ALS Environmental
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www.alsglobal.com

February 15, 2019 **Analytical Report for Service Request No:** K1900892

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 January 31, 2019
For your reference, these analyses have been assigned our service request number **K1900892.**

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

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Table of Contents

Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

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

Case Narrative

ALS Environmental—Kelso Laboratory
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Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation
Sample Matrix: Sediment, Water

Service Request: K1900892
Date Received: 01/31/2019

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:

Five sediment, water samples were received for analysis at ALS Environmental on 01/31/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

Method 8270D, Low Level Semivolatile Organic Compounds by GC/MS 02/08/2019: The detection limits were elevated for all sediment samples due to less than optimal sample mass received for analysis. The samples contained low percent solids which prevented extraction of the sample mass necessary to achieve target detection limits.

Method 8270D, Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level 02/06/2019: The detection limits were elevated for all sediment samples due to less than optimal sample mass extracted for analysis. The samples contained low percent solids which prevented extraction of the sample mass necessary to achieve target detection limits.

Method 8270D, Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level 02/06/2019: The results reported for Benzo (a)pyrene in samples PDI-ST-T06A-1901 and PDI-ST-T07B-1901 may contain a slight bias. The chromatogram indicated the presence of non-target background components. The matrix interference may have resulted in a slight high bias in the affected samples. The results were flagged with "X" to indicate the issue.

Method 8270D, Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level 02/06/2019: The recovery of many analytes in the replicate matrix spike analyses for sample PDI-ST-T07B-1901 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method 8270D, Polycyclic Aromatic Hydrocarbons by GC/MS SIM 02/04/2019: The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS14\0204F002.D: Fluoranthene-d10. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method 8270D, Polycyclic Aromatic Hydrocarbons by GC/MS SIM 02/05/2019: Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) with the sample batch containing the sample PDI-RB-ST-190129. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for this sample.

Method 8270D, Polycyclic Aromatic Hydrocarbons by GC/MS SIM 02/05/2019: The detection limits were elevated for all sediment samples due to less than optimal sample mass received for analysis. The samples contained low percent solids which prevented extraction of the sample mass necessary to achieve target detection limits.

Method ALS SOP, Organochlorine Pesticides by GC/MS/MS 02/07/2019: The internal standard recovery of Pyrene-d10 in samples PDI-ST-T06B-1901, PDI-ST-T06A-1901, PDI-ST-T07A-1901, and PDI-ST-T07B-1901 was outside control criteria

Approved by  Date 02/15/2019

because of suspected matrix interference. Surrogates for each of the samples affected by the internal standard were all within acceptance criteria indicating the analysis was in control. No further corrective action was performed.

Method ALS SOP, Organochlorine Pesticides by GC/MS/MS 02/07/2019: The Method Blank KQ1901380-03 associated with sample PDI-RB-ST-190129 contained low levels of the DDX analytes above the Method Reporting Limit (MRL). In accordance with ALS QA/QC policy, all sample results less than twenty times the level found in the Method Blank were flagged as estimated. The field sample analyzed in this sequence did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required

Semivoa GC:

No significant anomalies were noted with this analysis.

SMO:

No significant anomalies were noted with this analysis.

Approved by  Date 02/15/2019

Chain of Custody

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K1900872

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SURFACE SEDIMENT
CHAIN OF CUSTODY

Client Contact	Project Contact: Amy Dahl / Chelsey Cook	Site Contact: Jennifer Ray	Date: 1/31/19	COC No:
AECOM	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Howard-Holmes	Carrier: courier	1 of 1 pages
1111 3rd Ave Suite 1600	Analysis Turnaround Time			
Seattle, WA 98101	Calendar (C) or Work Days (W) c			
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: Study				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Pesticides, PAHs, Total Solids, BEHP, Tributyltin 1669M, 8270-SIM, 160.3, 8270-LL, Kron/Unger	WQ - Pesticides 1669M	WQ - PAHs 8270-SIM	WQ - BEHP EPA 8270D-LL	WQ - Tributyltin Krone/Unger	Sample Specific Notes:
PDI-ST-T06B-1901	1/30/2019	18:25	Sed		MT	1		X					
PDI-ST-T06A-1901	1/30/2019	18:45	Sed		↓	1		X					
PDI-ST-T07A-1901	1/30/2019	17:45	Sed		↓	1		X					
PDI-ST-T07B-~~1810~~ 1901	1/30/2019	17:15	Sed	MS/MSD	↓	3		X					
PDI-RB-ST-190129	1/29/2019	18:45	GW		MT	8			X	X	X	X	

HBH 1/31/19 per AECOM

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:
[signature]	AECOM	1/31/19 / 1030	[signature]	ALS	1/31/19 1030
[signature]	ALS	1/31/19 1200	[signature]	ALS Kelso	1/31/19 1200

PC HH

Cooler Receipt and Preservation Form

Client Aecom Service Request K19 00 892

Received: 1/31/19 Opened: 1/31/19 By: CG Unloaded: 1/31/19 By: CG

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 1 Back
   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	Tracking Number
0.8	0.6	3.8	3.6	-0.2	376	1 / NA CG 1/31	NA File

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

RUSH

Total Solids

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Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
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-ST-T06B-1901	K1900892-001	**25.0**	-	-	1	01/31/19 17:00	
PDI-ST-T06A-1901	K1900892-002	**25.6**	-	-	1	01/31/19 17:00	
PDI-ST-T07A-1901	K1900892-003	**24.6**	-	-	1	01/31/19 17:00	
PDI-ST-T07B-1901	K1900892-004	**26.3**	-	-	1	01/31/19 17:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
		Date Analyzed:	01/31/19

Replicate Sample Summary
Inorganic Parameters

Sample Name:	PDI-ST-T07B-1901	**Units:**	Percent
Lab Code:	K1900892-004	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1900892-004DUP Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	26.3	26.2	26.3	<1	20

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.

Organochlorine Pesticides

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Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:25
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-001	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.39	0.25	1	02/07/19 17:13	2/1/19	
2,4'-DDE	ND U	0.39	0.32	1	02/07/19 17:13	2/1/19	
2,4'-DDT	ND U	0.39	0.38	1	02/07/19 17:13	2/1/19	
4,4'-DDD	**0.74**	0.39	0.14	1	02/07/19 17:13	2/1/19	
4,4'-DDE	**1.4**	0.39	0.28	1	02/07/19 17:13	2/1/19	
4,4'-DDT	**2.3**	0.39	0.19	1	02/07/19 17:13	2/1/19	
Aldrin	ND U	0.39	0.32	1	02/07/19 17:13	2/1/19	
alpha-Chlordane	ND U	0.79	0.25	1	02/07/19 17:13	2/1/19	
cis-Nonachlor	ND U	0.39	0.39	1	02/07/19 17:13	2/1/19	
Dieldrin	ND U	0.79	0.31	1	02/07/19 17:13	2/1/19	
gamma-BHC (Lindane)	ND U	0.39	0.13	1	02/07/19 17:13	2/1/19	
gamma-Chlordane	ND U	0.79	0.26	1	02/07/19 17:13	2/1/19	
Heptachlor	ND U	0.39	0.16	1	02/07/19 17:13	2/1/19	
Oxychlordane	ND U	0.79	0.52	1	02/07/19 17:13	2/1/19	
trans-Nonachlor	ND U	0.79	0.23	1	02/07/19 17:13	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	97	5 - 120	02/07/19 17:13	
S_4,4'-DDT-d4	85	13 - 200	02/07/19 17:13	
S_Aldrin-13C12	52	10 - 143	02/07/19 17:13	
S_Endrin-13C12	92	20 - 157	02/07/19 17:13	
S_GBHCD6	55	5 - 124	02/07/19 17:13	
S_Heptachlor-13C10	68	10 - 177	02/07/19 17:13	
S_Heptachlrepox13C10	52	8 - 146	02/07/19 17:13	
S_Oxychlordane-13C10	49	5 - 144	02/07/19 17:13	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-002	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.38	0.25	1	02/07/19 17:31	2/1/19	
2,4'-DDE	ND U	0.38	0.31	1	02/07/19 17:31	2/1/19	
2,4'-DDT	ND U	0.38	0.36	1	02/07/19 17:31	2/1/19	
4,4'-DDD	**0.79**	0.38	0.14	1	02/07/19 17:31	2/1/19	
4,4'-DDE	**1.5**	0.38	0.27	1	02/07/19 17:31	2/1/19	
4,4'-DDT	**1.1**	0.38	0.18	1	02/07/19 17:31	2/1/19	
Aldrin	ND U	0.38	0.31	1	02/07/19 17:31	2/1/19	
alpha-Chlordane	ND U	0.76	0.24	1	02/07/19 17:31	2/1/19	
cis-Nonachlor	ND U	0.38	0.38	1	02/07/19 17:31	2/1/19	
Dieldrin	ND U	0.76	0.30	1	02/07/19 17:31	2/1/19	
gamma-BHC (Lindane)	ND U	0.38	0.12	1	02/07/19 17:31	2/1/19	
gamma-Chlordane	ND U	0.76	0.25	1	02/07/19 17:31	2/1/19	
Heptachlor	ND U	0.38	0.15	1	02/07/19 17:31	2/1/19	
Oxychlordane	ND U	0.76	0.50	1	02/07/19 17:31	2/1/19	
trans-Nonachlor	ND U	0.76	0.23	1	02/07/19 17:31	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	43	5 - 120	02/07/19 17:31	
S_4,4'-DDT-d4	46	13 - 200	02/07/19 17:31	
S_Aldrin-13C12	23	10 - 143	02/07/19 17:31	
S_Endrin-13C12	43	20 - 157	02/07/19 17:31	
S_GBHCD6	26	5 - 124	02/07/19 17:31	
S_Heptachlor-13C10	33	10 - 177	02/07/19 17:31	
S_Heptachlrepox13C10	23	8 - 146	02/07/19 17:31	
S_Oxychlordane-13C10	23	5 - 144	02/07/19 17:31	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-003	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.40	0.26	1	02/07/19 17:49	2/1/19	
2,4'-DDE	ND U	0.40	0.32	1	02/07/19 17:49	2/1/19	
2,4'-DDT	ND U	0.40	0.38	1	02/07/19 17:49	2/1/19	
4,4'-DDD	**2.5**	0.40	0.15	1	02/07/19 17:49	2/1/19	
4,4'-DDE	**1.6**	0.40	0.29	1	02/07/19 17:49	2/1/19	
4,4'-DDT	**0.80**	0.40	0.19	1	02/07/19 17:49	2/1/19	
Aldrin	ND U	0.40	0.32	1	02/07/19 17:49	2/1/19	
alpha-Chlordane	ND U	0.81	0.26	1	02/07/19 17:49	2/1/19	
cis-Nonachlor	ND U	0.40	0.40	1	02/07/19 17:49	2/1/19	
Dieldrin	**0.37 J**	0.81	0.32	1	02/07/19 17:49	2/1/19	
gamma-BHC (Lindane)	ND U	0.40	0.13	1	02/07/19 17:49	2/1/19	
gamma-Chlordane	ND U	0.81	0.26	1	02/07/19 17:49	2/1/19	
Heptachlor	ND U	0.40	0.16	1	02/07/19 17:49	2/1/19	
Oxychlordane	ND U	0.81	0.53	1	02/07/19 17:49	2/1/19	
trans-Nonachlor	ND U	0.81	0.24	1	02/07/19 17:49	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	88	5 - 120	02/07/19 17:49	
S_4,4'-DDT-d4	79	13 - 200	02/07/19 17:49	
S_Aldrin-13C12	47	10 - 143	02/07/19 17:49	
S_Endrin-13C12	83	20 - 157	02/07/19 17:49	
S_GBHCD6	47	5 - 124	02/07/19 17:49	
S_Heptachlor-13C10	59	10 - 177	02/07/19 17:49	
S_Heptachlrepox13C10	42	8 - 146	02/07/19 17:49	
S_Oxychlordane-13C10	41	5 - 144	02/07/19 17:49	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:15
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.38	0.24	1	02/07/19 18:06	2/1/19	
2,4'-DDE	ND U	0.38	0.30	1	02/07/19 18:06	2/1/19	
2,4'-DDT	ND U	0.38	0.36	1	02/07/19 18:06	2/1/19	
4,4'-DDD	**0.59**	0.38	0.14	1	02/07/19 18:06	2/1/19	
4,4'-DDE	**1.4**	0.38	0.27	1	02/07/19 18:06	2/1/19	
4,4'-DDT	**0.83**	0.38	0.18	1	02/07/19 18:06	2/1/19	
Aldrin	ND U	0.38	0.30	1	02/07/19 18:06	2/1/19	
alpha-Chlordane	ND U	0.75	0.24	1	02/07/19 18:06	2/1/19	
cis-Nonachlor	ND U	0.38	0.37	1	02/07/19 18:06	2/1/19	
Dieldrin	ND U	0.75	0.30	1	02/07/19 18:06	2/1/19	
gamma-BHC (Lindane)	ND U	0.38	0.12	1	02/07/19 18:06	2/1/19	
gamma-Chlordane	ND U	0.75	0.25	1	02/07/19 18:06	2/1/19	
Heptachlor	ND U	0.38	0.15	1	02/07/19 18:06	2/1/19	
Oxychlordane	ND U	0.75	0.49	1	02/07/19 18:06	2/1/19	
trans-Nonachlor	**0.22 J**	0.75	0.22	1	02/07/19 18:06	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	92	5 - 120	02/07/19 18:06	
S_4,4'-DDT-d4	77	13 - 200	02/07/19 18:06	
S_Aldrin-13C12	49	10 - 143	02/07/19 18:06	
S_Endrin-13C12	85	20 - 157	02/07/19 18:06	
S_GBHCD6	46	5 - 124	02/07/19 18:06	
S_Heptachlor-13C10	60	10 - 177	02/07/19 18:06	
S_Heptachlrepox13C10	46	8 - 146	02/07/19 18:06	
S_Oxychlordane-13C10	44	5 - 144	02/07/19 18:06	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/29/19 18:45
Sample Matrix:	Water	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-RB-ST-190129	**Units:**	ng/L
Lab Code:	K1900892-005	**Basis:**	NA

