SG-B397-BL1	K1804798-002	69	80	81
PDI-SG-B412-BL1	K1804798-003	63	75	78
PDI-SG-B402-BL1	K1804798-004	68	78	81
PDI-SG-B416-BL1	K1804798-005	66	76	80
PDI-SG-B413-BL1	K1804798-006	69	78	80
PDI-SG-B411-BL1	K1804798-007	65	77	81
PDI-SG-B407-BL1	K1804798-008	70 D	85 D	84 D
PDI-SG-B406-BL1	K1804798-009	66	76	81
PDI-SG-B403-BL1	K1804798-010	76	89	88
PDI-SG-B372-BL1	K1804798-011	65	73	78
PDI-SG-B373-BL1	K1804798-012	67	76	81
PDI-SG-B217-BL1	K1804798-013	63	73	77
PDI-SG-B215-BL1	K1804798-014	64	74	78
PDI-SG-B211-BL1	K1804798-015	61 D	72 D	75 D
PDI-SG-B210-BL1	K1804798-016	63	73	74
Method Blank	KWG1802719-4	69	76	74
PDI-SG-B403-BL1MS	KWG1802719-1	70	83	79
PDI-SG-B403-BL1DMS	KWG1802719-2	65	79	78
Lab Control Sample	KWG1802719-3	64	76	73

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: K1804798
Date Analyzed: 06/21/2018
Time Analyzed: 12:10

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062118A\0621F009.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1803150-2
Analysis Lot: KWG1803150

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	50,243	4.72	23,798	6.28	50,255	7.53
	Upper Limit ==>	100,486	5.22	47,596	6.78	100,510	8.03
	Lower Limit ==>	25,122	4.22	11,899	5.78	25,128	7.03
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
Method Blank	KWG1802719-4	54,269	4.72	27,778	6.28	59,223	7.53
Lab Control Sample	KWG1802719-3	57,582	4.72	27,794	6.28	58,105	7.53
PDI-SG-B403-BL1MS	KWG1802719-1	53,171	4.71	25,748	6.28	54,319	7.53
PDI-SG-B403-BL1DMS	KWG1802719-2	57,388	4.72	28,364	6.29	57,554	7.53
PDI-SG-B403-BL1	K1804798-010	55,035	4.72	28,391	6.29	56,321	7.53
PDI-SG-B395-BL1	K1804798-001	56,488	4.72	29,520	6.29	57,732	7.54
PDI-SG-B397-BL1	K1804798-002	56,421	4.73	29,265	6.29	57,742	7.54
PDI-SG-B412-BL1	K1804798-003	56,591	4.73	30,063	6.29	58,789	7.54
PDI-SG-B402-BL1	K1804798-004	56,923	4.72	29,714	6.29	58,679	7.54
PDI-SG-B416-BL1	K1804798-005	56,605	4.73	29,425	6.29	58,783	7.54
PDI-SG-B413-BL1	K1804798-006	55,320	4.73	29,063	6.29	57,704	7.54
PDI-SG-B411-BL1	K1804798-007	57,248	4.73	30,025	6.29	59,181	7.54
PDI-SG-B407-BL1	K1804798-008	53,804	4.72	30,505	6.29	58,548	7.54

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

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

Service Request: K1804798
Date Analyzed: 06/21/2018
Time Analyzed: 12:10

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062118A\0621F009.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1803150-2
Analysis Lot: KWG1803150

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	59,741	10.07	63,423	13.20
	Upper Limit ==>	119,482	10.57	126,846	13.70
	Lower Limit ==>	29,871	9.57	31,712	12.70
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
Method Blank	KWG1802719-4	59,661	10.07	64,773	13.19
Lab Control Sample	KWG1802719-3	59,651	10.07	62,851	13.20
PDI-SG-B403-BL1MS	KWG1802719-1	56,311	10.09	61,744	13.26
PDI-SG-B403-BL1DMS	KWG1802719-2	57,549	10.09	61,416	13.28
PDI-SG-B403-BL1	K1804798-010	56,279	10.09	58,723	13.28
PDI-SG-B395-BL1	K1804798-001	56,736	10.10	58,856	13.30
PDI-SG-B397-BL1	K1804798-002	55,218	10.10	56,810	13.29
PDI-SG-B412-BL1	K1804798-003	55,468	10.10	58,891	13.28
PDI-SG-B402-BL1	K1804798-004	56,205	10.10	59,012	13.30
PDI-SG-B416-BL1	K1804798-005	53,428	10.09	58,592	13.27
PDI-SG-B413-BL1	K1804798-006	55,984	10.10	57,090	13.30
PDI-SG-B411-BL1	K1804798-007	55,913	10.10	58,328	13.29
PDI-SG-B407-BL1	K1804798-008	57,568	10.10	61,686	13.30

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: K1804798
Date Analyzed: 06/25/2018
Time Analyzed: 09:29

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062518\0625F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1803165-2
Analysis Lot: KWG1803165

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	107,422	4.73	48,558	6.29	95,786	7.54
	Upper Limit ==>	214,844	5.23	97,116	6.79	191,572	8.04
	Lower Limit ==>	53,711	4.23	24,279	5.79	47,893	7.04
	ICAL Result ==>	65,689	4.74	30,904	6.29	71,972	7.53
Associated Analyses							
PDI-SG-B406-BL1	K1804798-009	102,728	4.73	50,567	6.29	95,574	7.54
PDI-SG-B372-BL1	K1804798-011	100,253	4.73	50,416	6.29	95,859	7.54
PDI-SG-B373-BL1	K1804798-012	102,178	4.72	51,079	6.29	97,606	7.54
PDI-SG-B217-BL1	K1804798-013	100,759	4.73	49,476	6.29	93,926	7.54
PDI-SG-B215-BL1	K1804798-014	105,576	4.73	51,594	6.29	97,783	7.54
PDI-SG-B210-BL1	K1804798-016	103,699	4.73	51,049	6.29	96,532	7.54
PDI-SG-B211-BL1	K1804798-015	89,705	4.73	43,694	6.30	81,053	7.56

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

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

Service Request: K1804798
Date Analyzed: 06/25/2018
Time Analyzed: 09:29

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062518\0625F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1803165-2
Analysis Lot: KWG1803165

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	99,595	10.08	110,228	13.23
	Upper Limit ==>	199,190	10.58	220,456	13.73
	Lower Limit ==>	49,798	9.58	55,114	12.73
	ICAL Result ==>	72,509	10.05	79,646	13.07
Associated Analyses					
PDI-SG-B406-BL1	K1804798-009	99,173	10.10	115,325	13.31
PDI-SG-B372-BL1	K1804798-011	101,436	10.10	114,513	13.30
PDI-SG-B373-BL1	K1804798-012	103,053	10.10	117,048	13.30
PDI-SG-B217-BL1	K1804798-013	99,923	10.10	114,207	13.30
PDI-SG-B215-BL1	K1804798-014	103,074	10.10	116,298	13.31
PDI-SG-B210-BL1	K1804798-016	104,591	10.11	118,904	13.31
PDI-SG-B211-BL1	K1804798-015	89,061	10.15	105,453	13.43

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: K1804798
Date Analyzed: 06/26/2018
Time Analyzed: 21:10

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\062618\0626F022.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1803157-2
Analysis Lot: KWG1803157

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	96,375	5.94	52,410	8.26	112,028	11.44
	Upper Limit ==>	192,750	6.44	104,820	8.76	224,056	11.94
	Lower Limit ==>	48,188	5.44	26,205	7.76	56,014	10.94
	ICAL Result ==>	90,101	6.06	44,197	8.42	87,517	11.64
Associated Analyses							
PDI-SG-B211-BL1DL	K1804798-015	98,877	5.94	53,343	8.26	107,176	11.44

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

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

Service Request: K1804798
Date Analyzed: 06/26/2018
Time Analyzed: 21:10

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\062618\0626F022.D
Instrument ID: MS20
Analysis Method: 8270D SIM

Lab Code: KWG1803157-2
Analysis Lot: KWG1803157

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	121,335	18.81	139,110	23.12
	Upper Limit ==>	242,670	19.31	278,220	23.62
	Lower Limit ==>	60,668	18.31	69,555	22.62
	ICAL Result ==>	105,110	19.00	102,151	23.35
Associated Analyses					
PDI-SG-B211-BL1DL	K1804798-015	115,925	18.81	133,490	23.13

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

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/30/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/21/2018

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802719

		PDI-SG-B403-BL1MS KWG1802719-1 Matrix Spike			PDI-SG-B403-BL1DMS KWG1802719-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	5.1	65.4	104	58	67.1	104	60	37-104	3	40
2-Methylnaphthalene	5.6	71.0	104	63	79.8	104	71	39-115	12	40
Acenaphthylene	3.9	77.0	104	70	73.4	104	67	39-115	5	40
Acenaphthene	3.4	78.6	104	72	76.8	104	71	41-116	2	40
Fluorene	3.9	83.9	104	77	81.3	104	74	43-117	3	40
Phenanthrene	32	123	104	88	118	104	83	42-119	4	40
Anthracene	7.6	97.1	104	86	95.6	104	85	42-124	2	40
Fluoranthene	52	145	104	89	143	104	87	42-130	1	40
Pyrene	60	147	104	83	145	104	81	33-125	1	40
Benz(a)anthracene	23	124	104	97	124	104	96	42-123	1	40
Chrysene	33	131	104	94	131	104	94	40-134	0	40
Benzo(b)fluoranthene	32	130	104	95	133	104	97	27-139	2	40
Benzo(k)fluoranthene	11	110	104	96	109	104	94	40-125	1	40
Benzo(a)pyrene	38	150	104	108	154	104	112	39-130	3	40
Indeno(1,2,3-cd)pyrene	16	122	104	102	120	104	100	37-143	2	40
Dibenz(a,h)anthracene	3.8	90.3	104	83	88.7	104	82	39-141	2	40
Benzo(g,h,i)perylene	19	95.2	104	74	92.8	104	71	35-140	3	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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/30/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/21/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1802719

Lab Control Sample
KWG1802719-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Naphthalene	63.7	100	64	42-107
2-Methylnaphthalene	66.3	100	66	40-116
Acenaphthylene	68.2	100	68	41-112
Acenaphthene	69.1	100	69	43-113
Fluorene	68.7	100	69	44-114
Phenanthrene	73.0	100	73	44-115
Anthracene	75.6	100	76	45-121
Fluoranthene	79.6	100	80	47-123
Pyrene	77.4	100	77	41-121
Benz(a)anthracene	89.3	100	89	42-123
Chrysene	88.4	100	88	46-130
Benzo(b)fluoranthene	100	100	100	46-125
Benzo(k)fluoranthene	96.3	100	96	47-125
Benzo(a)pyrene	96.5	100	97	45-128
Indeno(1,2,3-cd)pyrene	86.2	100	86	45-128
Dibenz(a,h)anthracene	83.2	100	83	44-128
Benzo(g,h,i)perylene	79.4	100	79	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.