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.50	0.11	1	02/07/19 15:45	2/1/19	
2,4'-DDE	ND U	0.50	0.11	1	02/07/19 15:45	2/1/19	
2,4'-DDT	ND U	0.50	0.087	1	02/07/19 15:45	2/1/19	
4,4'-DDD	ND U	0.50	0.10	1	02/07/19 15:45	2/1/19	
4,4'-DDE	ND U	0.50	0.075	1	02/07/19 15:45	2/1/19	
4,4'-DDT	ND U	0.50	0.088	1	02/07/19 15:45	2/1/19	
Aldrin	ND U	1.0	0.46	1	02/07/19 15:45	2/1/19	
alpha-Chlordane	ND U	0.50	0.13	1	02/07/19 15:45	2/1/19	
cis-Nonachlor	ND U	0.50	0.17	1	02/07/19 15:45	2/1/19	
Dieldrin	ND U	5.0	0.74	1	02/07/19 15:45	2/1/19	
gamma-BHC (Lindane)	ND U	0.50	0.30	1	02/07/19 15:45	2/1/19	
gamma-Chlordane	ND U	0.50	0.17	1	02/07/19 15:45	2/1/19	
Heptachlor	ND U	0.99	0.12	1	02/07/19 15:45	2/1/19	
Oxychlordane	ND U	5.0	2.0	1	02/07/19 15:45	2/1/19	
trans-Nonachlor	ND U	0.50	0.12	1	02/07/19 15:45	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	56	5 - 120	02/07/19 15:45	
S_4,4'-DDT-d4	57	13 - 200	02/07/19 15:45	
S_Aldrin-13C12	40	5 - 126	02/07/19 15:45	
S_Endrin-13C12	58	20 - 157	02/07/19 15:45	
S_GBHCD6	41	5 - 124	02/07/19 15:45	
S_Heptachlor-13C10	44	5 - 128	02/07/19 15:45	
S_Heptachlrepox13C10	41	8 - 146	02/07/19 15:45	
S_Oxychlordane-13C10	41	5 - 144	02/07/19 15:45	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901377-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.098	0.063	1	02/07/19 16:03	2/1/19	
2,4'-DDE	ND U	0.098	0.079	1	02/07/19 16:03	2/1/19	
2,4'-DDT	ND U	0.098	0.094	1	02/07/19 16:03	2/1/19	
4,4'-DDD	ND U	0.098	0.035	1	02/07/19 16:03	2/1/19	
4,4'-DDE	ND U	0.098	0.070	1	02/07/19 16:03	2/1/19	
4,4'-DDT	ND U	0.098	0.047	1	02/07/19 16:03	2/1/19	
Aldrin	ND U	0.098	0.079	1	02/07/19 16:03	2/1/19	
alpha-Chlordane	ND U	0.20	0.062	1	02/07/19 16:03	2/1/19	
cis-Nonachlor	ND U	0.098	0.097	1	02/07/19 16:03	2/1/19	
Dieldrin	ND U	0.20	0.077	1	02/07/19 16:03	2/1/19	
gamma-BHC (Lindane)	ND U	0.098	0.031	1	02/07/19 16:03	2/1/19	
gamma-Chlordane	ND U	0.20	0.064	1	02/07/19 16:03	2/1/19	
Heptachlor	ND U	0.098	0.039	1	02/07/19 16:03	2/1/19	
Oxychlordane	ND U	0.20	0.13	1	02/07/19 16:03	2/1/19	
trans-Nonachlor	ND U	0.20	0.058	1	02/07/19 16:03	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	65	5 - 120	02/07/19 16:03	
S_4,4'-DDT-d4	60	13 - 200	02/07/19 16:03	
S_Aldrin-13C12	47	10 - 143	02/07/19 16:03	
S_Endrin-13C12	69	20 - 157	02/07/19 16:03	
S_GBHCD6	50	5 - 124	02/07/19 16:03	
S_Heptachlor-13C10	53	10 - 177	02/07/19 16:03	
S_Heptachlrepox13C10	45	8 - 146	02/07/19 16:03	
S_Oxychlordane-13C10	45	5 - 144	02/07/19 16:03	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1901380-03	**Basis:**	NA

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	**0.80**	0.50	0.11	1	02/07/19 14:52	2/1/19	
2,4'-DDE	**0.58**	0.50	0.11	1	02/07/19 14:52	2/1/19	
2,4'-DDT	**0.60**	0.50	0.087	1	02/07/19 14:52	2/1/19	
4,4'-DDD	**0.67**	0.50	0.10	1	02/07/19 14:52	2/1/19	
4,4'-DDE	**0.77**	0.50	0.075	1	02/07/19 14:52	2/1/19	
4,4'-DDT	**0.52**	0.50	0.088	1	02/07/19 14:52	2/1/19	
Aldrin	ND U	1.0	0.46	1	02/07/19 14:52	2/1/19	
alpha-Chlordane	ND U	0.50	0.13	1	02/07/19 14:52	2/1/19	
cis-Nonachlor	ND U	0.50	0.17	1	02/07/19 14:52	2/1/19	
Dieldrin	ND U	5.0	0.74	1	02/07/19 14:52	2/1/19	
gamma-BHC (Lindane)	**0.39 J**	0.50	0.30	1	02/07/19 14:52	2/1/19	
gamma-Chlordane	**0.35 J**	0.50	0.17	1	02/07/19 14:52	2/1/19	
Heptachlor	**0.20 J**	0.99	0.12	1	02/07/19 14:52	2/1/19	
Oxychlordane	ND U	5.0	2.0	1	02/07/19 14:52	2/1/19	
trans-Nonachlor	ND U	0.50	0.12	1	02/07/19 14:52	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	64	5 - 120	02/07/19 14:52	
S_4,4'-DDT-d4	59	13 - 200	02/07/19 14:52	
S_Aldrin-13C12	59	5 - 126	02/07/19 14:52	
S_Endrin-13C12	66	20 - 157	02/07/19 14:52	
S_GBHCD6	53	5 - 124	02/07/19 14:52	
S_Heptachlor-13C10	55	5 - 128	02/07/19 14:52	
S_Heptachlrepox13C10	55	8 - 146	02/07/19 14:52	
S_Oxychlordane-13C10	52	5 - 144	02/07/19 14:52	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_4,4'DDD-d4 5-120	S_4,4'-DDT-d4 13-200	S_Aldrin-13C12 10-143
PDI-ST-T06B-1901	K1900892-001	97	85	52
PDI-ST-T06A-1901	K1900892-002	43	46	23
PDI-ST-T07A-1901	K1900892-003	88	79	47
PDI-ST-T07B-1901	K1900892-004	92	77	49
Method Blank	KQ1901377-04	65	60	47
Lab Control Sample	KQ1901377-03	68	54	48
PDI-ST-T07B-1901	KQ1901377-01	73	57	44
PDI-ST-T07B-1901	KQ1901377-02	85	72	43

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_Endrin-13C12 20-157	S_GBHCD6 5-124	S_Heptachlor-13C10 10-177
PDI-ST-T06B-1901	K1900892-001	92	55	68
PDI-ST-T06A-1901	K1900892-002	43	26	33
PDI-ST-T07A-1901	K1900892-003	83	47	59
PDI-ST-T07B-1901	K1900892-004	85	46	60
Method Blank	KQ1901377-04	69	50	53
Lab Control Sample	KQ1901377-03	68	45	50
PDI-ST-T07B-1901	KQ1901377-01	77	41	46
PDI-ST-T07B-1901	KQ1901377-02	70	44	51

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_Heptachlrepox13C10 8-146	S_Oxychlordane-13C10 5-144
PDI-ST-T06B-1901	K1900892-001	52	49
PDI-ST-T06A-1901	K1900892-002	23	23
PDI-ST-T07A-1901	K1900892-003	42	41
PDI-ST-T07B-1901	K1900892-004	46	44
Method Blank	KQ1901377-04	45	45
Lab Control Sample	KQ1901377-03	50	48
PDI-ST-T07B-1901	KQ1901377-01	42	42
PDI-ST-T07B-1901	KQ1901377-02	37	38

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP

Extraction Method: EPA 3541

Sample Name	Lab Code	S_4,4'DDD-d4 5-120	S_4,4'-DDT-d4 13-200	S_Aldrin-13C12 10-143
PDI-RB-ST-190129	K1900892-005	56	57	40
Method Blank	KQ1901380-03	64	59	59
Lab Control Sample	KQ1901380-01	53	45	36
Duplicate Lab Control Sample	KQ1901380-02	48	48	40

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP

Extraction Method: EPA 3541

Sample Name	Lab Code	S_Endrin-13C12 20-157	S_GBHCD6 5-124	S_Heptachlor-13C10 10-177
PDI-RB-ST-190129	K1900892-005	58	41	44
Method Blank	KQ1901380-03	66	53	55
Lab Control Sample	KQ1901380-01	54	37	37
Duplicate Lab Control Sample	KQ1901380-02	52	40	42

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP

Extraction Method: EPA 3541

Sample Name	Lab Code	S_Heptachlrepox13C10 8-146	S_Oxychlordane-13C10 5-144
PDI-RB-ST-190129	K1900892-005	41	41
Method Blank	KQ1901380-03	55	52
Lab Control Sample	KQ1901380-01	37	35
Duplicate Lab Control Sample	KQ1901380-02	37	37

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/07/19 14:35

Internal Standard Area and RT SUMMARY
Organochlorine Pesticides by GC/MS/MS

File ID: Y:\MS42\data\020719\020719F014.D **Lab Code:**KQ1901620-02
Instrument ID: K-MS-42 **Analysis Lot:**624420
Analysis Method: ALS SOP **Signal ID:**1

		Pyrene-d10	
		Area	**RT**
	Result ==>	2,037,376	9.651
	Upper Limit ==>	4,074,751	10.15
	Lower Limit ==>	1,018,688	9.15
Associated Analyses			
Method Blank	KQ1901380-03	2545170.059	9.651
Lab Control Sample	KQ1901380-01	4572199.639*	9.651
Duplicate Lab Control Sample	KQ1901380-02	3631970.787	9.651
PDI-RB-ST-190129	K1900892-005	3951051.271	9.651
Method Blank	KQ1901377-04	3511796.657	9.651
Lab Control Sample	KQ1901377-03	3779286.777	9.651
PDI-ST-T07B-1901MS	KQ1901377-01	4347621.724*	9.651
PDI-ST-T07B-1901DMS	KQ1901377-02	4287797.695*	9.658
PDI-ST-T06B-1901	K1900892-001	4096400.648*	9.651
PDI-ST-T06A-1901	K1900892-002	5122594.047*	9.651
PDI-ST-T07A-1901	K1900892-003	4569980.859*	9.651
PDI-ST-T07B-1901	K1900892-004	5202358.679*	9.651

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
		Date Analyzed:	02/7/19
		Date Extracted:	02/1/19

Duplicate Matrix Spike Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3541		

		Matrix Spike KQ1901377-01			**Duplicate Matrix Spike** KQ1901377-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND U	7.02	7.44	94	5.44	7.47	73	32-169	25	40
2,4'-DDE	ND U	5.78	7.44	78	4.23	7.47	57	43-155	31	40
2,4'-DDT	ND U	8.10	7.44	109	6.63	7.47	89	55-161	20	40
4,4'-DDD	0.59	9.05	7.44	114	8.16	7.47	101	10-190	10	40
4,4'-DDE	1.4	8.21	7.44	92	6.26	7.47	65	35-162	27	40
4,4'-DDT	0.83	8.58	7.44	104	9.21	7.47	112	24-183	7	40
Aldrin	ND U	8.52	7.44	115	7.88	7.47	105	52-151	8	40
alpha-Chlordane	ND U	8.17	7.44	110	7.76	7.47	104	31-156	5	40
cis-Nonachlor	ND U	6.75	7.44	91	7.15	7.47	96	27-144	6	40
Dieldrin	ND U	6.47	7.44	87	5.88	7.47	79	28-150	9	40
gamma-BHC (Lindane)	ND U	7.20	7.44	97	6.56	7.47	88	64-135	9	40
gamma-Chlordane	ND U	8.32	7.44	112	7.91	7.47	106	31-158	5	40
Heptachlor	ND U	7.98	7.44	107	7.50	7.47	100	76-117	6	40
Oxychlordane	ND U	7.91	7.44	106	7.99	7.47	107	53-144	<1	40
trans-Nonachlor	0.22 J	7.92	7.44	103	7.83	7.47	102	35-153	1	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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	624420

Lab Control Sample
KQ1901377-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	1.80	2.00	90	73-122
2,4'-DDE	1.86	2.00	93	54-145
2,4'-DDT	2.06	2.00	103	77-118
4,4'-DDD	2.06	2.00	103	74-117
4,4'-DDE	1.69	2.00	84	66-132
4,4'-DDT	2.15	2.00	108	78-116
Aldrin	1.96	2.00	98	74-122
alpha-Chlordane	1.82	2.00	91	74-130
cis-Nonachlor	1.70	2.00	85	69-134
Dieldrin	1.68	2.00	84	62-131
gamma-BHC (Lindane)	1.87	2.00	93	79-116
gamma-Chlordane	2.18	2.00	109	76-128
Heptachlor	1.98	2.00	99	81-114
Oxychlordane	2.06	2.00	103	59-141
trans-Nonachlor	1.70	2.00	85	76-124

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Duplicate Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ng/L
Prep Method:	EPA 3535A	**Basis:**	NA
		Analysis Lot:	624420

	Lab Control Sample KQ1901380-01			Duplicate Lab Control Sample KQ1901380-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	20.4	20.0	102	22.6	20.0	113	79-113	10	30
2,4'-DDE	17.2	20.0	86	19.5	20.0	98	75-117	13	30
2,4'-DDT	18.3	20.0	91	17.6	20.0	88	77-114	4	30
4,4'-DDD	20.6	20.0	103	20.5	20.0	102	78-114	<1	30
4,4'-DDE	19.2	20.0	96	22.3	20.0	111	76-115	15	30
4,4'-DDT	20.9	20.0	105	21.5	20.0	107	85-113	3	30
Aldrin	20.8	20.0	104	21.1	20.0	106	81-113	2	30
alpha-Chlordane	22.2	20.0	111	21.1	20.0	105	69-130	5	30
cis-Nonachlor	22.1	20.0	110	18.4	20.0	92	59-138	18	30
Dieldrin	19.5	20.0	97	20.3	20.0	101	62-111	4	30
gamma-BHC (Lindane)	18.8	20.0	94	18.9	20.0	95	66-130	<1	30
gamma-Chlordane	21.9	20.0	109	21.7	20.0	109	72-127	<1	30
Heptachlor	19.7	20.0	99	20.1	20.0	100	81-115	2	30
Oxychlordane	21.3	20.0	107	20.2	20.0	101	77-123	6	30
trans-Nonachlor	20.3	20.0	102	20.3	20.0	101	72-127	<1	30

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 14:52
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901380-03	**File ID:**	Y:\MS42\data\020719\020719F015.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3535A	**Extraction Lot:**	330745

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901380-01	Y:\MS42\data\020719\020719F016.D	02/07/19 15:10
Duplicate Lab Control Sample	KQ1901380-02	Y:\MS42\data\020719\020719F017.D	02/07/19 15:28
PDI-RB-ST-190129	K1900892-005	Y:\MS42\data\020719\020719F018.D	02/07/19 15:45

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 16:03
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901377-04	**File ID:**	Y:\MS42\data\020719\020719F019.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3541	**Extraction Lot:**	330730

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901377-03	Y:\MS42\data\020719\020719F020.D	02/07/19 16:20
PDI-ST-T07B-1901MS	KQ1901377-01	Y:\MS42\data\020719\020719F021.D	02/07/19 16:38
PDI-ST-T07B-1901DMS	KQ1901377-02	Y:\MS42\data\020719\020719F022.D	02/07/19 16:56
PDI-ST-T06B-1901	K1900892-001	Y:\MS42\data\020719\020719F023.D	02/07/19 17:13
PDI-ST-T06A-1901	K1900892-002	Y:\MS42\data\020719\020719F024.D	02/07/19 17:31
PDI-ST-T07A-1901	K1900892-003	Y:\MS42\data\020719\020719F025.D	02/07/19 17:49
PDI-ST-T07B-1901	K1900892-004	Y:\MS42\data\020719\020719F026.D	02/07/19 18:06

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 14:52
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901380-03	**File ID:**	Y:\MS42\data\020719\020719F015.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3535A	**Extraction Lot:**	330745

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901380-01	Y:\MS42\data\020719\020719F016.D	02/07/19 15:10
Duplicate Lab Control Sample	KQ1901380-02	Y:\MS42\data\020719\020719F017.D	02/07/19 15:28
PDI-RB-ST-190129	K1900892-005	Y:\MS42\data\020719\020719F018.D	02/07/19 15:45

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 16:03
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901377-04	**File ID:**	Y:\MS42\data\020719\020719F019.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3541	**Extraction Lot:**	330730

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901377-03	Y:\MS42\data\020719\020719F020.D	02/07/19 16:20
PDI-ST-T07B-1901MS	KQ1901377-01	Y:\MS42\data\020719\020719F021.D	02/07/19 16:38
PDI-ST-T07B-1901DMS	KQ1901377-02	Y:\MS42\data\020719\020719F022.D	02/07/19 16:56
PDI-ST-T06B-1901	K1900892-001	Y:\MS42\data\020719\020719F023.D	02/07/19 17:13
PDI-ST-T06A-1901	K1900892-002	Y:\MS42\data\020719\020719F024.D	02/07/19 17:31
PDI-ST-T07A-1901	K1900892-003	Y:\MS42\data\020719\020719F025.D	02/07/19 17:49
PDI-ST-T07B-1901	K1900892-004	Y:\MS42\data\020719\020719F026.D	02/07/19 18:06

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 15:10
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901380-01	**File ID:**	Y:\MS42\data\020719\020719F016.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3535A	**Extraction Lot:**	330745

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901380-03	Y:\MS42\data\020719\020719F015.D	02/07/19 14:52
Duplicate Lab Control Sample	KQ1901380-02	Y:\MS42\data\020719\020719F017.D	02/07/19 15:28
PDI-RB-ST-190129	K1900892-005	Y:\MS42\data\020719\020719F018.D	02/07/19 15:45

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 16:20
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901377-03	**File ID:**	Y:\MS42\data\020719\020719F020.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3541	**Extraction Lot:**	330730

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901377-04	Y:\MS42\data\020719\020719F019.D	02/07/19 16:03
PDI-ST-T07B-1901MS	KQ1901377-01	Y:\MS42\data\020719\020719F021.D	02/07/19 16:38
PDI-ST-T07B-1901DMS	KQ1901377-02	Y:\MS42\data\020719\020719F022.D	02/07/19 16:56
PDI-ST-T06B-1901	K1900892-001	Y:\MS42\data\020719\020719F023.D	02/07/19 17:13
PDI-ST-T06A-1901	K1900892-002	Y:\MS42\data\020719\020719F024.D	02/07/19 17:31
PDI-ST-T07A-1901	K1900892-003	Y:\MS42\data\020719\020719F025.D	02/07/19 17:49
PDI-ST-T07B-1901	K1900892-004	Y:\MS42\data\020719\020719F026.D	02/07/19 18:06

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 15:10
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901380-01	**File ID:**	Y:\MS42\data\020719\020719F016.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3535A	**Extraction Lot:**	330745