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/30/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/21/2018
		Time Analyzed:	13:26

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1802719-4	**File ID:**	J:\MS14\DATA\062118A\0621F010.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802719

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1802719-3	J:\MS14\DATA\062118A\0621F011.D	06/21/18	13:52
PDI-SG-B403-BL1MS	KWG1802719-1	J:\MS14\DATA\062118A\0621F012.D	06/21/18	14:18
PDI-SG-B403-BL1DMS	KWG1802719-2	J:\MS14\DATA\062118A\0621F013.D	06/21/18	14:43
PDI-SG-B403-BL1	K1804798-010	J:\MS14\DATA\062118A\0621F014.D	06/21/18	15:09
PDI-SG-B395-BL1	K1804798-001	J:\MS14\DATA\062118A\0621F017.D	06/21/18	16:25
PDI-SG-B397-BL1	K1804798-002	J:\MS14\DATA\062118A\0621F018.D	06/21/18	16:51
PDI-SG-B412-BL1	K1804798-003	J:\MS14\DATA\062118A\0621F019.D	06/21/18	17:16
PDI-SG-B402-BL1	K1804798-004	J:\MS14\DATA\062118A\0621F020.D	06/21/18	17:42
PDI-SG-B416-BL1	K1804798-005	J:\MS14\DATA\062118A\0621F021.D	06/21/18	18:08
PDI-SG-B413-BL1	K1804798-006	J:\MS14\DATA\062118A\0621F022.D	06/21/18	18:33
PDI-SG-B411-BL1	K1804798-007	J:\MS14\DATA\062118A\0621F023.D	06/21/18	18:59
PDI-SG-B407-BL1	K1804798-008	J:\MS14\DATA\062118A\0621F024.D	06/21/18	19:24
PDI-SG-B406-BL1	K1804798-009	J:\MS14\DATA\062518\0625F008.D	06/25/18	11:57
PDI-SG-B372-BL1	K1804798-011	J:\MS14\DATA\062518\0625F009.D	06/25/18	12:21
PDI-SG-B373-BL1	K1804798-012	J:\MS14\DATA\062518\0625F010.D	06/25/18	12:45
PDI-SG-B217-BL1	K1804798-013	J:\MS14\DATA\062518\0625F011.D	06/25/18	13:10
PDI-SG-B215-BL1	K1804798-014	J:\MS14\DATA\062518\0625F012.D	06/25/18	13:36
PDI-SG-B210-BL1	K1804798-016	J:\MS14\DATA\062518\0625F013.D	06/25/18	14:00
PDI-SG-B211-BL1	K1804798-015	J:\MS14\DATA\062518\0625F027.D	06/25/18	20:00
PDI-SG-B211-BL1	K1804798-015	J:\MS20\DATA\062618\0626F037.D	06/27/18	07:02

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/30/2018
Sample Matrix:	Sediment	**Date Analyzed:**	06/21/2018
		Time Analyzed:	13:52

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1802719-3	**File ID:**	J:\MS14\DATA\062118A\0621F011.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802719

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1802719-4	J:\MS14\DATA\062118A\0621F010.D	06/21/18	13:26
PDI-SG-B403-BL1MS	KWG1802719-1	J:\MS14\DATA\062118A\0621F012.D	06/21/18	14:18
PDI-SG-B403-BL1DMS	KWG1802719-2	J:\MS14\DATA\062118A\0621F013.D	06/21/18	14:43
PDI-SG-B403-BL1	K1804798-010	J:\MS14\DATA\062118A\0621F014.D	06/21/18	15:09
PDI-SG-B395-BL1	K1804798-001	J:\MS14\DATA\062118A\0621F017.D	06/21/18	16:25
PDI-SG-B397-BL1	K1804798-002	J:\MS14\DATA\062118A\0621F018.D	06/21/18	16:51
PDI-SG-B412-BL1	K1804798-003	J:\MS14\DATA\062118A\0621F019.D	06/21/18	17:16
PDI-SG-B402-BL1	K1804798-004	J:\MS14\DATA\062118A\0621F020.D	06/21/18	17:42
PDI-SG-B416-BL1	K1804798-005	J:\MS14\DATA\062118A\0621F021.D	06/21/18	18:08
PDI-SG-B413-BL1	K1804798-006	J:\MS14\DATA\062118A\0621F022.D	06/21/18	18:33
PDI-SG-B411-BL1	K1804798-007	J:\MS14\DATA\062118A\0621F023.D	06/21/18	18:59
PDI-SG-B407-BL1	K1804798-008	J:\MS14\DATA\062118A\0621F024.D	06/21/18	19:24
PDI-SG-B406-BL1	K1804798-009	J:\MS14\DATA\062518\0625F008.D	06/25/18	11:57
PDI-SG-B372-BL1	K1804798-011	J:\MS14\DATA\062518\0625F009.D	06/25/18	12:21
PDI-SG-B373-BL1	K1804798-012	J:\MS14\DATA\062518\0625F010.D	06/25/18	12:45
PDI-SG-B217-BL1	K1804798-013	J:\MS14\DATA\062518\0625F011.D	06/25/18	13:10
PDI-SG-B215-BL1	K1804798-014	J:\MS14\DATA\062518\0625F012.D	06/25/18	13:36
PDI-SG-B210-BL1	K1804798-016	J:\MS14\DATA\062518\0625F013.D	06/25/18	14:00
PDI-SG-B211-BL1	K1804798-015	J:\MS14\DATA\062518\0625F027.D	06/25/18	20:00
PDI-SG-B211-BL1	K1804798-015	J:\MS20\DATA\062618\0626F037.D	06/27/18	07:02

QA/QC Results

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

Service Request: K1804798
Date Analyzed: 06/21/2018
Time Analyzed: 08:50

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062118A\0621F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1803150

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	25.9	26469	PASS
68	69	0	2	1.8	582	PASS
69	198	0	100	31.0	31605	PASS
70	69	0	2	0.6	203	PASS
127	198	10	80	41.8	42659	PASS
197	198	0	2	0.7	734	PASS
198	442	30	100	44.1	102009	PASS
199	198	5	9	6.5	6680	PASS
275	198	10	60	35.2	35916	PASS
365	442	1	50	2.5	5699	PASS
441	443	0	100	72.8	32155	PASS
442	442	100	100	100.0	231099	PASS
443	442	15	24	19.1	44195	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1803150-2	J:\MS14\DATA\062118A\0621F009.D	06/21/2018	12:10	
Method Blank	KWG1802719-4	J:\MS14\DATA\062118A\0621F010.D	06/21/2018	13:26	
Lab Control Sample	KWG1802719-3	J:\MS14\DATA\062118A\0621F011.D	06/21/2018	13:52	
PDI-SG-B403-BL1MS	KWG1802719-1	J:\MS14\DATA\062118A\0621F012.D	06/21/2018	14:18	
PDI-SG-B403-BL1DMS	KWG1802719-2	J:\MS14\DATA\062118A\0621F013.D	06/21/2018	14:43	
PDI-SG-B403-BL1	K1804798-010	J:\MS14\DATA\062118A\0621F014.D	06/21/2018	15:09	
PDI-SG-B395-BL1	K1804798-001	J:\MS14\DATA\062118A\0621F017.D	06/21/2018	16:25	
PDI-SG-B397-BL1	K1804798-002	J:\MS14\DATA\062118A\0621F018.D	06/21/2018	16:51	
PDI-SG-B412-BL1	K1804798-003	J:\MS14\DATA\062118A\0621F019.D	06/21/2018	17:16	
PDI-SG-B402-BL1	K1804798-004	J:\MS14\DATA\062118A\0621F020.D	06/21/2018	17:42	
PDI-SG-B416-BL1	K1804798-005	J:\MS14\DATA\062118A\0621F021.D	06/21/2018	18:08	
PDI-SG-B413-BL1	K1804798-006	J:\MS14\DATA\062118A\0621F022.D	06/21/2018	18:33	
PDI-SG-B411-BL1	K1804798-007	J:\MS14\DATA\062118A\0621F023.D	06/21/2018	18:59	
PDI-SG-B407-BL1	K1804798-008	J:\MS14\DATA\062118A\0621F024.D	06/21/2018	19:24	

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: K1804798
Date Analyzed: 06/25/2018
Time Analyzed: 08:58

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\062518\0625F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1803165

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	35.2	76038	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	37.7	81379	PASS
70	69	0	2	0.9	716	PASS
127	198	10	80	44.6	96354	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	43.8	216042	PASS
199	198	5	9	6.7	14555	PASS
275	198	10	60	35.4	76437	PASS
365	442	1	50	2.3	11105	PASS
441	443	0	100	75.9	71874	PASS
442	442	100	100	100.0	493141	PASS
443	442	15	24	19.2	94757	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1803165-2	J:\MS14\DATA\062518\0625F002.D	06/25/2018	09:29	
PDI-SG-B406-BL1	K1804798-009	J:\MS14\DATA\062518\0625F008.D	06/25/2018	11:57	
PDI-SG-B372-BL1	K1804798-011	J:\MS14\DATA\062518\0625F009.D	06/25/2018	12:21	
PDI-SG-B373-BL1	K1804798-012	J:\MS14\DATA\062518\0625F010.D	06/25/2018	12:45	
PDI-SG-B217-BL1	K1804798-013	J:\MS14\DATA\062518\0625F011.D	06/25/2018	13:10	
PDI-SG-B215-BL1	K1804798-014	J:\MS14\DATA\062518\0625F012.D	06/25/2018	13:36	
PDI-SG-B210-BL1	K1804798-016	J:\MS14\DATA\062518\0625F013.D	06/25/2018	14:00	
PDI-SG-B211-BL1	K1804798-015	J:\MS14\DATA\062518\0625F027.D	06/25/2018	20:00	

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: K1804798
Date Analyzed: 06/26/2018
Time Analyzed: 20:31

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS20\DATA\062618\0626F021.D
Instrument ID: MS20
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1803157

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
275	198	10	60	38.6	189205	PASS
365	442	1	50	2.5	32066	PASS
441	443	0	100	82.3	213610	PASS
442	442	100	100	100.0	1271466	PASS
443	442	15	24	20.4	259669	PASS
51	198	10	80	23.4	115010	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	25.7	125881	PASS
70	69	0	2	0.8	960	PASS
127	198	10	80	38.1	186922	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	38.6	490624	PASS
199	198	5	9	6.8	33592	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1803157-2	J:\MS20\DATA\062618\0626F022.D	06/26/2018	21:10	
PDI-SG-B211-BL1	K1804798-015	J:\MS20\DATA\062618\0626F037.D	06/27/2018	07:02	

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

Client: AECOM **Service Request:** K1804798
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:** K1804798
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:** K1804798
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: K1804798
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:** K1804798
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:** K1804798
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:** K1804798
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: K1804798
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:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/21/2018

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: KWG1803150
Units: ng/ml

File ID: J:\MS14\DATA\062118A\0621F009.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	400	370	0.70	1.05	0.985	-6		NA	± 20	AverageRF
2-Methylnaphthalene	400	390	0.40	0.669	0.649	-3		NA	± 20	AverageRF
Acenaphthylene	400	390	0.90	2.17	2.09	-4		NA	± 20	AverageRF
Acenaphthene	400	400	0.90	1.24	1.24	0		NA	± 20	AverageRF
Fluorene	400	390	0.90	1.56	1.51	-3		NA	± 20	AverageRF
Phenanthrene	400	400	0.70	1.12	1.12	0		NA	± 20	AverageRF
Anthracene	400	370	0.70	1.09	1.02	-7		NA	± 20	AverageRF
Fluoranthene	400	460	0.60	1.28	1.46	14		NA	± 20	AverageRF
Pyrene	400	380	0.60	1.38	1.31	-5		NA	± 20	AverageRF
Benz(a)anthracene	400	410	0.80	1.27	1.31	3		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	1.40	16		NA	± 20	AverageRF
Benzo(k)fluoranthene	400	450	0.70	1.17	1.32	13		NA	± 20	AverageRF
Benzo(a)pyrene	400	460	0.70	1.07	1.24	15		NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	430	0.50	1.29	1.38	7		NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	400	0.40	1.29	1.29	1		NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	390	0.50	1.44	1.39	-4		NA	± 20	AverageRF
Fluorene-d10	400	410	0.01	1.31	1.35	3		NA	± 20	AverageRF
Fluoranthene-d10	400	480	0.01	1.14	1.38	21	*	NA	± 20	AverageRF
Terphenyl-d14	400	380	0.01	0.908	0.862	-5		NA	± 20	AverageRF