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901380-03	Y:\MS42\data\020719\020719F015.D	02/07/19 14:52
Duplicate Lab Control Sample	KQ1901380-02	Y:\MS42\data\020719\020719F017.D	02/07/19 15:28
PDI-RB-ST-190129	K1900892-005	Y:\MS42\data\020719\020719F018.D	02/07/19 15:45

ALS Group USA, Corp.
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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 16:20
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1901377-03	**File ID:**	Y:\MS42\data\020719\020719F020.D
Analysis Method:	ALS SOP	**Analysis Lot:**	624420
Prep Method:	EPA 3541	**Extraction Lot:**	330730

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901377-04	Y:\MS42\data\020719\020719F019.D	02/07/19 16:03
PDI-ST-T07B-1901MS	KQ1901377-01	Y:\MS42\data\020719\020719F021.D	02/07/19 16:38
PDI-ST-T07B-1901DMS	KQ1901377-02	Y:\MS42\data\020719\020719F022.D	02/07/19 16:56
PDI-ST-T06B-1901	K1900892-001	Y:\MS42\data\020719\020719F023.D	02/07/19 17:13
PDI-ST-T06A-1901	K1900892-002	Y:\MS42\data\020719\020719F024.D	02/07/19 17:31
PDI-ST-T07A-1901	K1900892-003	Y:\MS42\data\020719\020719F025.D	02/07/19 17:49
PDI-ST-T07B-1901	K1900892-004	Y:\MS42\data\020719\020719F026.D	02/07/19 18:06

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/07/19 14:35

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID: Y:\MS42\data\020719\020719F014.D **Analytical Method:** ALS SOP
Instrument ID: K-MS-42 **Analysis Lot:** 624420

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901620-01	Y:\MS42\data\020719\020719F014.D	02/07/19 14:35	
Continuing Calibration Verification	KQ1901620-02	Y:\MS42\data\020719\020719F014.D	02/07/19 14:35	
Method Blank	KQ1901380-03	Y:\MS42\data\020719\020719F015.D	02/07/19 14:52	
Lab Control Sample	KQ1901380-01	Y:\MS42\data\020719\020719F016.D	02/07/19 15:10	
Duplicate Lab Control Sample	KQ1901380-02	Y:\MS42\data\020719\020719F017.D	02/07/19 15:28	
PDI-RB-ST-190129	K1900892-005	Y:\MS42\data\020719\020719F018.D	02/07/19 15:45	
Method Blank	KQ1901377-04	Y:\MS42\data\020719\020719F019.D	02/07/19 16:03	
Lab Control Sample	KQ1901377-03	Y:\MS42\data\020719\020719F020.D	02/07/19 16:20	
PDI-ST-T07B-1901	KQ1901377-01	Y:\MS42\data\020719\020719F021.D	02/07/19 16:38	
PDI-ST-T07B-1901	KQ1901377-02	Y:\MS42\data\020719\020719F022.D	02/07/19 16:56	
PDI-ST-T06B-1901	K1900892-001	Y:\MS42\data\020719\020719F023.D	02/07/19 17:13	
PDI-ST-T06A-1901	K1900892-002	Y:\MS42\data\020719\020719F024.D	02/07/19 17:31	
PDI-ST-T07A-1901	K1900892-003	Y:\MS42\data\020719\020719F025.D	02/07/19 17:49	
PDI-ST-T07B-1901	K1900892-004	Y:\MS42\data\020719\020719F026.D	02/07/19 18:06	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900067-01	OC PEST ICAL .5PPB SVM60-47A	Y:\MS42\data\020719\020719F004.D	02/07/2019 11:39
02	KC1900067-02	OC PEST ICAL 1PPB SVM60-47B	Y:\MS42\data\020719\020719F005.D	02/07/2019 11:56
03	KC1900067-03	OC PEST ICAL 2PPB SVM60-47C	Y:\MS42\data\020719\020719F006.D	02/07/2019 12:14
04	KC1900067-04	OC PEST ICAL 5PPB SVM60-47D	Y:\MS42\data\020719\020719F007.D	02/07/2019 12:31
05	KC1900067-05	OC PEST ICAL 10PPB SVM60-47E	Y:\MS42\data\020719\020719F008.D	02/07/2019 12:49
06	KC1900067-06	OC PEST ICAL 20PPB SVM60-47F	Y:\MS42\data\020719\020719F009.D	02/07/2019 13:07
07	KC1900067-07	OC PEST ICAL 40PPB SVM60-47G	Y:\MS42\data\020719\020719F010.D	02/07/2019 13:24
08	KC1900067-08	OC PEST ICAL 60PPB SVM60-47H	Y:\MS42\data\020719\020719F011.D	02/07/2019 13:42
09	KC1900067-09	OC PEST ICAL 80PPB SVM60-47I	Y:\MS42\data\020719\020719F012.D	02/07/2019 13:59
10	KC1900067-10	OC PEST ICAL 100PPB SVM60-47J	Y:\MS42\data\020719\020719F013.D	02/07/2019 14:17

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.518	02	1	0.9817	03	2	0.9355	04	5	0.9945
05	10	1.054	06	20	1.156	07	40	1.026	08	60	1.097
09	80	1.105	10	100	1.14						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.522	02	1	0.9566	03	2	0.962	04	5	0.942
05	10	1.145	06	20	1.127	07	40	1.151	08	60	1.197
09	80	1.273	10	100	1.374						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	3.594	02	1	2.484	03	2	2.752	04	5	2.525
05	10	2.392	06	20	2.654	07	40	3.02	08	60	2.794
09	80	2.249	10	100	2.887						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.021	02	1	1.447	03	2	1.591	04	5	1.443
05	10	1.449	06	20	1.613	07	40	1.49	08	60	1.705
09	80	1.812	10	100	1.68						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.037	02	1	0.7134	03	2	0.6949	04	5	0.736
05	10	0.7866	06	20	0.8585	07	40	0.7699	08	60	0.8263
09	80	0.9249	10	100	0.9756						

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.485	02	1	0.9136	03	2	1.114	04	5	1.065
05	10	1.018	06	20	1.051	07	40	1.109	08	60	1.087

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
09	80	1.131	10	100	1.133						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	4.614	02	1	2.496	03	2	1.539	04	5	0.8977
05	10	0.6776	06	20	0.6023	07	40	0.5476	08	60	0.5366
09	80	0.5202	10	100	0.5235						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1	1.3	03	2	1.482	04	5	1.423	05	10	1.53
06	20	1.554	07	40	1.621	08	60	1.639	09	80	1.681
10	100	1.824									

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.505	02	1	1.103	03	2	1.192	04	5	1.148
05	10	1.095	06	20	1.07	07	40	1.043	08	60	1.078
09	80	1.109	10	100	1.098						

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.503	02	1	1.866	03	2	2.134	04	5	1.938
05	10	1.955	06	20	2.089	07	40	1.977	08	60	1.945
09	80	2.032	10	100	1.958						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	1.574	02	5	1.483	03	5	1.776	04	5	1.612
05	5	1.663	06	5	1.528	07	5	1.426	08	5	1.555
09	5	1.697	10	5	1.497						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.494	02	5	3.219	03	5	3.968	04	5	3.618
05	5	3.504	06	5	3.36	07	5	3.702	08	5	3.317
09	5	3.032	10	5	3.453						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.8202	02	20	0.5556	03	20	0.7382	04	20	0.6788
05	20	0.8688	06	20	0.7627	07	20	0.8398	08	20	0.7253
09	20	0.6498	10	20	0.7886						

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1441	02	20	0.1456	03	20	0.152	04	20	0.1545

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	20	0.1587	06	20	0.1501	07	20	0.1529	08	20	0.1393
09	20	0.1227	10	20	0.1346						

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	4.926	02	20	3.396	03	20	4.541	04	20	4.405
05	20	5.427	06	20	4.913	07	20	4.979	08	20	4.616
09	20	3.618	10	20	4.986						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.153	02	20	0.9525	03	20	1.2	04	20	1.145
05	20	1.312	06	20	1.227	07	20	1.228	08	20	1.177
09	20	1.044	10	20	1.264						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2729	02	20	0.2094	03	20	0.2386	04	20	0.2208
05	20	0.2689	06	20	0.2503	07	20	0.2648	08	20	0.2365
09	20	0.2345	10	20	0.2973						

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5696	02	20	0.4347	03	20	0.5035	04	20	0.4693
05	20	0.593	06	20	0.5384	07	20	0.5953	08	20	0.5299
09	20	0.5108	10	20	0.6749						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.123	02	1	0.9389	03	2	0.9901	04	5	0.9678
05	10	0.9018	06	20	0.9211	07	40	0.9371	08	60	0.9591
09	80	1.019	10	100	0.9288						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.5549	02	1	0.4679	03	2	0.6439	04	5	0.5251
05	10	0.4544	06	20	0.4827	07	40	0.4591	08	60	0.4804
09	80	0.423	10	100	0.3823						

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.663	02	1	1.925	03	2	2.183	04	5	2.042
05	10	2.13	06	20	2.08	07	40	1.984	08	60	2.117
09	80	2.332	10	100	2.164						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.09	02	1	0.7794	03	2	0.8877	04	5	0.8086
05	10	0.7829	06	20	0.8259	07	40	0.8194	08	60	0.8397
09	80	0.8641	10	100	0.8267						

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.885	02	1	1.17	03	2	1.364	04	5	1.234
05	10	1.208	06	20	1.212	07	40	1.242	08	60	1.271
09	80	1.372	10	100	1.285						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2,4'-DDD	TRG	Average RF	% RSD	14.8	≤20	1.101	0.01
2,4'-DDE	TRG	Average RF	% RSD	16.2	≤20	1.165	0.01
2,4'-DDT	TRG	Average RF	% RSD	14.0	≤20	2.735	0.01
4,4'-DDD	TRG	Average RF	% RSD	11.5	≤20	1.625	0.01
4,4'-DDE	TRG	Average RF	% RSD	13.9	≤20	0.8323	0.01
4,4'-DDT	TRG	Average RF	% RSD	13.3	≤20	1.111	0.01
Aldrin	TRG	Quadratic	COD	0.9999	≥	1.295	0.01
Dieldrin	TRG	Quadratic	COD	0.9991	≥	1.562	0.01
Heptachlor	TRG	Average RF	% RSD	11.6	≤20	1.144	0.01
Oxychlordane	TRG	Average RF	% RSD	8.8	≤20	2.04	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	6.8	≤	1.581	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	7.6	≤	3.467	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	12.8	≤	0.7428	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	7.4	≤	0.1454	0.01
S_GBHCD6	SURR	Average RF	% RSD	13.9	≤	4.581	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	9.0	≤	1.17	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	10.7	≤	0.2494	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	12.8	≤	0.5419	0.01
alpha-Chlordane	TRG	Average RF	% RSD	6.6	≤20	0.9686	0.01
cis-Nonachlor	TRG	Average RF	% RSD	15.0	≤20	0.4874	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	9.7	≤20	2.162	0.01
gamma-Chlordane	TRG	Average RF	% RSD	10.5	≤20	0.8525	0.01
trans-Nonachlor	TRG	Average RF	% RSD	15.7	≤20	1.324	0.01

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/7/2019

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900067 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1900067-11	OC PEST ICV 20PPB SVM60-47K	Y:\MS42\data\020719\020719F014.D	02/07/2019 14:35

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	20.4	1.101E0	1.122E0	1.90	±25	Average RF
2,4'-DDE	20.0	19.8	1.165E0	1.151E0	-1.243	±25	Average RF
2,4'-DDT	20.0	17.3	2.735E0	2.363E0	-13.589	±25	Average RF
4,4'-DDD	20.0	19.9	1.625E0	1.62E0	-0.291	±25	Average RF
4,4'-DDE	20.0	20.1	8.323E-1	8.372E-1	0.589	±25	Average RF
4,4'-DDT	20.0	20.7	1.111E0	1.15E0	3.53	±25	Average RF
Aldrin	20.0	19.1	1.295E0	5.738E-1	-4.410	±25	Quadratic
alpha-Chlordane	20.0	19.6	9.686E-1	9.509E-1	-1.830	±25	Average RF
cis-Nonachlor	20.0	18.0	4.874E-1	4.374E-1	-10.244	±25	Average RF
Dieldrin	20.0	21.8	1.562E0	1.668E0	8.80	±25	Quadratic
gamma-BHC (Lindane)	20.0	19.9	2.162E0	2.151E0	-0.490	±25	Average RF
gamma-Chlordane	20.0	18.7	8.525E-1	7.964E-1	-6.579	±25	Average RF
Heptachlor	20.0	19.2	1.144E0	1.099E0	-3.942	±25	Average RF
Oxychlordane	20.0	20.5	2.04E0	2.095E0	2.72	±25	Average RF
trans-Nonachlor	20.0	18.7	1.324E0	1.236E0	-6.668	±25	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	4.67	3.467E0	3.241E0	93.4	50-200	Average RF
S_4,4'-DDT-d4	5.00	4.65	1.581E0	1.47E0	93.0	50-200	Average RF
S_Aldrin-13C12	20.0	20.4	7.428E-1	7.56E-1	102	50-200	Average RF
S_Endrin-13C12	20.0	17.5	1.454E-1	1.272E-1	87.5	50-200	Average RF
S_GBHCD6	20.0	21.1	4.581E0	4.828E0	106	50-200	Average RF
S_Heptachlor-13C10	20.0	20.8	1.17E0	1.215E0	104	50-200	Average RF
S_Heptachlrepox13C10	20.0	18.4	2.494E-1	2.289E-1	92.0	50-200	Average RF
S_Oxychlordane-13C10	20.0	20.0	5.419E-1	5.41E-1	100	50-200	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 14:35

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Calibration Date:**	2/7/2019
File ID:	Y:\MS42\data\020719\020719F014.D	**Calibration ID:**	KC1900067
Signal ID:	1	**Analysis Lot:**	624420
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	20.4	1.1008	1.1218	1.9	NA	±25	Average RF
2,4'-DDE	20.0	19.8	1.1651	1.1506	-1.2	NA	±25	Average RF
2,4'-DDT	20.0	17.3	2.7351	2.3634	-13.6	NA	±25	Average RF
4,4'-DDD	20.0	19.9	1.625	1.6203	-0.3	NA	±25	Average RF
4,4'-DDE	20.0	20.1	0.8323	0.8372	0.6	NA	±25	Average RF
4,4'-DDT	20.0	20.7	1.1108	1.15	3.5	NA	±25	Average RF
Aldrin	20.0	19.1	1.2954	0.5738	NA	-4.4	±25	Quadratic
alpha-Chlordane	20.0	19.6	0.9686	0.9509	-1.8	NA	±25	Average RF
cis-Nonachlor	20.0	18.0	0.4874	0.4374	-10.2	NA	±25	Average RF
Dieldrin	20.0	21.6	1.5615	1.6682	NA	8.1	±25	Quadratic
gamma-BHC (Lindane)	20.0	19.9	2.1621	2.1515	-0.5	NA	±25	Average RF
gamma-Chlordane	20.0	18.7	0.8525	0.7964	-6.6	NA	±25	Average RF
Heptachlor	20.0	19.2	1.1441	1.099	-3.9	NA	±25	Average RF
Oxychlordane	20.0	20.5	2.0396	2.095	2.7	NA	±25	Average RF
trans-Nonachlor	20.0	18.7	1.3242	1.236	-6.7	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	4.67	3.4665	3.2412	93.5	NA	50-200	Average RF
S_4,4'-DDT-d4	5.00	4.65	1.581	1.4702	93.0	NA	50-200	Average RF
S_Aldrin-13C12	20.0	20.4	0.7428	0.756	102	NA	50-200	Average RF
S_Endrin-13C12	20.0	17.5	0.1454	0.1272	87.4	NA	50-200	Average RF
S_GBHCD6	20.0	21.1	4.5806	4.8275	105	NA	50-200	Average RF
S_Heptachlor-13C10	20.0	20.8	1.1703	1.2146	104	NA	50-200	Average RF
S_Heptachlrepox13C10	20.0	18.4	0.2494	0.2289	91.8	NA	50-200	Average RF
S_Oxychlordane-13C10	20.0	20.0	0.5419	0.541	100	NA	50-200	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 14:35

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Calibration Date:**	2/7/2019
File ID:	Y:\MS42\data\020719\020719F014.D	**Calibration ID:**	KC1900067
Signal ID:	1	**Analysis Lot:**	624420
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	20.4	1.1008	1.1218	1.9	NA	±25	Average RF
2,4'-DDE	20.0	19.8	1.1651	1.1506	-1.2	NA	±25	Average RF
2,4'-DDT	20.0	17.3	2.7351	2.3634	-13.6	NA	±25	Average RF
4,4'-DDD	20.0	19.9	1.625	1.6203	-0.3	NA	±25	Average RF
4,4'-DDE	20.0	20.1	0.8323	0.8372	0.6	NA	±25	Average RF
4,4'-DDT	20.0	20.7	1.1108	1.15	3.5	NA	±25	Average RF
Aldrin	20.0	19.1	1.2954	0.5738	NA	-4.4	±25	Quadratic
alpha-Chlordane	20.0	19.6	0.9686	0.9509	-1.8	NA	±25	Average RF
cis-Nonachlor	20.0	18.0	0.4874	0.4374	-10.2	NA	±25	Average RF
Dieldrin	20.0	21.6	1.5615	1.6682	NA	8.1	±25	Quadratic
gamma-BHC (Lindane)	20.0	19.9	2.1621	2.1515	-0.5	NA	±25	Average RF
gamma-Chlordane	20.0	18.7	0.8525	0.7964	-6.6	NA	±25	Average RF
Heptachlor	20.0	19.2	1.1441	1.099	-3.9	NA	±25	Average RF
Oxychlordane	20.0	20.5	2.0396	2.095	2.7	NA	±25	Average RF
trans-Nonachlor	20.0	18.7	1.3242	1.236	-6.7	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	4.67	3.4665	3.2412	93.5	NA	50-200	Average RF
S_4,4'-DDT-d4	5.00	4.65	1.581	1.4702	93.0	NA	50-200	Average RF
S_Aldrin-13C12	20.0	20.4	0.7428	0.756	102	NA	50-200	Average RF
S_Endrin-13C12	20.0	17.5	0.1454	0.1272	87.4	NA	50-200	Average RF
S_GBHCD6	20.0	21.1	4.5806	4.8275	105	NA	50-200	Average RF
S_Heptachlor-13C10	20.0	20.8	1.1703	1.2146	104	NA	50-200	Average RF
S_Heptachlrepox13C10	20.0	18.4	0.2494	0.2289	91.8	NA	50-200	Average RF
S_Oxychlordane-13C10	20.0	20.0	0.5419	0.541	100	NA	50-200	Average RF

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**624420
Instrument ID:K-MS-42

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
Y:\MS42\data\020719\020719F014.D	Continuing Calibration Verification	KQ1901620-01	2/7/2019	14:35	
Y:\MS42\data\020719\020719F014.D	Continuing Calibration Verification	KQ1901620-02	2/7/2019	14:35	
Y:\MS42\data\020719\020719F015.D	Method Blank	KQ1901380-03	2/7/2019	14:52	
Y:\MS42\data\020719\020719F016.D	Lab Control Sample	KQ1901380-01	2/7/2019	15:10	
Y:\MS42\data\020719\020719F017.D	Duplicate Lab Control Sample	KQ1901380-02	2/7/2019	15:28	
Y:\MS42\data\020719\020719F018.D	PDI-RB-ST-190129	K1900892-005	2/7/2019	15:45	
Y:\MS42\data\020719\020719F019.D	Method Blank	KQ1901377-04	2/7/2019	16:03	
Y:\MS42\data\020719\020719F020.D	Lab Control Sample	KQ1901377-03	2/7/2019	16:20	
Y:\MS42\data\020719\020719F021.D	PDI-ST-T07B-1901 MS	KQ1901377-01	2/7/2019	16:38	
Y:\MS42\data\020719\020719F022.D	PDI-ST-T07B-1901 DMS	KQ1901377-02	2/7/2019	16:56	
Y:\MS42\data\020719\020719F023.D	PDI-ST-T06B-1901	K1900892-001	2/7/2019	17:13	
Y:\MS42\data\020719\020719F024.D	PDI-ST-T06A-1901	K1900892-002	2/7/2019	17:31	
Y:\MS42\data\020719\020719F025.D	PDI-ST-T07A-1901	K1900892-003	2/7/2019	17:49	
Y:\MS42\data\020719\020719F026.D	PDI-ST-T07B-1901	K1900892-004	2/7/2019	18:06	
Y:\MS42\data\020719\020719F027.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	18:24	
Y:\MS42\data\020719\020719F028.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	18:41	
Y:\MS42\data\020719\020719F029.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	18:59	
Y:\MS42\data\020719\020719F030.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	19:17	
Y:\MS42\data\020719\020719F032.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	19:52	
Y:\MS42\data\020719\020719F033.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	20:09	
Y:\MS42\data\020719\020719F034.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	20:27	
Y:\MS42\data\020719\020719F035.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	20:45	
Y:\MS42\data\020719\020719F036.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	21:02	
Y:\MS42\data\020719\020719F037.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	21:20	
Y:\MS42\data\020719\020719F038.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	21:38	
Y:\MS42\data\020719\020719F039.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	21:55	
Y:\MS42\data\020719\020719F040.D	ZZZZZZZ	ZZZZZZZ	2/7/2019	22:13	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3541 **Extraction Lot:** 330730
Analytical Method: ALS SOP **Extraction Date:** 02/01/19 09:31

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-ST-T06B-1901	K1900892-001	1/30/19	1/31/19	10.157 g	1 mL	25.0
PDI-ST-T06A-1901	K1900892-002	1/30/19	1/31/19	10.232 g	1 mL	25.6
PDI-ST-T07A-1901	K1900892-003	1/30/19	1/31/19	10.070 g	1 mL	24.6
PDI-ST-T07B-1901	K1900892-004	1/30/19	1/31/19	10.091 g	1 mL	26.3
Matrix Spike	KQ1901377-01MS	1/30/19	1/31/19	10.221 g	1 mL	26.3
Duplicate Matrix Spike	KQ1901377-02DMS	1/30/19	1/31/19	10.174 g	1 mL	26.3
Lab Control Sample	KQ1901377-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1901377-04MB	NA	NA	10.2320 g	1 mL	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3535A **Extraction Lot:** 330745
Analytical Method: ALS SOP **Extraction Date:** 02/01/19 08:14