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/25/2018

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: KWG1803165
Units: ng/ml

File ID: J:\MS14\DATA\062518\0625F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	410	0.70	1.05	1.09	3	NA	± 20	AverageRF
2-Methylnaphthalene	400	390	0.40	0.669	0.660	-1	NA	± 20	AverageRF
Acenaphthylene	400	430	0.90	2.17	2.34	8	NA	± 20	AverageRF
Acenaphthene	400	430	0.90	1.24	1.33	7	NA	± 20	AverageRF
Fluorene	400	400	0.90	1.56	1.58	1	NA	± 20	AverageRF
Phenanthrene	400	420	0.70	1.12	1.18	5	NA	± 20	AverageRF
Anthracene	400	400	0.70	1.09	1.07	-1	NA	± 20	AverageRF
Fluoranthene	400	420	0.60	1.28	1.33	4	NA	± 20	AverageRF
Pyrene	400	400	0.60	1.38	1.37	-1	NA	± 20	AverageRF
Benz(a)anthracene	400	400	0.80	1.27	1.26	-1	NA	± 20	AverageRF
Chrysene	400	400	0.70	1.18	1.18	0	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	420	0.70	1.20	1.25	4	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	410	0.70	1.17	1.19	2	NA	± 20	AverageRF
Benzo(a)pyrene	400	420	0.70	1.07	1.12	4	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	380	0.50	1.29	1.22	-5	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	370	0.40	1.29	1.20	-7	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	350	0.50	1.44	1.24	-14	NA	± 20	AverageRF
Fluorene-d10	400	400	0.01	1.31	1.31	0	NA	± 20	AverageRF
Fluoranthene-d10	400	430	0.01	1.14	1.23	8	NA	± 20	AverageRF
Terphenyl-d14	400	420	0.01	0.908	0.946	4	NA	± 20	AverageRF

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/26/2018

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: KWG1803157
Units: ng/ml

File ID: J:\MS20\DATA\062618\0626F022.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	360	0.70	1.02	0.914	-11	NA	± 20	AverageRF
2-Methylnaphthalene	400	390	0.40	0.682	0.659	-3	NA	± 20	AverageRF
Acenaphthylene	400	380	0.90	2.03	1.95	-4	NA	± 20	AverageRF
Acenaphthene	400	360	0.90	1.25	1.13	-10	NA	± 20	AverageRF
Fluorene	400	370	0.90	1.50	1.39	-7	NA	± 20	AverageRF
Phenanthrene	400	350	0.70	1.17	1.03	-12	NA	± 20	AverageRF
Anthracene	400	350	0.70	1.09	0.957	-12	NA	± 20	AverageRF
Fluoranthene	400	380	0.60	1.27	1.22	-4	NA	± 20	AverageRF
Pyrene	400	430	0.60	1.13	1.21	7	NA	± 20	AverageRF
Benz(a)anthracene	400	430	0.80	1.09	1.18	8	NA	± 20	AverageRF
Chrysene	400	380	0.70	1.08	1.03	-4	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	390	0.70	1.14	1.11	-3	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	390	0.70	1.15	1.12	-3	NA	± 20	AverageRF
Benzo(a)pyrene	400	410	0.70	0.984	1.02	3	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	400	0.50	1.02	1.00	-1	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	410	0.40	1.05	1.07	2	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	350	0.50	1.22	1.06	-13	NA	± 20	AverageRF
Fluorene-d10	400	380	0.01	1.28	1.21	-5	NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.15	1.15	-1	NA	± 20	AverageRF
Terphenyl-d14	400	430	0.01	0.853	0.907	6	NA	± 20	AverageRF

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1803150
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0621F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1803150-1	6/21/2018	08:50		6/21/2018	09:10
0621F009.D	Continuing Calibration Verification	KWG1803150-2	6/21/2018	12:10		6/21/2018	12:29
0621F010.D	Method Blank	KWG1802719-4	6/21/2018	13:26		6/21/2018	13:45
0621F011.D	Lab Control Sample	KWG1802719-3	6/21/2018	13:52		6/21/2018	14:11
0621F012.D	PDI-SG-B403-BL1MS	KWG1802719-1	6/21/2018	14:18		6/21/2018	14:37
0621F013.D	PDI-SG-B403-BL1DMS	KWG1802719-2	6/21/2018	14:43		6/21/2018	15:02
0621F014.D	PDI-SG-B403-BL1	K1804798-010	6/21/2018	15:09		6/21/2018	15:28
0621F015.D	ZZZZZZ	ZZZZZZ	6/21/2018	15:34		6/21/2018	15:53
0621F016.D	ZZZZZZ	ZZZZZZ	6/21/2018	16:00		6/21/2018	16:19
0621F017.D	PDI-SG-B395-BL1	K1804798-001	6/21/2018	16:25		6/21/2018	16:44
0621F018.D	PDI-SG-B397-BL1	K1804798-002	6/21/2018	16:51		6/21/2018	17:10
0621F019.D	PDI-SG-B412-BL1	K1804798-003	6/21/2018	17:16		6/21/2018	17:35
0621F020.D	PDI-SG-B402-BL1	K1804798-004	6/21/2018	17:42		6/21/2018	18:01
0621F021.D	PDI-SG-B416-BL1	K1804798-005	6/21/2018	18:08		6/21/2018	18:27
0621F022.D	PDI-SG-B413-BL1	K1804798-006	6/21/2018	18:33		6/21/2018	18:52
0621F023.D	PDI-SG-B411-BL1	K1804798-007	6/21/2018	18:59		6/21/2018	19:18
0621F024.D	PDI-SG-B407-BL1	K1804798-008	6/21/2018	19:24		6/21/2018	19:43

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

QA/QC Results

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1803165
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0625F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1803165-1	6/25/2018	08:58		6/25/2018	09:18
0625F002.D	Continuing Calibration Verification	KWG1803165-2	6/25/2018	09:29		6/25/2018	09:48
0625F003.D	ZZZZZZ	ZZZZZZ	6/25/2018	09:56		6/25/2018	10:15
0625F004.D	ZZZZZZ	ZZZZZZ	6/25/2018	10:20		6/25/2018	10:39
0625F005.D	ZZZZZZ	ZZZZZZ	6/25/2018	10:44		6/25/2018	11:03
0625F006.D	ZZZZZZ	ZZZZZZ	6/25/2018	11:08		6/25/2018	11:27
0625F007.D	ZZZZZZ	ZZZZZZ	6/25/2018	11:32		6/25/2018	11:51
0625F008.D	PDI-SG-B406-BL1	K1804798-009	6/25/2018	11:57		6/25/2018	12:16
0625F009.D	PDI-SG-B372-BL1	K1804798-011	6/25/2018	12:21		6/25/2018	12:40
0625F010.D	PDI-SG-B373-BL1	K1804798-012	6/25/2018	12:45		6/25/2018	13:04
0625F011.D	PDI-SG-B217-BL1	K1804798-013	6/25/2018	13:10		6/25/2018	13:29
0625F012.D	PDI-SG-B215-BL1	K1804798-014	6/25/2018	13:36		6/25/2018	13:55
0625F013.D	PDI-SG-B210-BL1	K1804798-016	6/25/2018	14:00		6/25/2018	14:19
0625F014.D	ZZZZZZ	ZZZZZZ	6/25/2018	14:25		6/25/2018	14:44
0625F015.D	ZZZZZZ	ZZZZZZ	6/25/2018	14:51		6/25/2018	15:10
0625F016.D	ZZZZZZ	ZZZZZZ	6/25/2018	15:16		6/25/2018	15:35
0625F017.D	ZZZZZZ	ZZZZZZ	6/25/2018	15:42		6/25/2018	16:01
0625F018.D	ZZZZZZ	ZZZZZZ	6/25/2018	16:08		6/25/2018	16:27
0625F019.D	ZZZZZZ	ZZZZZZ	6/25/2018	16:33		6/25/2018	16:52
0625F020.D	ZZZZZZ	ZZZZZZ	6/25/2018	16:59		6/25/2018	17:18
0625F021.D	ZZZZZZ	ZZZZZZ	6/25/2018	17:24		6/25/2018	17:43
0625F022.D	ZZZZZZ	ZZZZZZ	6/25/2018	17:50		6/25/2018	18:09
0625F023.D	ZZZZZZ	ZZZZZZ	6/25/2018	18:16		6/25/2018	18:35
0625F024.D	ZZZZZZ	ZZZZZZ	6/25/2018	18:42		6/25/2018	19:01
0625F025.D	ZZZZZZ	ZZZZZZ	6/25/2018	19:08		6/25/2018	19:27
0625F026.D	ZZZZZZ	ZZZZZZ	6/25/2018	19:34		6/25/2018	19:53
0625F027.D	PDI-SG-B211-BL1	K1804798-015	6/25/2018	20:00		6/25/2018	20:19
0625F028.D	ZZZZZZ	ZZZZZZ	6/25/2018	20:26		6/25/2018	20:45
0625F029.D	ZZZZZZ	ZZZZZZ	6/25/2018	20:52		6/25/2018	21:11

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

QA/QC Results

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1803157
Instrument ID: MS20

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0626F021.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1803157-1	6/26/2018	20:31		6/26/2018	21:01
0626F022.D	Continuing Calibration Verification	KWG1803157-2	6/26/2018	21:10		6/26/2018	21:39
0626F023.D	ZZZZZZ	ZZZZZZ	6/26/2018	21:50		6/26/2018	22:19
0626F024.D	ZZZZZZ	ZZZZZZ	6/26/2018	22:29		6/26/2018	22:58
0626F025.D	ZZZZZZ	ZZZZZZ	6/26/2018	23:08		6/26/2018	23:37
0626F026.D	ZZZZZZ	ZZZZZZ	6/26/2018	23:48		6/27/2018	00:17
0626F027.D	ZZZZZZ	ZZZZZZ	6/27/2018	00:27		6/27/2018	00:56
0626F028.D	ZZZZZZ	ZZZZZZ	6/27/2018	01:06		6/27/2018	01:35
0626F029.D	ZZZZZZ	ZZZZZZ	6/27/2018	01:46		6/27/2018	02:15
0626F030.D	ZZZZZZ	ZZZZZZ	6/27/2018	02:25		6/27/2018	02:54
0626F031.D	ZZZZZZ	ZZZZZZ	6/27/2018	03:05		6/27/2018	03:34
0626F032.D	ZZZZZZ	ZZZZZZ	6/27/2018	03:44		6/27/2018	04:13
0626F033.D	ZZZZZZ	ZZZZZZ	6/27/2018	04:24		6/27/2018	04:53
0626F034.D	ZZZZZZ	ZZZZZZ	6/27/2018	05:03		6/27/2018	05:32
0626F035.D	ZZZZZZ	ZZZZZZ	6/27/2018	05:43		6/27/2018	06:12
0626F036.D	ZZZZZZ	ZZZZZZ	6/27/2018	06:23		6/27/2018	06:52
0626F037.D	PDI-SG-B211-BL1	K1804798-015	6/27/2018	07:02		6/27/2018	07:31
0626F038.D	ZZZZZZ	ZZZZZZ	6/27/2018	07:42		6/27/2018	08:11
0626F039.D	ZZZZZZ	ZZZZZZ	6/27/2018	08:22		6/27/2018	08:51

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: K1804798
Date Extracted: 05/30/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1802719
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
PDI-SG-B395-BL1	K1804798-001	05/18/18	05/21/18	40.026g	2mL	44.5	
PDI-SG-B397-BL1	K1804798-002	05/18/18	05/21/18	40.066g	2mL	42.6	
PDI-SG-B412-BL1	K1804798-003	05/18/18	05/21/18	40.029g	2mL	59.4	
PDI-SG-B402-BL1	K1804798-004	05/18/18	05/21/18	40.016g	2mL	45.6	
PDI-SG-B416-BL1	K1804798-005	05/19/18	05/21/18	40.132g	2mL	67.3	
PDI-SG-B413-BL1	K1804798-006	05/19/18	05/21/18	40.046g	2mL	37.5	
PDI-SG-B411-BL1	K1804798-007	05/19/18	05/21/18	40.370g	2mL	39.3	
PDI-SG-B407-BL1	K1804798-008	05/19/18	05/21/18	40.416g	2mL	40.5	
PDI-SG-B406-BL1	K1804798-009	05/19/18	05/21/18	40.146g	2mL	44.5	
PDI-SG-B403-BL1	K1804798-010	05/19/18	05/21/18	40.335g	2mL	47.9	
PDI-SG-B372-BL1	K1804798-011	05/20/18	05/21/18	40.183g	2mL	46.1	
PDI-SG-B373-BL1	K1804798-012	05/20/18	05/21/18	40.346g	2mL	49	
PDI-SG-B217-BL1	K1804798-013	05/20/18	05/21/18	40.089g	2mL	43.8	
PDI-SG-B215-BL1	K1804798-014	05/20/18	05/21/18	40.141g	2mL	49.7	
PDI-SG-B211-BL1DL	K1804798-015	05/20/18	05/21/18	40.281g	2mL	53.7	
PDI-SG-B211-BL1	K1804798-015	05/20/18	05/21/18	40.281g	2mL	53.7	
PDI-SG-B210-BL1	K1804798-016	05/20/18	05/21/18	40.310g	2mL	67.1	
Method Blank	KWG1802719-4	NA	NA	40.416g	2mL	NA	
PDI-SG-B403-BL1MS	KWG1802719-1	05/19/18	05/21/18	40.115g	2mL	47.9	
PDI-SG-B403-BL1DMS	KWG1802719-2	05/19/18	05/21/18	40.126g	2mL	47.9	
Lab Control Sample	KWG1802719-3	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:** K1804798
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-RB-VV-180520-1745	K1804798-017	05/20/2018	05/21/2018

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/2018
Sample Matrix:	Water	**Date Received:**	05/21/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	PDI-SG-RB-VV-180520-1745	**Units:**	ug/L
Lab Code:	K1804798-017	**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	**0.0024**	J	0.021	0.0015	1	05/22/18	05/23/18	KWG1802604	
2-Methylnaphthalene	ND	U	0.021	0.0014	1	05/22/18	05/23/18	KWG1802604	
Acenaphthylene	ND	U	0.021	0.0012	1	05/22/18	05/23/18	KWG1802604	
Acenaphthene	ND	U	0.021	0.0013	1	05/22/18	05/23/18	KWG1802604	
Fluorene	ND	U	0.021	0.0012	1	05/22/18	05/23/18	KWG1802604	
Phenanthrene	**0.0021**	J	0.021	0.0012	1	05/22/18	05/23/18	KWG1802604	
Anthracene	ND	U	0.021	0.00086	1	05/22/18	05/23/18	KWG1802604	
Fluoranthene	ND	U	0.021	0.00086	1	05/22/18	05/23/18	KWG1802604	
Pyrene	ND	U	0.021	0.0011	1	05/22/18	05/23/18	KWG1802604	
Benz(a)anthracene	**0.0024**	J	0.021	0.0011	1	05/22/18	05/23/18	KWG1802604	
Chrysene	ND	U	0.021	0.00080	1	05/22/18	05/23/18	KWG1802604	
Benzo(b)fluoranthene†	ND	U	0.021	0.00087	1	05/22/18	05/23/18	KWG1802604	
Benzo(k)fluoranthene	ND	U	0.021	0.00099	1	05/22/18	05/23/18	KWG1802604	
Benzo(a)pyrene	ND	U	0.021	0.0012	1	05/22/18	05/23/18	KWG1802604	
Indeno(1,2,3-cd)pyrene	ND	U	0.021	0.00094	1	05/22/18	05/23/18	KWG1802604	
Dibenz(a,h)anthracene	ND	U	0.021	0.0014	1	05/22/18	05/23/18	KWG1802604	
Benzo(g,h,i)perylene	ND	U	0.021	0.00091	1	05/22/18	05/23/18	KWG1802604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	110	42-131	05/23/18	Acceptable
Fluoranthene-d10	111	42-133	05/23/18	Acceptable
Terphenyl-d14	88	32-129	05/23/18	Acceptable

† Analyte Comments

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

Comments:

Analytical Results

Client:	AECOM	**Service Request:**	K1804798
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:	KWG1802604-4	**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	ND	U	0.020	0.0014	1	05/22/18	05/23/18	KWG1802604	
2-Methylnaphthalene	ND	U	0.020	0.0013	1	05/22/18	05/23/18	KWG1802604	
Acenaphthylene	ND	U	0.020	0.0011	1	05/22/18	05/23/18	KWG1802604	
Acenaphthene	ND	U	0.020	0.0012	1	05/22/18	05/23/18	KWG1802604	
Fluorene	ND	U	0.020	0.0011	1	05/22/18	05/23/18	KWG1802604	
Phenanthrene	ND	U	0.020	0.0011	1	05/22/18	05/23/18	KWG1802604	
Anthracene	ND	U	0.020	0.00082	1	05/22/18	05/23/18	KWG1802604	
Fluoranthene	ND	U	0.020	0.00082	1	05/22/18	05/23/18	KWG1802604	
Pyrene	ND	U	0.020	0.0010	1	05/22/18	05/23/18	KWG1802604	
Benz(a)anthracene	**0.0027**	J	0.020	0.00097	1	05/22/18	05/23/18	KWG1802604	
Chrysene	ND	U	0.020	0.00076	1	05/22/18	05/23/18	KWG1802604	
Benzo(b)fluoranthene†	ND	U	0.020	0.00083	1	05/22/18	05/23/18	KWG1802604	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	05/22/18	05/23/18	KWG1802604	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	05/22/18	05/23/18	KWG1802604	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	05/22/18	05/23/18	KWG1802604	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	05/22/18	05/23/18	KWG1802604	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	05/22/18	05/23/18	KWG1802604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	114	42-131	05/23/18	Acceptable
Fluoranthene-d10	106	42-133	05/23/18	Acceptable
Terphenyl-d14	103	32-129	05/23/18	Acceptable

† Analyte Comments

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

Comments:

QA/QC Report

Client: AECOM **Service Request:** K1804798
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-SG-RB-VV-180520-1745	K1804798-017	110	111	88
Method Blank	KWG1802604-4	114	106	103
Lab Control Sample	KWG1802604-3	113	114	112

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.

QA/QC Report

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

Service Request: K1804798
Date Analyzed: 05/23/2018
Time Analyzed: 08:34

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\052318\0523F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802709-2
Analysis Lot: KWG1802709

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	33,029	4.64	20,617	6.22	47,367	7.46
	Upper Limit ==>	66,058	5.14	41,234	6.72	94,734	7.96
	Lower Limit ==>	16,515	4.14	10,309	5.72	23,684	6.96
	ICAL Result ==>	45,603	4.78	23,247	6.33	49,507	7.56
Associated Analyses							
Method Blank	KWG1802604-4	30,621	4.64	21,297	6.22	46,680	7.46
Lab Control Sample	KWG1802604-3	30,862	4.64	20,328	6.22	48,186	7.46
PDI-SG-RB-VV-180520-1745	K1804798-017	36,041	4.63	23,862	6.22	51,725	7.46

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

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

Service Request: K1804798
Date Analyzed: 05/23/2018
Time Analyzed: 08:34

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\052318\0523F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1802709-2
Analysis Lot: KWG1802709

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	54,549	9.96	58,640	12.99
	Upper Limit ==>	109,098	10.46	117,280	13.49
	Lower Limit ==>	27,275	9.46	29,320	12.49
	ICAL Result ==>	64,481	10.08	65,038	13.14
Associated Analyses					
Method Blank	KWG1802604-4	48,377	9.96	55,723	13.00
Lab Control Sample	KWG1802604-3	48,315	9.96	55,171	13.00
PDI-SG-RB-VV-180520-1745	K1804798-017	59,755	9.95	68,969	12.97

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

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/22/2018
Sample Matrix:	Water	**Date Analyzed:**	05/23/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3511	**Units:**	ug/L
Analysis Method:	8270D SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1802604

Lab Control Sample
KWG1802604-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Naphthalene	2.41	2.78	87	52-115
2-Methylnaphthalene	2.62	2.78	94	48-120
Acenaphthylene	2.40	2.78	86	58-124
Acenaphthene	2.54	2.78	92	63-121
Fluorene	2.64	2.78	95	68-121
Phenanthrene	2.59	2.78	93	64-126
Anthracene	2.66	2.78	96	68-127
Fluoranthene	2.53	2.78	91	70-127
Pyrene	3.28	2.78	118	72-127
Benz(a)anthracene	3.07	2.78	111	74-124
Chrysene	2.94	2.78	106	74-132
Benzo(b)fluoranthene	2.76	2.78	99	73-136
Benzo(k)fluoranthene	2.69	2.78	97	74-134
Benzo(a)pyrene	2.86	2.78	103	75-131
Indeno(1,2,3-cd)pyrene	2.80	2.78	101	63-136
Dibenz(a,h)anthracene	2.63	2.78	95	59-135
Benzo(g,h,i)perylene	2.55	2.78	92	63-127

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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/22/2018
Sample Matrix:	Water	**Date Analyzed:**	05/23/2018
		Time Analyzed:	14:37

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1802604-4	**File ID:**	J:\MS14\DATA\052318\0523F017.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802604

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1802604-3	J:\MS14\DATA\052318\0523F018.D	05/23/18	15:01
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS14\DATA\052318\0523F027.D	05/23/18	18:38

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Extracted:**	05/22/2018
Sample Matrix:	Water	**Date Analyzed:**	05/23/2018
		Time Analyzed:	15:01

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1802604-3	**File ID:**	J:\MS14\DATA\052318\0523F018.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1802604

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1802604-4	J:\MS14\DATA\052318\0523F017.D	05/23/18	14:37
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS14\DATA\052318\0523F027.D	05/23/18	18:38

QA/QC Results

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

Service Request: K1804798
Date Analyzed: 05/23/2018
Time Analyzed: 08:09

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\052318\0523F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1802709

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	42.2	79720	PASS
68	69	0	2	1.9	1479	PASS
69	198	0	100	40.6	76822	PASS
70	69	0	2	0.9	658	PASS
127	198	10	80	53.1	100482	PASS
197	198	0	2	0.5	900	PASS
198	442	30	100	43.5	189064	PASS
199	198	5	9	6.6	12445	PASS
275	198	10	60	35.9	67824	PASS
365	442	1	50	4.0	17178	PASS
441	443	0	100	72.9	59109	PASS
442	442	100	100	100.0	434773	PASS
443	442	15	24	18.7	81101	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1802709-2	J:\MS14\DATA\052318\0523F002.D	05/23/2018	08:34	
Method Blank	KWG1802604-4	J:\MS14\DATA\052318\0523F017.D	05/23/2018	14:37	
Lab Control Sample	KWG1802604-3	J:\MS14\DATA\052318\0523F018.D	05/23/2018	15:01	
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS14\DATA\052318\0523F027.D	05/23/2018	18:38	

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

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 10/13/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15579 **Column:** MS
Instrument ID: MS14