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-RB-ST-190129	K1900892-005	1/29/19	1/31/19	1010.0000	1 mL	
Lab Control Sample	KQ1901380-01LCS	NA	NA	1000 mL	1 mL	
Duplicate Lab Control Sample	KQ1901380-02DLCS	NA	NA	1000 mL	1 mL	
Method Blank	KQ1901380-03MB	NA	NA	1010.0000	1 mL	

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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:25
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-001	**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	4.0	1.8	1	02/05/19 20:44	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	93	10 - 120	02/05/19 20:44	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-002	**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	3.9	1.7	1	02/05/19 21:03	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	103	10 - 120	02/05/19 21:03	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-003	**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	4.0	1.8	1	02/05/19 21:22	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	97	10 - 120	02/05/19 21:22	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:15
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**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	3.8	1.7	1	02/05/19 21:40	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	87	10 - 120	02/05/19 21:40	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/29/19 18:45
Sample Matrix:	Water	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-RB-ST-190129	**Units:**	ug/L
Lab Code:	K1900892-005	**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	02/05/19 13:32	1/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	99	31 - 137	02/05/19 13:32	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901365-06	**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	02/05/19 11:02	1/31/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	99	31 - 137	02/05/19 11:02	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901374-04	**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	02/05/19 20:07	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tri-n-propyltin	87	10 - 120	02/05/19 20:07	

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Butyltins

Analysis Method: ALS SOP

Extraction Method: EPA 3520C

Sample Name	Lab Code	Tri-n-propyltin 31-137
Batch QC	K1900786-002	101
PDI-RB-ST-190129	K1900892-005	99
Method Blank	KQ1901365-06	99
Lab Control Sample	KQ1901365-03	88
Lab Control Sample	KQ1901365-04	80
Lab Control Sample	KQ1901365-05	100
Batch QC	KQ1901365-01	123
Batch QC	KQ1901365-02	95

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Butyltins

Analysis Method: ALS SOP

Extraction Method: EPA 3520C

Sample Name	Lab Code	Tri-n-propyltin 31-137
PDI-ST-T06B-1901	K1900892-001	93
PDI-ST-T06A-1901	K1900892-002	103
PDI-ST-T07A-1901	K1900892-003	97
PDI-ST-T07B-1901	K1900892-004	87
Method Blank	KQ1901374-04	87
Lab Control Sample	KQ1901374-03	110
PDI-ST-T07B-1901	KQ1901374-01	93
PDI-ST-T07B-1901	KQ1901374-02	94

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
		Date Analyzed:	02/5/19
		Date Extracted:	02/1/19

Duplicate Matrix Spike Summary
Butyltins

Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	Method		

		Matrix Spike KQ1901374-01			**Duplicate Matrix Spike** KQ1901374-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Tri-n-butyltin Cation	ND U	61.4	83.1	74	70.1	83.4	84	10-115	13	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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	624179

Lab Control Sample
KQ1901365-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Tri-n-butyltin Cation	0.0567	0.0676	84	32-122

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	624179

Lab Control Sample
KQ1901365-04

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Tri-n-butyltin Cation	0.0714	0.0890	80	32-122

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/L
Prep Method:	EPA 3520C	**Basis:**	NA
		Analysis Lot:	624179

Lab Control Sample
KQ1901365-05

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Tri-n-butyltin Cation	0.414	0.446	93	32-122

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Butyltins

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	624277

Lab Control Sample
KQ1901374-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Tri-n-butyltin Cation	23.2	22.3	104	10-122

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 11:02
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Method Blank Summary
Butyltins

Sample Name:	Method Blank	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901365-06	**File ID:**	J:\GC26\DATA\020519\0205F010.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624179
Prep Method:	EPA 3520C	**Extraction Lot:**	330722

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901365-03	J:\GC26\DATA\020519\0205F008.D\	02/05/19 10:25
Lab Control Sample	KQ1901365-04	J:\GC26\DATA\020519\0205F009.D\	02/05/19 10:44
Lab Control Sample	KQ1901365-05	J:\GC26\DATA\020519\0205F011.D\	02/05/19 11:21
Batch QC	K1900786-002	J:\GC26\DATA\020519\0205F013.D\	02/05/19 11:58
Batch QCMS	KQ1901365-01	J:\GC26\DATA\020519\0205F014.D\	02/05/19 12:17
Batch QCDMS	KQ1901365-02	J:\GC26\DATA\020519\0205F015.D\	02/05/19 12:36
PDI-RB-ST-190129	K1900892-005	J:\GC26\DATA\020519\0205F018.D\	02/05/19 13:32

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 20:07
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Method Blank Summary
Butyltins

Sample Name:	Method Blank	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901374-04	**File ID:**	J:\GC26\DATA\020519B\0205F018.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624277
Prep Method:	Method	**Extraction Lot:**	330727

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901374-03	J:\GC26\DATA\020519B\0205F019.D\	02/05/19 20:26
PDI-ST-T06B-1901	K1900892-001	J:\GC26\DATA\020519B\0205F020.D\	02/05/19 20:44
PDI-ST-T06A-1901	K1900892-002	J:\GC26\DATA\020519B\0205F021.D\	02/05/19 21:03
PDI-ST-T07A-1901	K1900892-003	J:\GC26\DATA\020519B\0205F022.D\	02/05/19 21:22
PDI-ST-T07B-1901	K1900892-004	J:\GC26\DATA\020519B\0205F023.D\	02/05/19 21:40
PDI-ST-T07B-1901MS	KQ1901374-01	J:\GC26\DATA\020519B\0205F024.D\	02/05/19 21:59
PDI-ST-T07B-1901DMS	KQ1901374-02	J:\GC26\DATA\020519B\0205F025.D\	02/05/19 22:17

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 11:21
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901365-05	**File ID:**	J:\GC26\DATA\020519\0205F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624179
Prep Method:	EPA 3520C	**Extraction Lot:**	330722

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901365-06	J:\GC26\DATA\020519\0205F010.D\	02/05/19 11:02
Batch QC	K1900786-002	J:\GC26\DATA\020519\0205F013.D\	02/05/19 11:58
Batch QCMS	KQ1901365-01	J:\GC26\DATA\020519\0205F014.D\	02/05/19 12:17
Batch QCDMS	KQ1901365-02	J:\GC26\DATA\020519\0205F015.D\	02/05/19 12:36
PDI-RB-ST-190129	K1900892-005	J:\GC26\DATA\020519\0205F018.D\	02/05/19 13:32

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 11:21
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901365-05	**File ID:**	J:\GC26\DATA\020519\0205F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624179
Prep Method:	EPA 3520C	**Extraction Lot:**	330722

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901365-06	J:\GC26\DATA\020519\0205F010.D\	02/05/19 11:02
Batch QC	K1900786-002	J:\GC26\DATA\020519\0205F013.D\	02/05/19 11:58
Batch QCMS	KQ1901365-01	J:\GC26\DATA\020519\0205F014.D\	02/05/19 12:17
Batch QCDMS	KQ1901365-02	J:\GC26\DATA\020519\0205F015.D\	02/05/19 12:36
PDI-RB-ST-190129	K1900892-005	J:\GC26\DATA\020519\0205F018.D\	02/05/19 13:32

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 11:21
Sample Matrix:	Water	**Date Extracted:**	01/31/19

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901365-05	**File ID:**	J:\GC26\DATA\020519\0205F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624179
Prep Method:	EPA 3520C	**Extraction Lot:**	330722

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901365-06	J:\GC26\DATA\020519\0205F010.D\	02/05/19 11:02
Batch QC	K1900786-002	J:\GC26\DATA\020519\0205F013.D\	02/05/19 11:58
Batch QCMS	KQ1901365-01	J:\GC26\DATA\020519\0205F014.D\	02/05/19 12:17
Batch QCDMS	KQ1901365-02	J:\GC26\DATA\020519\0205F015.D\	02/05/19 12:36
PDI-RB-ST-190129	K1900892-005	J:\GC26\DATA\020519\0205F018.D\	02/05/19 13:32

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 20:26
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Butyltins

Sample Name:	Lab Control Sample	**Instrument ID:**	K-GC-26
Lab Code:	KQ1901374-03	**File ID:**	J:\GC26\DATA\020519B\0205F019.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	624277
Prep Method:	Method	**Extraction Lot:**	330727

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901374-04	J:\GC26\DATA\020519B\0205F018.D\	02/05/19 20:07
PDI-ST-T06B-1901	K1900892-001	J:\GC26\DATA\020519B\0205F020.D\	02/05/19 20:44
PDI-ST-T06A-1901	K1900892-002	J:\GC26\DATA\020519B\0205F021.D\	02/05/19 21:03
PDI-ST-T07A-1901	K1900892-003	J:\GC26\DATA\020519B\0205F022.D\	02/05/19 21:22
PDI-ST-T07B-1901	K1900892-004	J:\GC26\DATA\020519B\0205F023.D\	02/05/19 21:40
PDI-ST-T07B-1901MS	KQ1901374-01	J:\GC26\DATA\020519B\0205F024.D\	02/05/19 21:59
PDI-ST-T07B-1901DMS	KQ1901374-02	J:\GC26\DATA\020519B\0205F025.D\	02/05/19 22:17

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800553 **Signal ID:** RTX-1
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800553-01	OT5-11E 2PPB	J:\GC26\DATA\121018\1210F008.D	12/10/2018 15:27
02	KC1800553-02	OT5-11F 5PPB	J:\GC26\DATA\121018\1210F009.D	12/10/2018 15:45
03	KC1800553-03	OT5-11G 10PPB	J:\GC26\DATA\121018\1210F010.D	12/10/2018 16:04
04	KC1800553-04	OT5-11H 20PPB	J:\GC26\DATA\121018\1210F011.D	12/10/2018 16:22
05	KC1800553-05	OT5-11B 50PPB	J:\GC26\DATA\121018\1210F012.D	12/10/2018 16:41
06	KC1800553-06	OT5-11I 200PPB	J:\GC26\DATA\121018\1210F013.D	12/10/2018 16:59
07	KC1800553-07	OT5-11J 500PPB	J:\GC26\DATA\121018\1210F014.D	12/10/2018 17:18

Analyte

Tri-n-butyltin Cation

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	5.31E4	02	4.455	5.514E4	03	8.910	4.774E4	04	17.820	5.283E4
05	44.550	5.94E4	06	178.200	5.937E4	07	445.500	5.952E4			

Tri-n-propyltin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	3.258E4	02	5.000	3.834E4	03	10.000	3.909E4	04	20.000	3.744E4
05	50.000	4.591E4	06	200.000	4.689E4	07	500.000	4.819E4			

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800553 **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	8.1	≤20	5.53E4	
Tri-n-propyltin	SURR	Average RF	% RSD	14.2	≤20	4.12E4	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800553 **Signal ID:** RTX-35
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800553-01	OT5-11E 2PPB	J:\GC26\DATA\121018\1210F008.D	12/10/2018 15:27
02	KC1800553-02	OT5-11F 5PPB	J:\GC26\DATA\121018\1210F009.D	12/10/2018 15:45
03	KC1800553-03	OT5-11G 10PPB	J:\GC26\DATA\121018\1210F010.D	12/10/2018 16:04
04	KC1800553-04	OT5-11H 20PPB	J:\GC26\DATA\121018\1210F011.D	12/10/2018 16:22
05	KC1800553-05	OT5-11B 50PPB	J:\GC26\DATA\121018\1210F012.D	12/10/2018 16:41
06	KC1800553-06	OT5-11I 200PPB	J:\GC26\DATA\121018\1210F013.D	12/10/2018 16:59
07	KC1800553-07	OT5-11J 500PPB	J:\GC26\DATA\121018\1210F014.D	12/10/2018 17:18