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\101317\1013F003.D	F	J:\MS14\DATA\101317\1013F008.D
B	J:\MS14\DATA\101317\1013F004.D	G	J:\MS14\DATA\101317\1013F009.D
C	J:\MS14\DATA\101317\1013F005.D	H	J:\MS14\DATA\101317\1013F010.D
D	J:\MS14\DATA\101317\1013F006.D	I	J:\MS14\DATA\101317\1013F011.D
E	J:\MS14\DATA\101317\1013F007.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	4.0	1.18	B	8.0	1.19	C	20	1.14	D	100	1.10	E	200	1.11
	F	400	1.15	G	1000	1.13	H	1600	1.13	I	2000	1.12			
2-Methylnaphthalene	A	4.0	0.984	B	8.0	0.814	C	20	0.820	D	100	0.773	E	200	0.768
	F	400	0.768	G	1000	0.737	H	1600	0.739	I	2000	0.736			
Acenaphthylene	A	4.0	2.48	B	8.0	2.37	C	20	2.40	D	100	2.32	E	200	2.36
	F	400	2.47	G	1000	2.51	H	1600	2.56	I	2000	2.57			
Acenaphthene	A	4.0	1.34	B	8.0	1.36	C	20	1.34	D	100	1.31	E	200	1.33
	F	400	1.38	G	1000	1.41	H	1600	1.45	I	2000	1.46			
Fluorene	A	4.0	1.73	B	8.0	1.67	C	20	1.65	D	100	1.63	E	200	1.65
	F	400	1.70	G	1000	1.71	H	1600	1.75	I	2000	1.77			
Phenanthrene	A	4.0	1.33	B	8.0	1.25	C	20	1.21	D	100	1.17	E	200	1.18
	F	400	1.22	G	1000	1.24	H	1600	1.27	I	2000	1.29			
Anthracene	A	4.0	1.23	B	8.0	1.19	C	20	1.20	D	100	1.17	E	200	1.20
	F	400	1.23	G	1000	1.25	H	1600	1.27	I	2000	1.28			
Fluoranthene	A	4.0	1.48	B	8.0	1.41	C	20	1.44	D	100	1.41	E	200	1.41
	F	400	1.48	G	1000	1.53	H	1600	1.54	I	2000	1.55			
Pyrene	A	4.0	1.21	B	8.0	1.17	C	20	1.17	D	100	1.14	E	200	1.15
	F	400	1.20	G	1000	1.24	H	1600	1.28	I	2000	1.29			
Benz(a)anthracene	A	4.0	1.30	B	8.0	1.21	C	20	1.17	D	100	1.12	E	200	1.14
	F	400	1.20	G	1000	1.23	H	1600	1.25	I	2000	1.25			
Chrysene	A	4.0	1.13	B	8.0	1.14	C	20	1.10	D	100	1.08	E	200	1.09
	F	400	1.12	G	1000	1.14	H	1600	1.17	I	2000	1.17			
Benzo(b)fluoranthene	A	4.0	1.37	B	8.0	1.19	C	20	1.21	D	100	1.18	E	200	1.23
	F	400	1.28	G	1000	1.30	H	1600	1.31	I	2000	1.30			
Benzo(k)fluoranthene	A	4.0	1.29	B	8.0	1.22	C	20	1.19	D	100	1.19	E	200	1.22
	F	400	1.28	G	1000	1.25	H	1600	1.27	I	2000	1.26			
Benzo(a)pyrene	A	4.0	1.11	B	8.0	1.07	C	20	1.08	D	100	1.05	E	200	1.07
	F	400	1.12	G	1000	1.13	H	1600	1.15	I	2000	1.14			
Indeno(1,2,3-cd)pyrene	A	4.0	1.07	B	8.0	0.946	C	20	0.945	D	100	0.956	E	200	0.969
	F	400	1.02	G	1000	1.00	H	1600	1.01	I	2000	1.00			

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 10/13/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15579 **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
Dibenz(a,h)anthracene	A	4.0	1.14	B	8.0	1.13	C	20	0.979	D	100	0.947	E	200	0.961
	F	400	0.975	G	1000	0.975	H	1600	0.993	I	2000	0.983			
Benzo(g,h,i)perylene	A	4.0	1.28	B	8.0	1.15	C	20	1.07	D	100	1.07	E	200	1.08
	F	400	1.11	G	1000	1.07	H	1600	1.06	I	2000	1.04			
Fluorene-d10	A	4.0	1.65	B	8.0	1.44	C	20	1.31	D	100	1.26	E	200	1.27
	F	400	1.31	G	1000	1.33	H	1600	1.37	I	2000	1.38			
Fluoranthene-d10	A	4.0	1.21	B	8.0	1.18	C	20	1.19	D	100	1.19	E	200	1.20
	F	400	1.27	G	1000	1.34	H	1600	1.37	I	2000	1.36			
Terphenyl-d14	A	4.0	0.889	B	8.0	0.855	C	20	0.825	D	100	0.800	E	200	0.814
	F	400	0.833	G	1000	0.845	H	1600	0.864	I	2000	0.864			

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Calibration Date:** 10/13/2017

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15579 **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	2.6		≤ 20	1.14		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	9.8		≤ 20	0.793		0.40
Acenaphthylene	MS	AverageRF	% RSD	3.6		≤ 20	2.45		0.90
Acenaphthene	MS	AverageRF	% RSD	3.8		≤ 20	1.38		0.90
Fluorene	MS	AverageRF	% RSD	2.8		≤ 20	1.70		0.90
Phenanthrene	MS	AverageRF	% RSD	4.1		≤ 20	1.24		0.70
Anthracene	MS	AverageRF	% RSD	3.0		≤ 20	1.22		0.70
Fluoranthene	MS	AverageRF	% RSD	4.0		≤ 20	1.47		0.60
Pyrene	MS	AverageRF	% RSD	4.6		≤ 20	1.21		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	4.8		≤ 20	1.21		0.80
Chrysene	MS	AverageRF	% RSD	2.9		≤ 20	1.13		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	4.9		≤ 20	1.26		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	3.1		≤ 20	1.24		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	3.3		≤ 20	1.10		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	4.1		≤ 20	0.992		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	7.2		≤ 20	1.01		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	6.5		≤ 20	1.10		0.50
Fluorene-d10	SURR	AverageRF	% RSD	8.8		≤ 20	1.37		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	6.5		≤ 20	1.26		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	3.3		≤ 20	0.843		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: K1804798
Calibration Date: 10/13/2017
Date Analyzed: 10/13/2017

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15579
Units: ng/ml

File ID: J:\MS14\DATA\101317\1013F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	380	1.14	1.08	-6	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	360	0.793	0.716	-10	NA	± 30 %	AverageRF
Acenaphthylene	400	380	2.45	2.30	-6	NA	± 30 %	AverageRF
Acenaphthene	400	380	1.38	1.32	-4	NA	± 30 %	AverageRF
Fluorene	400	380	1.70	1.60	-6	NA	± 30 %	AverageRF
Phenanthrene	400	370	1.24	1.14	-8	NA	± 30 %	AverageRF
Anthracene	400	380	1.22	1.15	-6	NA	± 30 %	AverageRF
Fluoranthene	400	390	1.47	1.44	-2	NA	± 30 %	AverageRF
Pyrene	400	380	1.21	1.14	-6	NA	± 30 %	AverageRF
Benz(a)anthracene	400	380	1.21	1.15	-5	NA	± 30 %	AverageRF
Chrysene	400	380	1.13	1.08	-4	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	390	1.26	1.22	-3	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	390	1.24	1.20	-3	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	380	1.10	1.05	-5	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	0.992	0.913	-8	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	370	1.01	0.924	-8	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	370	1.10	1.02	-7	NA	± 30 %	AverageRF

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

† SPCC Compound **‡ CCC Compound**

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 05/23/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 10/13/2017
Analysis Method: 8270D SIM **Calibration ID:** CAL15579
Analysis Lot: KWG1802709
Units: ng/ml

File ID: J:\MS14\DATA\052318\0523F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	360	0.70	1.14	1.03	-10	NA	± 20	AverageRF
2-Methylnaphthalene	400	380	0.40	0.793	0.744	-6	NA	± 20	AverageRF
Acenaphthylene	400	330	0.90	2.45	2.04	-17	NA	± 20	AverageRF
Acenaphthene	400	360	0.90	1.38	1.25	-9	NA	± 20	AverageRF
Fluorene	400	370	0.90	1.70	1.59	-6	NA	± 20	AverageRF
Phenanthrene	400	370	0.70	1.24	1.14	-8	NA	± 20	AverageRF
Anthracene	400	330	0.70	1.22	0.999	-18	NA	± 20	AverageRF
Fluoranthene	400	380	0.60	1.47	1.40	-5	NA	± 20	AverageRF
Pyrene	400	400	0.60	1.21	1.21	0	NA	± 20	AverageRF
Benz(a)anthracene	400	420	0.80	1.21	1.28	6	NA	± 20	AverageRF
Chrysene	400	410	0.70	1.13	1.16	3	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	420	0.70	1.26	1.32	4	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	400	0.70	1.24	1.25	1	NA	± 20	AverageRF
Benzo(a)pyrene	400	400	0.70	1.10	1.11	0	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	470	0.50	0.992	1.16	17	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	450	0.40	1.01	1.12	11	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	430	0.50	1.10	1.18	7	NA	± 20	AverageRF
Fluorene-d10	400	400	0.01	1.37	1.36	0	NA	± 20	AverageRF
Fluoranthene-d10	400	420	0.01	1.26	1.32	5	NA	± 20	AverageRF
Terphenyl-d14	400	390	0.01	0.843	0.822	-3	NA	± 20	AverageRF

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

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1802709
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0523F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1802709-1	5/23/2018	08:09		5/23/2018	08:29
0523F002.D	Continuing Calibration Verification	KWG1802709-2	5/23/2018	08:34		5/23/2018	08:53
0523F003.D	ZZZZZZ	ZZZZZZ	5/23/2018	09:08		5/23/2018	09:27
0523F004.D	ZZZZZZ	ZZZZZZ	5/23/2018	09:31		5/23/2018	09:50
0523F005.D	ZZZZZZ	ZZZZZZ	5/23/2018	09:55		5/23/2018	10:14
0523F006.D	ZZZZZZ	ZZZZZZ	5/23/2018	10:18		5/23/2018	10:37
0523F007.D	ZZZZZZ	ZZZZZZ	5/23/2018	10:42		5/23/2018	11:01
0523F008.D	ZZZZZZ	ZZZZZZ	5/23/2018	11:06		5/23/2018	11:25
0523F009.D	ZZZZZZ	ZZZZZZ	5/23/2018	11:29		5/23/2018	11:48
0523F010.D	ZZZZZZ	ZZZZZZ	5/23/2018	11:52		5/23/2018	12:11
0523F011.D	ZZZZZZ	ZZZZZZ	5/23/2018	12:16		5/23/2018	12:35
0523F012.D	ZZZZZZ	ZZZZZZ	5/23/2018	12:39		5/23/2018	12:58
0523F013.D	ZZZZZZ	ZZZZZZ	5/23/2018	13:03		5/23/2018	13:22
0523F014.D	ZZZZZZ	ZZZZZZ	5/23/2018	13:26		5/23/2018	13:45
0523F015.D	ZZZZZZ	ZZZZZZ	5/23/2018	13:50		5/23/2018	14:09
0523F016.D	ZZZZZZ	ZZZZZZ	5/23/2018	14:13		5/23/2018	14:32
0523F017.D	Method Blank	KWG1802604-4	5/23/2018	14:37		5/23/2018	14:56
0523F018.D	Lab Control Sample	KWG1802604-3	5/23/2018	15:01		5/23/2018	15:20
0523F019.D	ZZZZZZ	ZZZZZZ	5/23/2018	15:25		5/23/2018	15:44
0523F020.D	ZZZZZZ	ZZZZZZ	5/23/2018	15:49		5/23/2018	16:08
0523F021.D	ZZZZZZ	ZZZZZZ	5/23/2018	16:14		5/23/2018	16:33
0523F022.D	ZZZZZZ	ZZZZZZ	5/23/2018	16:39		5/23/2018	16:58
0523F023.D	ZZZZZZ	ZZZZZZ	5/23/2018	17:03		5/23/2018	17:22
0523F024.D	ZZZZZZ	ZZZZZZ	5/23/2018	17:27		5/23/2018	17:46
0523F025.D	ZZZZZZ	ZZZZZZ	5/23/2018	17:51		5/23/2018	18:10
0523F026.D	ZZZZZZ	ZZZZZZ	5/23/2018	18:14		5/23/2018	18:33
0523F027.D	PDI-SG-RB-VV-180520-1745	K1804798-017	5/23/2018	18:38		5/23/2018	18:57
0523F028.D	ZZZZZZ	ZZZZZZ	5/23/2018	19:01		5/23/2018	19:20

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: K1804798
Date Extracted: 05/22/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3511
Analysis Method: 8270D SIM

Extraction Lot: KWG1802604
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
PDI-SG-RB-VV-180520-1745	K1804798-017	05/20/18	05/21/18	430ml	2ml	NA	
Method Blank	KWG1802604-4	NA	NA	450ml	2ml	NA	
Lab Control Sample	KWG1802604-3	NA	NA	450ml	2ml	NA	

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

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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 12:35
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B395-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-001	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**250**	110	10	1	06/06/18 18:28	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	83	30 - 102	06/06/18 18:28	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 14:10
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B397-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-002	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**130**	120	11	1	06/06/18 18:57	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	79	30 - 102	06/06/18 18:57	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 10:10
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B412-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-003	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**40 J**	84	8.9	1	06/06/18 19:25	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	72	30 - 102	06/06/18 19:25	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/18/18 15:05
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B402-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-004	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**110 J**	110	9.8	1	06/06/18 19:53	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	70	30 - 102	06/06/18 19:53	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 16:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B416-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-005	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**30 J**	74	8.9	1	06/06/18 20:21	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	68	30 - 102	06/06/18 20:21	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 14:15
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B413-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-006	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**110 J**	130	12	1	06/06/18 20:49	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	77	30 - 102	06/06/18 20:49	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 13:25
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B411-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-007	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**110 J**	130	12	1	06/06/18 21:18	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	83	30 - 102	06/06/18 21:18	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 11:56
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B407-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-008	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**450**	120	11	1	06/06/18 21:46	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	78	30 - 102	06/06/18 21:46	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 11:05
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B406-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-009	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**130**	110	10	1	06/06/18 22:14	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	75	30 - 102	06/06/18 22:14	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18 10:07
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**88 J**	100	9.3	1	06/06/18 18:00	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	70	30 - 102	06/06/18 18:00	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 10:30
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B372-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-011	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**100 J**	110	9.6	1	06/06/18 22:42	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	70	30 - 102	06/06/18 22:42	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 11:45
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B373-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-012	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**70 J**	100	9.1	1	06/06/18 23:11	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	84	30 - 102	06/06/18 23:11	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 17:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B217-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-013	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**65 J**	110	11	1	06/06/18 23:39	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	72	30 - 102	06/06/18 23:39	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 16:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B215-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-014	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**48 J**	100	9.0	1	06/07/18 00:07	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	68	30 - 102	06/07/18 00:07	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 14:30
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B211-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-015	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**42 J**	93	8.9	1	06/07/18 00:36	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	67	30 - 102	06/07/18 00:36	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 11:00
Sample Matrix:	Sediment	**Date Received:**	05/21/18 13:10
Sample Name:	PDI-SG-B210-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-016	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**64 J**	74	8.9	1	06/07/18 01:04	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	80	30 - 102	06/07/18 01:04	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/20/18 17:45
Sample Matrix:	Water	**Date Received:**	05/21/18 16:24
Sample Name:	PDI-SG-RB-VV-180520-1745	**Units:**	ug/L
Lab Code:	K1804798-017	**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	**1.5**	0.95	0.13	1	05/30/18 07:31	5/22/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	118	48 - 109	05/30/18 07:31	*

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
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:	KQ1806730-03	**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	05/30/18 05:37	5/22/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	97	48 - 109	05/30/18 05:37	

Analytical Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1806869-04	**Basis:**	Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	49	8.9	1	06/06/18 16:07	5/29/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	93	30 - 102	06/06/18 16:07	

Client: AECOM **Service Request:** K1804798

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Sediment

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

Analysis Method: 8270D

Extraction Method: EPA 3541

Sample Name	Lab Code	p-Terphenyl-d14 30-102
PDI-SG-B395-BL1	K1804798-001	83
PDI-SG-B397-BL1	K1804798-002	79
PDI-SG-B412-BL1	K1804798-003	72
PDI-SG-B402-BL1	K1804798-004	70
PDI-SG-B416-BL1	K1804798-005	68
PDI-SG-B413-BL1	K1804798-006	77
PDI-SG-B411-BL1	K1804798-007	83
PDI-SG-B407-BL1	K1804798-008	78
PDI-SG-B406-BL1	K1804798-009	75
PDI-SG-B403-BL1	K1804798-010	70
PDI-SG-B372-BL1	K1804798-011	70
PDI-SG-B373-BL1	K1804798-012	84
PDI-SG-B217-BL1	K1804798-013	72
PDI-SG-B215-BL1	K1804798-014	68
PDI-SG-B211-BL1	K1804798-015	67
PDI-SG-B210-BL1	K1804798-016	80
Method Blank	KQ1806869-04	93
Lab Control Sample	KQ1806869-03	78
PDI-SG-B403-BL1	KQ1806869-01	60
PDI-SG-B403-BL1	KQ1806869-02	70

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: AECOM **Service Request:**K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**05/29/18 21:29

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

File ID: J:\MS29\DATA\052918\0529F015.D\ **Lab Code:**KQ1807125-02
Instrument ID: K-MS-29 **Analysis Lot:**592734
Analysis Method: 8270D **Signal ID:**1

		Chrysene-d12	
		Area	**RT**
	ICAL Result ==>	261,572	15.40
	Upper Limit ==>	523,144	15.90
	Lower Limit ==>	130,786	14.90
Associated Analyses			
Continuing Calibration Verification	KQ1807125-02	238991	15.41
Method Blank	KQ1806730-03	234372	15.41
Lab Control Sample	KQ1806730-01	241962	15.41
Duplicate Lab Control Sample	KQ1806730-02	248156	15.41
PDI-SG-RB-VV-180520-1745	K1804798-017	223080	15.41

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 06/06/18 15:39

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

File ID: J:\MS29\DATA\060518\0606F002.D\ **Lab Code:** KQ1807824-02
Instrument ID: K-MS-29 **Analysis Lot:** 593873
Analysis Method: 8270D **Signal ID:** 1

		Chrysene-d12	
		Area	**RT**
	ICAL Result ==>	261,572	15.40
	Upper Limit ==>	523,144	15.90
	Lower Limit ==>	130,786	14.90
Associated Analyses			
Continuing Calibration Verification	KQ1807824-02	178878	15.41
Method Blank	KQ1806869-04	166937	15.41
Lab Control Sample	KQ1806869-03	180998	15.41
PDI-SG-B403-BL1MS	KQ1806869-01	199612	15.41
PDI-SG-B403-BL1DMS	KQ1806869-02	198626	15.41
PDI-SG-B403-BL1	K1804798-010	190665	15.41
PDI-SG-B395-BL1	K1804798-001	191716	15.41
PDI-SG-B397-BL1	K1804798-002	196149	15.41
PDI-SG-B412-BL1	K1804798-003	188229	15.41
PDI-SG-B402-BL1	K1804798-004	196749	15.41
PDI-SG-B416-BL1	K1804798-005	191697	15.41
PDI-SG-B413-BL1	K1804798-006	191562	15.41
PDI-SG-B411-BL1	K1804798-007	197834	15.41
PDI-SG-B407-BL1	K1804798-008	198833	15.41
PDI-SG-B406-BL1	K1804798-009	198062	15.41
PDI-SG-B372-BL1	K1804798-011	200764	15.41
PDI-SG-B373-BL1	K1804798-012	208961	15.41
PDI-SG-B217-BL1	K1804798-013	201195	15.41
PDI-SG-B215-BL1	K1804798-014	205004	15.41
PDI-SG-B211-BL1	K1804798-015	206141	15.42
PDI-SG-B210-BL1	K1804798-016	200954	15.41

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	05/19/18
Sample Matrix:	Sediment	**Date Received:**	05/21/18
		Date Analyzed:	06/6/18
		Date Extracted:	05/29/18

Duplicate Matrix Spike Summary
Low Level Semivolatile Organic Compounds by GC/MS

Sample Name:	PDI-SG-B403-BL1	**Units:**	ug/Kg
Lab Code:	K1804798-010	**Basis:**	Dry
Analysis Method:	8270D		
Prep Method:	EPA 3541		

		Matrix Spike KQ1806869-01			Duplicate Matrix Spike KQ1806869-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bis(2-ethylhexyl) Phthalate	88 J	247	260	61	285	261	75	23-123	14	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:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/06/18
Sample Matrix:	Sediment	**Date Extracted:**	05/29/18

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

Analysis Method:	8270D	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	593873

Lab Control Sample
KQ1806869-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	204	250	82	39-113

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/30/18
Sample Matrix:	Water	**Date Extracted:**	05/22/18

Duplicate 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:	592734

	Lab Control Sample KQ1806730-01			Duplicate Lab Control Sample KQ1806730-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bis(2-ethylhexyl) Phthalate	5.16	5.00	103	4.98	5.00	100	42-147	3	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/30/18 05:37
Sample Matrix:	Water	**Date Extracted:**	05/22/18

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806730-03	**File ID:**	J:\MS29\DATA\052918\0529F032.D\
Analysis Method:	8270D	**Analysis Lot:**	592734
Prep Method:	EPA 3520C	**Extraction Lot:**	314392

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1806730-01	J:\MS29\DATA\052918\0529F033.D\	05/30/18 06:05
Duplicate Lab Control Sample	KQ1806730-02	J:\MS29\DATA\052918\0529F034.D\	05/30/18 06:34
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS29\DATA\052918\0529F036.D\	05/30/18 07:31

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/06/18 16:07
Sample Matrix:	Sediment	**Date Extracted:**	05/29/18

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806869-04	**File ID:**	J:\MS29\DATA\060518\0606F003.D\
Analysis Method:	8270D	**Analysis Lot:**	593873
Prep Method:	EPA 3541	**Extraction Lot:**	314549

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1806869-03	J:\MS29\DATA\060518\0606F004.D\	06/06/18 16:35
PDI-SG-B403-BL1MS	KQ1806869-01	J:\MS29\DATA\060518\0606F005.D\	06/06/18 17:04
PDI-SG-B403-BL1DMS	KQ1806869-02	J:\MS29\DATA\060518\0606F006.D\	06/06/18 17:32
PDI-SG-B403-BL1	K1804798-010	J:\MS29\DATA\060518\0606F007.D\	06/06/18 18:00
PDI-SG-B395-BL1	K1804798-001	J:\MS29\DATA\060518\0606F008.D\	06/06/18 18:28
PDI-SG-B397-BL1	K1804798-002	J:\MS29\DATA\060518\0606F009.D\	06/06/18 18:57
PDI-SG-B412-BL1	K1804798-003	J:\MS29\DATA\060518\0606F010.D\	06/06/18 19:25
PDI-SG-B402-BL1	K1804798-004	J:\MS29\DATA\060518\0606F011.D\	06/06/18 19:53
PDI-SG-B416-BL1	K1804798-005	J:\MS29\DATA\060518\0606F012.D\	06/06/18 20:21
PDI-SG-B413-BL1	K1804798-006	J:\MS29\DATA\060518\0606F013.D\	06/06/18 20:49
PDI-SG-B411-BL1	K1804798-007	J:\MS29\DATA\060518\0606F014.D\	06/06/18 21:18
PDI-SG-B407-BL1	K1804798-008	J:\MS29\DATA\060518\0606F015.D\	06/06/18 21:46
PDI-SG-B406-BL1	K1804798-009	J:\MS29\DATA\060518\0606F016.D\	06/06/18 22:14
PDI-SG-B372-BL1	K1804798-011	J:\MS29\DATA\060518\0606F017.D\	06/06/18 22:42
PDI-SG-B373-BL1	K1804798-012	J:\MS29\DATA\060518\0606F018.D\	06/06/18 23:11
PDI-SG-B217-BL1	K1804798-013	J:\MS29\DATA\060518\0606F019.D\	06/06/18 23:39
PDI-SG-B215-BL1	K1804798-014	J:\MS29\DATA\060518\0606F020.D\	06/07/18 00:07
PDI-SG-B211-BL1	K1804798-015	J:\MS29\DATA\060518\0606F021.D\	06/07/18 00:36
PDI-SG-B210-BL1	K1804798-016	J:\MS29\DATA\060518\0606F022.D\	06/07/18 01:04