Analyte

Tri-n-butyltin Cation

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.782	9.056E4	02	4.455	9.168E4	03	8.910	7.364E4	04	17.820	8.308E4
05	44.550	8.504E4	06	178.200	8.489E4	07	445.500	8.228E4			

Tri-n-propyltin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	4.442E4	02	5.000	5.926E4	03	10.000	5.945E4	04	20.000	6.616E4
05	50.000	6.137E4	06	200.000	6.641E4	07	500.000	6.474E4			

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Summary
Butyltins

Calibration ID: KC1800553 **Signal ID:** RTX-35
Instrument ID: K-GC-26

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Tri-n-butyltin Cation	TRG	Average RF	% RSD	7.1	≤20	8.445E4	
Tri-n-propyltin	SURR	Average RF	% RSD	12.6	≤20	6.026E4	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Verification Summary
Butyltins

Calibration ID: KC1800553 **Signal ID:** RTX-1
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800553-08	OT5-12A ICV 50PPB	J:\GC26\DATA\121118\1211F004.D	12/11/2018 09:01

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	48.1	5.53E4	5.975E4	8.05	±25	Average RF

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/10/2018

Initial Calibration Verification Summary
Butyltins

Calibration ID: KC1800553 **Signal ID:** RTX-35
Instrument ID: K-GC-26

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC1800553-08	OT5-12A ICV 50PPB	J:\GC26\DATA\121118\1211F004.D	12/11/2018 09:01

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	45.8	8.445E4	8.677E4	2.74	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 09:30

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519\0205F005.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-35	**Analysis Lot:**	624179
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	43.5	8.445E4	8.248E4	-2.3	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	59.8	6.026E4	7.202E4	19.5	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 09:30

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519\0205F005.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-1	**Analysis Lot:**	624179
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	45.3	5.53E4	5.623E4	1.7	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	55.0	4.12E4	4.534E4	10.0	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 13:51

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519\0205F019.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-35	**Analysis Lot:**	624179
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	48.1	8.445E4	9.118E4	8.0	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	58.7	6.026E4	7.075E4	17.4	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 13:51

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519\0205F019.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-1	**Analysis Lot:**	624179
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	51.3	5.53E4	6.373E4	15.2	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	58.9	4.12E4	4.858E4	17.9	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 19:31

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519B\0205F016.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-35	**Analysis Lot:**	624277
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	47.4	8.445E4	8.994E4	6.5	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	60.0	6.026E4	7.236E4	20.1	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 19:31

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519B\0205F016.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-1	**Analysis Lot:**	624277
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	51.7	5.53E4	6.414E4	16.0	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	59.7	4.12E4	4.919E4	19.4	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 22:36

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519B\0205F026.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-35	**Analysis Lot:**	624277
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	46.9	8.445E4	8.898E4	5.4	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	58.7	6.026E4	7.076E4	17.4	NA	±25	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/05/19 22:36

Continuing Calibration Verification (CCV) Summary
Butyltins

Analysis Method:	ALS SOP	**Calibration Date:**	12/10/2018
File ID:	J:\GC26\DATA\020519B\0205F026.D\	**Calibration ID:**	KC1800553
Signal ID:	RTX-1	**Analysis Lot:**	624277
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-butyltin Cation	44.6	48.0	5.53E4	5.956E4	7.7	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Tri-n-propyltin	50.0	60.9	4.12E4	5.019E4	21.8	NA	±25	Average RF

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Butyltins

Analysis Method: ALS SOP **Analysis Lot:**624179
Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\020519\0205F005.D\	Continuing Calibration Verification	KQ1901549-01	2/5/2019	09:30:00	
J:\GC26\DATA\020519\0205F006.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	09:48:00	
J:\GC26\DATA\020519\0205F008.D\	Lab Control Sample	KQ1901365-03	2/5/2019	10:25:00	
J:\GC26\DATA\020519\0205F009.D\	Lab Control Sample	KQ1901365-04	2/5/2019	10:44:00	
J:\GC26\DATA\020519\0205F010.D\	Method Blank	KQ1901365-06	2/5/2019	11:02:00	
J:\GC26\DATA\020519\0205F011.D\	Lab Control Sample	KQ1901365-05	2/5/2019	11:21:00	
J:\GC26\DATA\020519\0205F012.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	11:39:00	
J:\GC26\DATA\020519\0205F013.D\	Batch QC	K1900786-002	2/5/2019	11:58:00	
J:\GC26\DATA\020519\0205F014.D\	Batch QC MS	KQ1901365-01	2/5/2019	12:17:00	
J:\GC26\DATA\020519\0205F015.D\	Batch QC DMS	KQ1901365-02	2/5/2019	12:36:00	
J:\GC26\DATA\020519\0205F016.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	12:55:00	
J:\GC26\DATA\020519\0205F017.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	13:13:00	
J:\GC26\DATA\020519\0205F018.D\	PDI-RB-ST-190129	K1900892-005	2/5/2019	13:32:00	
J:\GC26\DATA\020519\0205F019.D\	Continuing Calibration Verification	KQ1901549-02	2/5/2019	13:51:00	
J:\GC26\DATA\020519\0205F020.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	14:10:00	

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Butyltins

Analysis Method: **Analysis Lot:**624277
Instrument ID:K-GC-26

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\GC26\DATA\020519B\0205F005.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	16:07:00	
J:\GC26\DATA\020519B\0205F006.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	16:25:00	
J:\GC26\DATA\020519B\0205F007.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	16:44:00	
J:\GC26\DATA\020519B\0205F009.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	17:21:00	
J:\GC26\DATA\020519B\0205F010.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	17:40:00	
J:\GC26\DATA\020519B\0205F011.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	17:58:00	
J:\GC26\DATA\020519B\0205F012.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	18:17:00	
J:\GC26\DATA\020519B\0205F013.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	18:35:00	
J:\GC26\DATA\020519B\0205F014.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	18:54:00	
J:\GC26\DATA\020519B\0205F015.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	19:12:00	
J:\GC26\DATA\020519B\0205F016.D\	Continuing Calibration Verification	KQ1901706-02	2/5/2019	19:31:00	
J:\GC26\DATA\020519B\0205F017.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	19:49:00	
J:\GC26\DATA\020519B\0205F018.D\	Method Blank	KQ1901374-04	2/5/2019	20:07:00	
J:\GC26\DATA\020519B\0205F019.D\	Lab Control Sample	KQ1901374-03	2/5/2019	20:26:00	
J:\GC26\DATA\020519B\0205F020.D\	PDI-ST-T06B-1901	K1900892-001	2/5/2019	20:44:00	
J:\GC26\DATA\020519B\0205F021.D\	PDI-ST-T06A-1901	K1900892-002	2/5/2019	21:03:00	
J:\GC26\DATA\020519B\0205F022.D\	PDI-ST-T07A-1901	K1900892-003	2/5/2019	21:22:00	
J:\GC26\DATA\020519B\0205F023.D\	PDI-ST-T07B-1901	K1900892-004	2/5/2019	21:40:00	
J:\GC26\DATA\020519B\0205F024.D\	PDI-ST-T07B-1901 MS	KQ1901374-01	2/5/2019	21:59:00	
J:\GC26\DATA\020519B\0205F025.D\	PDI-ST-T07B-1901 DMS	KQ1901374-02	2/5/2019	22:17:00	
J:\GC26\DATA\020519B\0205F026.D\	Continuing Calibration Verification	KQ1901706-03	2/5/2019	22:36:00	
J:\GC26\DATA\020519B\0205F027.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	22:54:00	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Butyltins

Prep Method: EPA 3520C **Extraction Lot:** 330722
Analytical Method: ALS SOP **Extraction Date:** 01/31/19 18:13

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1900786-002	NA	NA	500 mL	1 mL	
PDI-RB-ST-190129	K1900892-005	1/29/19	1/31/19	500 mL	1 mL	
Matrix Spike	KQ1901365-01MS	NA	NA	500 mL	1 mL	
Duplicate Matrix Spike	KQ1901365-02DMS	NA	NA	500 mL	1 mL	
Lab Control Sample	KQ1901365-03LCS	NA	NA	500 mL	1 mL	
Lab Control Sample	KQ1901365-04LCS	NA	NA	500 mL	1 mL	
Lab Control Sample	KQ1901365-05LCS	NA	NA	500 mL	1 mL	
Method Blank	KQ1901365-06MB	NA	NA	500 mL	1 mL	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Butyltins

Prep Method: Method **Extraction Lot:** 330727
Analytical Method: ALS SOP **Extraction Date:** 02/01/19 15:53

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-ST-T06B-1901	K1900892-001	1/30/19	1/31/19	20.143 g	4 mL	25.0
PDI-ST-T06A-1901	K1900892-002	1/30/19	1/31/19	20.284 g	4 mL	25.6
PDI-ST-T07A-1901	K1900892-003	1/30/19	1/31/19	20.132 g	4 mL	24.6
PDI-ST-T07B-1901	K1900892-004	1/30/19	1/31/19	20.125 g	4 mL	26.3
Matrix Spike	KQ1901374-01MS	1/30/19	1/31/19	20.375 g	4 mL	26.3
Duplicate Matrix Spike	KQ1901374-02DMS	1/30/19	1/31/19	20.302 g	4 mL	26.3
Lab Control Sample	KQ1901374-03LCS	NA	NA	20.00 g	4 mL	
Method Blank	KQ1901374-04MB	NA	NA	20.3750 g	4 mL	

Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:25
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-001	**Basis:**	Dry

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.93**	**J**	2.0	0.25	1	02/06/19 11:48	2/4/19	
Acenaphthene	**3.3**		1.0	0.096	1	02/06/19 11:48	2/4/19	
Acenaphthylene	**2.9**		1.0	0.094	1	02/06/19 11:48	2/4/19	
Anthracene	**7.3**		1.0	0.078	1	02/06/19 11:48	2/4/19	
Benz(a)anthracene	**27**		1.0	0.078	1	02/06/19 11:48	2/4/19	
Benzo(a)pyrene	**37**		1.0	0.15	1	02/06/19 11:48	2/4/19	
Benzo(b)fluoranthene	**36**		1.0	0.14	1	02/06/19 11:48	2/4/19	
Benzo(g,h,i)perylene	**18**		1.0	0.20	1	02/06/19 11:48	2/4/19	
Benzo(k)fluoranthene	**13**		1.0	0.12	1	02/06/19 11:48	2/4/19	
Chrysene	**30**		1.0	0.12	1	02/06/19 11:48	2/4/19	
Dibenz(a,h)anthracene	**4.6**		1.0	0.18	1	02/06/19 11:48	2/4/19	
Dibenzofuran	**0.81**	**J**	1.0	0.092	1	02/06/19 11:48	2/4/19	
Fluoranthene	**40**		1.0	0.10	1	02/06/19 11:48	2/4/19	
Fluorene	**2.5**		1.0	0.11	1	02/06/19 11:48	2/4/19	
Indeno(1,2,3-cd)pyrene	**19**		1.0	0.20	1	02/06/19 11:48	2/4/19	
Naphthalene	**1.4**	**J**	2.0	0.31	1	02/06/19 11:48	2/4/19	
Phenanthrene	**22**		1.0	0.14	1	02/06/19 11:48	2/4/19	
Pyrene	**39**		1.0	0.11	1	02/06/19 11:48	2/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	64	23 - 110	02/06/19 11:48	
Fluorene-d10	55	26 - 102	02/06/19 11:48	
Terphenyl-d14	62	27 - 115	02/06/19 11:48	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-002	**Basis:**	Dry