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/30/18 06:05
Sample Matrix:	Water	**Date Extracted:**	05/22/18

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806730-01	**File ID:**	J:\MS29\DATA\052918\0529F033.D\
Analysis Method:	8270D	**Analysis Lot:**	592734
Prep Method:	EPA 3520C	**Extraction Lot:**	314392

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1806730-03	J:\MS29\DATA\052918\0529F032.D\	05/30/18 05:37
Duplicate Lab Control Sample	KQ1806730-02	J:\MS29\DATA\052918\0529F034.D\	05/30/18 06:34
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS29\DATA\052918\0529F036.D\	05/30/18 07:31

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/06/18 16:35
Sample Matrix:	Sediment	**Date Extracted:**	05/29/18

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1806869-03	**File ID:**	J:\MS29\DATA\060518\0606F004.D\
Analysis Method:	8270D	**Analysis Lot:**	593873
Prep Method:	EPA 3541	**Extraction Lot:**	314549

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1806869-04	J:\MS29\DATA\060518\0606F003.D\	06/06/18 16:07
PDI-SG-B403-BL1MS	KQ1806869-01	J:\MS29\DATA\060518\0606F005.D\	06/06/18 17:04
PDI-SG-B403-BL1DMS	KQ1806869-02	J:\MS29\DATA\060518\0606F006.D\	06/06/18 17:32
PDI-SG-B403-BL1	K1804798-010	J:\MS29\DATA\060518\0606F007.D\	06/06/18 18:00
PDI-SG-B395-BL1	K1804798-001	J:\MS29\DATA\060518\0606F008.D\	06/06/18 18:28
PDI-SG-B397-BL1	K1804798-002	J:\MS29\DATA\060518\0606F009.D\	06/06/18 18:57
PDI-SG-B412-BL1	K1804798-003	J:\MS29\DATA\060518\0606F010.D\	06/06/18 19:25
PDI-SG-B402-BL1	K1804798-004	J:\MS29\DATA\060518\0606F011.D\	06/06/18 19:53
PDI-SG-B416-BL1	K1804798-005	J:\MS29\DATA\060518\0606F012.D\	06/06/18 20:21
PDI-SG-B413-BL1	K1804798-006	J:\MS29\DATA\060518\0606F013.D\	06/06/18 20:49
PDI-SG-B411-BL1	K1804798-007	J:\MS29\DATA\060518\0606F014.D\	06/06/18 21:18
PDI-SG-B407-BL1	K1804798-008	J:\MS29\DATA\060518\0606F015.D\	06/06/18 21:46
PDI-SG-B406-BL1	K1804798-009	J:\MS29\DATA\060518\0606F016.D\	06/06/18 22:14
PDI-SG-B372-BL1	K1804798-011	J:\MS29\DATA\060518\0606F017.D\	06/06/18 22:42
PDI-SG-B373-BL1	K1804798-012	J:\MS29\DATA\060518\0606F018.D\	06/06/18 23:11
PDI-SG-B217-BL1	K1804798-013	J:\MS29\DATA\060518\0606F019.D\	06/06/18 23:39
PDI-SG-B215-BL1	K1804798-014	J:\MS29\DATA\060518\0606F020.D\	06/07/18 00:07
PDI-SG-B211-BL1	K1804798-015	J:\MS29\DATA\060518\0606F021.D\	06/07/18 00:36
PDI-SG-B210-BL1	K1804798-016	J:\MS29\DATA\060518\0606F022.D\	06/07/18 01:04

Client: AECOM **Service Request:**K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**05/29/18 21:00

Tune Summary
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\052918\0529F014.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-29 **Analysis Lot:** 592734

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	27.77	876672	Pass
68	69	0	2	1.62	17303	Pass
69	198	0	100	33.81	1067242	Pass
70	69	0	2	0.46	4906	Pass
127	198	10	80	45.17	1425749	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	83.84	3156650	Pass
199	198	5	9	6.64	209685	Pass
275	198	10	60	28.18	889600	Pass
365	442	1	50	2.33	87701	Pass
441	443	0.01	100	77.66	575360	Pass
442	442	30	100	100.00	3765077	Pass
443	442	15	24	19.68	740864	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1807125-02	J:\MS29\DATA\052918\0529F015.D\	05/29/18 21:29	
Method Blank	KQ1806730-03	J:\MS29\DATA\052918\0529F032.D\	05/30/18 05:37	
Lab Control Sample	KQ1806730-01	J:\MS29\DATA\052918\0529F033.D\	05/30/18 06:05	
Duplicate Lab Control Sample	KQ1806730-02	J:\MS29\DATA\052918\0529F034.D\	05/30/18 06:34	
PDI-SG-RB-VV-180520-1745	K1804798-017	J:\MS29\DATA\052918\0529F036.D\	05/30/18 07:31	

Client: AECOM **Service Request:**K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**06/06/18 15:10

Tune Summary
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\060518\0606F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-29 **Analysis Lot:** 593873

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	23.82	594308	Pass
68	69	0	2	1.63	12031	Pass
69	198	0	100	29.56	737666	Pass
70	69	0	2	0.48	3554	Pass
127	198	10	80	42.14	1051413	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	64.58	2495317	Pass
199	198	5	9	6.56	163749	Pass
275	198	10	60	30.63	764373	Pass
365	442	1	50	2.06	79584	Pass
441	443	0.01	100	78.63	585472	Pass
442	442	30	100	100.00	3863722	Pass
443	442	15	24	19.27	744576	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1807824-02	J:\MS29\DATA\060518\0606F002.D\	06/06/18 15:39	
Method Blank	KQ1806869-04	J:\MS29\DATA\060518\0606F003.D\	06/06/18 16:07	
Lab Control Sample	KQ1806869-03	J:\MS29\DATA\060518\0606F004.D\	06/06/18 16:35	
PDI-SG-B403-BL1	KQ1806869-01	J:\MS29\DATA\060518\0606F005.D\	06/06/18 17:04	
PDI-SG-B403-BL1	KQ1806869-02	J:\MS29\DATA\060518\0606F006.D\	06/06/18 17:32	
PDI-SG-B403-BL1	K1804798-010	J:\MS29\DATA\060518\0606F007.D\	06/06/18 18:00	
PDI-SG-B395-BL1	K1804798-001	J:\MS29\DATA\060518\0606F008.D\	06/06/18 18:28	
PDI-SG-B397-BL1	K1804798-002	J:\MS29\DATA\060518\0606F009.D\	06/06/18 18:57	
PDI-SG-B412-BL1	K1804798-003	J:\MS29\DATA\060518\0606F010.D\	06/06/18 19:25	
PDI-SG-B402-BL1	K1804798-004	J:\MS29\DATA\060518\0606F011.D\	06/06/18 19:53	
PDI-SG-B416-BL1	K1804798-005	J:\MS29\DATA\060518\0606F012.D\	06/06/18 20:21	
PDI-SG-B413-BL1	K1804798-006	J:\MS29\DATA\060518\0606F013.D\	06/06/18 20:49	
PDI-SG-B411-BL1	K1804798-007	J:\MS29\DATA\060518\0606F014.D\	06/06/18 21:18	
PDI-SG-B407-BL1	K1804798-008	J:\MS29\DATA\060518\0606F015.D\	06/06/18 21:46	
PDI-SG-B406-BL1	K1804798-009	J:\MS29\DATA\060518\0606F016.D\	06/06/18 22:14	
PDI-SG-B372-BL1	K1804798-011	J:\MS29\DATA\060518\0606F017.D\	06/06/18 22:42	
PDI-SG-B373-BL1	K1804798-012	J:\MS29\DATA\060518\0606F018.D\	06/06/18 23:11	
PDI-SG-B217-BL1	K1804798-013	J:\MS29\DATA\060518\0606F019.D\	06/06/18 23:39	
PDI-SG-B215-BL1	K1804798-014	J:\MS29\DATA\060518\0606F020.D\	06/07/18 00:07	

PDI-SG-B211-BL1	K1804798-015	J:\MS29\DATA\060518\0606F021.D\	06/07/18 00:36
PDI-SG-B210-BL1	K1804798-016	J:\MS29\DATA\060518\0606F022.D\	06/07/18 01:04

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800235 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800235-01	SVO_LL ICAL @ 0.05ppm | SVM57-73A	J:\MS29\DATA\052918A\0529A003.D	05/29/2018 15:45
02	KC1800235-02	SVO_LL ICAL @ 0.10ppm | SVM57-73B	J:\MS29\DATA\052918A\0529A004.D	05/29/2018 16:14
03	KC1800235-03	SVO_LL ICAL @ 0.20ppm | SVM57-73C	J:\MS29\DATA\052918A\0529A005.D	05/29/2018 16:42
04	KC1800235-04	SVO_LL ICAL @ 0.50ppm | SVM57-73D	J:\MS29\DATA\052918A\0529A006.D	05/29/2018 17:11
05	KC1800235-05	SVO_LL ICAL @ 1.0ppm | SVM57-73E	J:\MS29\DATA\052918A\0529A007.D	05/29/2018 17:40
06	KC1800235-06	SVO_LL ICAL @ 2.0ppm | SVM57-73F	J:\MS29\DATA\052918A\0529A008.D	05/29/2018 18:08
07	KC1800235-07	SVO_LL ICAL @ 3.0ppm | SVM57-73G	J:\MS29\DATA\052918A\0529A009.D	05/29/2018 18:37
08	KC1800235-08	SVO_LL ICAL @ 5.0ppm | SVM57-73H	J:\MS29\DATA\052918A\0529A010.D	05/29/2018 19:05
09	KC1800235-09	SVO_LL ICAL @ 7.0ppm | SVM57-73I	J:\MS29\DATA\052918A\0529A011.D	05/29/2018 19:34
10	KC1800235-10	SVO_LL ICAL @ 10ppm | SVM57-73J	J:\MS29\DATA\052918A\0529A012.D	05/29/2018 20:03

Analyte

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.6315	02	100.000	0.6174	03	200.000	0.6534	04	500.000	0.7102
05	1000.000	0.7399	06	2000.000	0.8322	07	3000.000	0.8351	08	5000.000	0.8504
09	7000.000	0.8483	10	10000.000	0.8536						

p-Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9757	02	100.000	0.9361	03	200.000	0.9256	04	500.000	0.8922
05	1000.000	0.9197	06	2000.000	0.9417	07	3000.000	0.9336	08	5000.000	0.9404
09	7000.000	0.8918	10	10000.000	0.922						

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800235 **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	13.0	≤20	0.7572	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	2.6	≤20	0.9279	0.010

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800222 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800222-01	SVO_LL ICAL @ 0.05ppm | SVM57-73A	J:\MS29\DATA\052918\0529F003.D	05/29/2018 15:45
02	KC1800222-02	SVO_LL ICAL @ 0.10ppm | SVM57-73B	J:\MS29\DATA\052918\0529F004.D	05/29/2018 16:14
03	KC1800222-03	SVO_LL ICAL @ 0.20ppm | SVM57-73C	J:\MS29\DATA\052918\0529F005.D	05/29/2018 16:42
04	KC1800222-04	SVO_LL ICAL @ 0.50ppm | SVM57-73D	J:\MS29\DATA\052918\0529F006.D	05/29/2018 17:11
05	KC1800222-05	SVO_LL ICAL @ 1.0ppm | SVM57-73E	J:\MS29\DATA\052918\0529F007.D	05/29/2018 17:40
06	KC1800222-06	SVO_LL ICAL @ 2.0ppm | SVM57-73F	J:\MS29\DATA\052918\0529F008.D	05/29/2018 18:08
07	KC1800222-07	SVO_LL ICAL @ 3.0ppm | SVM57-73G	J:\MS29\DATA\052918\0529F009.D	05/29/2018 18:37
08	KC1800222-08	SVO_LL ICAL @ 5.0ppm | SVM57-73H	J:\MS29\DATA\052918\0529F010.D	05/29/2018 19:05
09	KC1800222-09	SVO_LL ICAL @ 7.0ppm | SVM57-73I	J:\MS29\DATA\052918\0529F011.D	05/29/2018 19:34
10	KC1800222-10	SVO_LL ICAL @ 10ppm | SVM57-73J	J:\MS29\DATA\052918\0529F012.D	05/29/2018 20:03

Analyte

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
03	200.000	0.6534	04	500.000	0.7102	05	1000.000	0.7399	06	2000.000	0.8322
07	3000.000	0.8351	08	5000.000	0.8504	09	7000.000	0.8483	10	10000.000	0.8536

p-Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	50.000	0.9757	02	100.000	0.9361	03	200.000	0.9256	04	500.000	0.8922
05	1000.000	0.9197	06	2000.000	0.9417	07	3000.000	0.9336	08	5000.000	0.9404
09	7000.000	0.8918	10	10000.000	0.922						

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800222 **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	9.8	≤20	0.7904	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	2.6	≤20	0.9279	0.010

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800235 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800235-11	SVO_LL ICV @ 3.0ppm | SVM58-18A	J:\MS29\DATA\052918A\0529A013.D	05/29/2018 20:31

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3370	7.572E-1	8.511E-1	12.40	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
p-Terphenyl-d14	3000	2960	9.279E-1	9.161E-1	-1.272	±30	Average RF

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 5/29/2018

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

Calibration ID: KC1800222 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800222-11	SVO_LL ICV @ 3.0ppm | SVM58-18A	J:\MS29\DATA\052918\0529F013.D	05/29/2018 20:31

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3230	7.904E-1	8.511E-1	7.68	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
p-Terphenyl-d14	3000	2960	9.279E-1	9.161E-1	-1.272	±30	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	05/29/18 21:29

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

Analysis Method:	8270D	**Calibration Date:**	5/29/2018
File ID:	J:\MS29\DATA\052918\0529F015.D\	**Calibration ID:**	KC1800222
Signal ID:	1	**Analysis Lot:**	592734
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3190	0.7904	0.8409	6.4	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
p-Terphenyl-d14	3000	3070	0.9279	0.9499	2.4	NA	±20	Average RF

Client:	AECOM	**Service Request:**	K1804798
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	06/06/18 15:39

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

Analysis Method:	8270D	**Calibration Date:**	5/29/2018
File ID:	J:\MS29\DATA\060518\0606F002.D\	**Calibration ID:**	KC1800235
Signal ID:	1	**Analysis Lot:**	593873
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	3530	0.7572	0.8915	17.7	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
p-Terphenyl-d14	3000	3230	0.9279	0.9983	7.6	NA	±20	Average RF

Client: AECOM **Service Request:**K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

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

Analysis Method: **Analysis Lot:**592734
Instrument ID:K-MS-29

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS29\DATA\052918\0529F014.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	21:00:00	
J:\MS29\DATA\052918\0529F015.D\	Continuing Calibration Verification	KQ1807125-02	5/29/2018	21:29:00	
J:\MS29\DATA\052918\0529F016.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	21:58:00	
J:\MS29\DATA\052918\0529F017.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	22:26:00	
J:\MS29\DATA\052918\0529F018.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	22:55:00	
J:\MS29\DATA\052918\0529F019.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	23:24:00	
J:\MS29\DATA\052918\0529F020.D\	ZZZZZZZ	ZZZZZZZ	5/29/2018	23:53:00	
J:\MS29\DATA\052918\0529F021.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	00:21:00	
J:\MS29\DATA\052918\0529F022.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	00:50:00	
J:\MS29\DATA\052918\0529F023.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	01:19:00	
J:\MS29\DATA\052918\0529F024.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	01:47:00	
J:\MS29\DATA\052918\0529F025.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	02:16:00	
J:\MS29\DATA\052918\0529F026.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	02:45:00	
J:\MS29\DATA\052918\0529F027.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	03:13:00	
J:\MS29\DATA\052918\0529F028.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	03:42:00	
J:\MS29\DATA\052918\0529F029.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	04:11:00	
J:\MS29\DATA\052918\0529F030.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	04:39:00	
J:\MS29\DATA\052918\0529F031.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	05:08:00	
J:\MS29\DATA\052918\0529F032.D\	Method Blank	KQ1806730-03	5/30/2018	05:37:00	
J:\MS29\DATA\052918\0529F033.D\	Lab Control Sample	KQ1806730-01	5/30/2018	06:05:00	
J:\MS29\DATA\052918\0529F034.D\	Duplicate Lab Control Sample	KQ1806730-02	5/30/2018	06:34:00	
J:\MS29\DATA\052918\0529F035.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	07:02:00	
J:\MS29\DATA\052918\0529F036.D\	PDI-SG-RB-VV-180520-1745	K1804798-017	5/30/2018	07:31:00	
J:\MS29\DATA\052918\0529F037.D\	ZZZZZZZ	ZZZZZZZ	5/30/2018	08:00:00	

Client: AECOM **Service Request:**K1804798

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

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

Analysis Method:

Analysis Lot:593873

Instrument ID:K-MS-29

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS29\DATA\060518\0606F001.D\	ZZZZZZZ	ZZZZZZZ	6/6/2018	15:10:00	
J:\MS29\DATA\060518\0606F002.D\	Continuing Calibration Verification	KQ1807824-02	6/6/2018	15:39:00	
J:\MS29\DATA\060518\0606F003.D\	Method Blank	KQ1806869-04	6/6/2018	16:07:00	
J:\MS29\DATA\060518\0606F004.D\	Lab Control Sample	KQ1806869-03	6/6/2018	16:35:00	
J:\MS29\DATA\060518\0606F005.D\	PDI-SG-B403-BL1 MS	KQ1806869-01	6/6/2018	17:04:00	
J:\MS29\DATA\060518\0606F006.D\	PDI-SG-B403-BL1 DMS	KQ1806869-02	6/6/2018	17:32:00	
J:\MS29\DATA\060518\0606F007.D\	PDI-SG-B403-BL1	K1804798-010	6/6/2018	18:00:00	
J:\MS29\DATA\060518\0606F008.D\	PDI-SG-B395-BL1	K1804798-001	6/6/2018	18:28:00	
J:\MS29\DATA\060518\0606F009.D\	PDI-SG-B397-BL1	K1804798-002	6/6/2018	18:57:00	
J:\MS29\DATA\060518\0606F010.D\	PDI-SG-B412-BL1	K1804798-003	6/6/2018	19:25:00	
J:\MS29\DATA\060518\0606F011.D\	PDI-SG-B402-BL1	K1804798-004	6/6/2018	19:53:00	
J:\MS29\DATA\060518\0606F012.D\	PDI-SG-B416-BL1	K1804798-005	6/6/2018	20:21:00	
J:\MS29\DATA\060518\0606F013.D\	PDI-SG-B413-BL1	K1804798-006	6/6/2018	20:49:00	
J:\MS29\DATA\060518\0606F014.D\	PDI-SG-B411-BL1	K1804798-007	6/6/2018	21:18:00	
J:\MS29\DATA\060518\0606F015.D\	PDI-SG-B407-BL1	K1804798-008	6/6/2018	21:46:00	
J:\MS29\DATA\060518\0606F016.D\	PDI-SG-B406-BL1	K1804798-009	6/6/2018	22:14:00	
J:\MS29\DATA\060518\0606F017.D\	PDI-SG-B372-BL1	K1804798-011	6/6/2018	22:42:00	
J:\MS29\DATA\060518\0606F018.D\	PDI-SG-B373-BL1	K1804798-012	6/6/2018	23:11:00	
J:\MS29\DATA\060518\0606F019.D\	PDI-SG-B217-BL1	K1804798-013	6/6/2018	23:39:00	
J:\MS29\DATA\060518\0606F020.D\	PDI-SG-B215-BL1	K1804798-014	6/7/2018	00:07:00	
J:\MS29\DATA\060518\0606F021.D\	PDI-SG-B211-BL1	K1804798-015	6/7/2018	00:36:00	
J:\MS29\DATA\060518\0606F022.D\	PDI-SG-B210-BL1	K1804798-016	6/7/2018	01:04:00	

Prep Summary Report

Client: AECOM **Service Request:** K1804798
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Low Level Semivolatile Organic Compounds by GC/MS

Prep Method: EPA 3541 **Extraction Lot:** 314549
Analytical Method: 8270D **Extraction Date:** 05/29/18 14:26

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-SG-B395-BL1	K1804798-001	5/18/18	5/21/18	40.044 g	2 mL	44.5
PDI-SG-B397-BL1	K1804798-002	5/18/18	5/21/18	40.054 g	2 mL	42.6
PDI-SG-B412-BL1	K1804798-003	5/18/18	5/21/18	40.050 g	2 mL	59.4
PDI-SG-B402-BL1	K1804798-004	5/18/18	5/21/18	40.224 g	2 mL	45.6
PDI-SG-B416-BL1	K1804798-005	5/19/18	5/21/18	40.071 g	2 mL	67.3
PDI-SG-B413-BL1	K1804798-006	5/19/18	5/21/18	40.220 g	2 mL	37.5
PDI-SG-B411-BL1	K1804798-007	5/19/18	5/21/18	40.016 g	2 mL	39.3
PDI-SG-B407-BL1	K1804798-008	5/19/18	5/21/18	40.202 g	2 mL	40.5
PDI-SG-B406-BL1	K1804798-009	5/19/18	5/21/18	40.227 g	2 mL	44.5
PDI-SG-B403-BL1	K1804798-010	5/19/18	5/21/18	40.038 g	2 mL	47.9
PDI-SG-B372-BL1	K1804798-011	5/20/18	5/21/18	40.253 g	2 mL	46.1
PDI-SG-B373-BL1	K1804798-012	5/20/18	5/21/18	40.105 g	2 mL	49.0
PDI-SG-B217-BL1	K1804798-013	5/20/18	5/21/18	40.406 g	2 mL	43.8
PDI-SG-B215-BL1	K1804798-014	5/20/18	5/21/18	40.186 g	2 mL	49.7
PDI-SG-B211-BL1	K1804798-015	5/20/18	5/21/18	40.102 g	2 mL	53.7
PDI-SG-B210-BL1	K1804798-016	5/20/18	5/21/18	40.240 g	2 mL	67.1
Matrix Spike	KQ1806869-01MS	5/19/18	5/21/18	40.078 g	2 mL	47.9
Duplicate Matrix Spike	KQ1806869-02DMS	5/19/18	5/21/18	40.029 g	2 mL	47.9
Lab Control Sample	KQ1806869-03LCS	NA	NA	20.00 g	2 mL	
Method Blank	KQ1806869-04MB	NA	NA	40.4060 g	2 mL	

Prep Summary Report

Client: AECOM **Service Request:** K1804798
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:** 314392
Analytical Method: 8270D **Extraction Date:** 05/22/18 12:35

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-SG-RB-VV-180520-1745	K1804798-017	5/20/18	5/21/18	1050.0000	2 mL	
Lab Control Sample	KQ1806730-01LCS	NA	NA	1000 mL	2 mL	
Duplicate Lab Control Sample	KQ1806730-02DLCS	NA	NA	1000 mL	2 mL	
Method Blank	KQ1806730-03MB	NA	NA	1050.0000	2 mL	