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.97**	**J**	2.0	0.24	1	02/06/19 12:18	2/4/19	
Acenaphthene	**0.81**	**J**	0.99	0.094	1	02/06/19 12:18	2/4/19	
Acenaphthylene	**0.91**	**J**	0.99	0.092	1	02/06/19 12:18	2/4/19	
Anthracene	**2.8**		0.99	0.076	1	02/06/19 12:18	2/4/19	
Benz(a)anthracene	**9.5**		0.99	0.076	1	02/06/19 12:18	2/4/19	
Benzo(a)pyrene	**15**	**X**	0.99	0.14	1	02/06/19 12:18	2/4/19	
Benzo(b)fluoranthene	**13**		0.99	0.14	1	02/06/19 12:18	2/4/19	
Benzo(g,h,i)perylene	**8.4**		0.99	0.19	1	02/06/19 12:18	2/4/19	
Benzo(k)fluoranthene	**5.6**		0.99	0.12	1	02/06/19 12:18	2/4/19	
Chrysene	**13**		0.99	0.11	1	02/06/19 12:18	2/4/19	
Dibenz(a,h)anthracene	**1.1**		0.99	0.18	1	02/06/19 12:18	2/4/19	
Dibenzofuran	**0.69**	**J**	0.99	0.090	1	02/06/19 12:18	2/4/19	
Fluoranthene	**31**		0.99	0.098	1	02/06/19 12:18	2/4/19	
Fluorene	**0.76**	**J**	0.99	0.11	1	02/06/19 12:18	2/4/19	
Indeno(1,2,3-cd)pyrene	**6.8**		0.99	0.20	1	02/06/19 12:18	2/4/19	
Naphthalene	**1.3**	**J**	2.0	0.30	1	02/06/19 12:18	2/4/19	
Phenanthrene	**7.2**		0.99	0.14	1	02/06/19 12:18	2/4/19	
Pyrene	**26**		0.99	0.10	1	02/06/19 12:18	2/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	66	23 - 110	02/06/19 12:18	
Fluorene-d10	56	26 - 102	02/06/19 12:18	
Terphenyl-d14	64	27 - 115	02/06/19 12:18	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-003	**Basis:**	Dry

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.67**	**J**	2.1	0.25	1	02/06/19 12:47	2/4/19	
Acenaphthene	**2.8**		1.0	0.098	1	02/06/19 12:47	2/4/19	
Acenaphthylene	**0.50**	**J**	1.0	0.096	1	02/06/19 12:47	2/4/19	
Anthracene	**4.3**		1.0	0.079	1	02/06/19 12:47	2/4/19	
Benz(a)anthracene	**14**		1.0	0.079	1	02/06/19 12:47	2/4/19	
Benzo(a)pyrene	**30**		1.0	0.15	1	02/06/19 12:47	2/4/19	
Benzo(b)fluoranthene	**20**		1.0	0.14	1	02/06/19 12:47	2/4/19	
Benzo(g,h,i)perylene	**13**		1.0	0.20	1	02/06/19 12:47	2/4/19	
Benzo(k)fluoranthene	**8.6**		1.0	0.12	1	02/06/19 12:47	2/4/19	
Chrysene	**20**		1.0	0.12	1	02/06/19 12:47	2/4/19	
Dibenz(a,h)anthracene	**2.7**		1.0	0.18	1	02/06/19 12:47	2/4/19	
Dibenzofuran	**1.5**		1.0	0.094	1	02/06/19 12:47	2/4/19	
Fluoranthene	**32**		1.0	0.11	1	02/06/19 12:47	2/4/19	
Fluorene	**2.2**		1.0	0.11	1	02/06/19 12:47	2/4/19	
Indeno(1,2,3-cd)pyrene	**12**		1.0	0.20	1	02/06/19 12:47	2/4/19	
Naphthalene	**1.5**	**J**	2.1	0.32	1	02/06/19 12:47	2/4/19	
Phenanthrene	**23**		1.0	0.14	1	02/06/19 12:47	2/4/19	
Pyrene	**29**		1.0	0.11	1	02/06/19 12:47	2/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	70	23 - 110	02/06/19 12:47	
Fluorene-d10	61	26 - 102	02/06/19 12:47	
Terphenyl-d14	68	27 - 115	02/06/19 12:47	

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Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:15
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.40**	**J**	2.0	0.24	1	02/06/19 11:19	2/4/19	
Acenaphthene	**0.30**	**J**	0.99	0.094	1	02/06/19 11:19	2/4/19	
Acenaphthylene	**0.39**	**J**	0.99	0.092	1	02/06/19 11:19	2/4/19	
Anthracene	**0.97**	**J**	0.99	0.076	1	02/06/19 11:19	2/4/19	
Benz(a)anthracene	**4.2**		0.99	0.076	1	02/06/19 11:19	2/4/19	
Benzo(a)pyrene	**11**	**X**	0.99	0.14	1	02/06/19 11:19	2/4/19	
Benzo(b)fluoranthene	**7.4**		0.99	0.14	1	02/06/19 11:19	2/4/19	
Benzo(g,h,i)perylene	**5.2**		0.99	0.19	1	02/06/19 11:19	2/4/19	
Benzo(k)fluoranthene	**3.1**		0.99	0.12	1	02/06/19 11:19	2/4/19	
Chrysene	**6.6**		0.99	0.11	1	02/06/19 11:19	2/4/19	
Dibenz(a,h)anthracene	**0.79**	**J**	0.99	0.18	1	02/06/19 11:19	2/4/19	
Dibenzofuran	**0.38**	**J**	0.99	0.090	1	02/06/19 11:19	2/4/19	
Fluoranthene	**9.2**		0.99	0.098	1	02/06/19 11:19	2/4/19	
Fluorene	**0.35**	**J**	0.99	0.11	1	02/06/19 11:19	2/4/19	
Indeno(1,2,3-cd)pyrene	**4.4**		0.99	0.20	1	02/06/19 11:19	2/4/19	
Naphthalene	**0.80**	**J**	2.0	0.30	1	02/06/19 11:19	2/4/19	
Phenanthrene	**4.3**		0.99	0.14	1	02/06/19 11:19	2/4/19	
Pyrene	**9.2**		0.99	0.10	1	02/06/19 11:19	2/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	68	23 - 110	02/06/19 11:19	
Fluorene-d10	58	26 - 102	02/06/19 11:19	
Terphenyl-d14	65	27 - 115	02/06/19 11:19	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901375-04	**Basis:**	Dry

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.51	0.12	1	02/06/19 07:23	2/4/19	
Acenaphthene	ND U	0.25	0.047	1	02/06/19 07:23	2/4/19	
Acenaphthylene	ND U	0.25	0.046	1	02/06/19 07:23	2/4/19	
Anthracene	ND U	0.25	0.038	1	02/06/19 07:23	2/4/19	
Benz(a)anthracene	ND U	0.25	0.038	1	02/06/19 07:23	2/4/19	
Benzo(a)pyrene	ND U	0.25	0.070	1	02/06/19 07:23	2/4/19	
Benzo(b)fluoranthene	ND U	0.25	0.066	1	02/06/19 07:23	2/4/19	
Benzo(g,h,i)perylene	ND U	0.25	0.095	1	02/06/19 07:23	2/4/19	
Benzo(k)fluoranthene	ND U	0.25	0.057	1	02/06/19 07:23	2/4/19	
Chrysene	ND U	0.25	0.055	1	02/06/19 07:23	2/4/19	
Dibenz(a,h)anthracene	ND U	0.25	0.086	1	02/06/19 07:23	2/4/19	
Dibenzofuran	ND U	0.25	0.045	1	02/06/19 07:23	2/4/19	
Fluoranthene	ND U	0.25	0.049	1	02/06/19 07:23	2/4/19	
Fluorene	ND U	0.25	0.052	1	02/06/19 07:23	2/4/19	
Indeno(1,2,3-cd)pyrene	ND U	0.25	0.096	1	02/06/19 07:23	2/4/19	
Naphthalene	ND U	0.51	0.15	1	02/06/19 07:23	2/4/19	
Phenanthrene	ND U	0.25	0.066	1	02/06/19 07:23	2/4/19	
Pyrene	ND U	0.25	0.050	1	02/06/19 07:23	2/4/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	70	23 - 110	02/06/19 07:23	
Fluorene-d10	62	26 - 102	02/06/19 07:23	
Terphenyl-d14	69	27 - 115	02/06/19 07:23	

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D

Extraction Method: EPA 3541

Sample Name	Lab Code	Fluoranthene-d10 23-110	Fluorene-d10 26-102	Terphenyl-d14 27-115
PDI-ST-T06B-1901	K1900892-001	64	55	62
PDI-ST-T06A-1901	K1900892-002	66	56	64
PDI-ST-T07A-1901	K1900892-003	70	61	68
PDI-ST-T07B-1901	K1900892-004	68	58	65
Method Blank	KQ1901375-04	70	62	69
Lab Control Sample	KQ1901375-03	69	60	67
PDI-ST-T07B-1901	KQ1901375-01	70	57	67
PDI-ST-T07B-1901	KQ1901375-02	71	59	67

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/06/19 05:54

Internal Standard Area and RT SUMMARY

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020619\0206F002.D\ **Lab Code:**KQ1901640-01
Instrument ID: K-MS-14 **Analysis Lot:**624453
Analysis Method: 8270D **Signal ID:**1

		Acenaphthene-d10		Chrysene-d12		Naphthalene-d8	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	23,233	6.37	53,837	10.19	50,298	4.81
	Upper Limit ==>	46,466	6.87	107,674	10.69	100,596	5.31
	Lower Limit ==>	11,617	5.87	26,919	9.69	25,149	4.31
Associated Analyses							
Continuing Calibration Verification	KQ1901640-01	23948	6.36	60362	10.19	54615	4.80
Method Blank	KQ1901375-04	28541	6.36	61715	10.19	64545	4.81
PDI-ST-T07B-1901MS	KQ1901375-01	32537	6.36	78255	10.20	76535	4.81
PDI-ST-T07B-1901DMS	KQ1901375-02	32462	6.37	79249	10.20	78246	4.82
PDI-ST-T07B-1901	K1900892-004	35609	6.36	84974	10.19	79681	4.81
PDI-ST-T06B-1901	K1900892-001	35514	6.36	83305	10.19	80472	4.81
PDI-ST-T06A-1901	K1900892-002	35870	6.36	83759	10.20	80142	4.81
PDI-ST-T07A-1901	K1900892-003	35472	6.37	83626	10.20	79354	4.81

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/06/19 05:54

Internal Standard Area and RT SUMMARY

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020619\0206F002.D\ **Lab Code:**KQ1901640-01
Instrument ID: K-MS-14 **Analysis Lot:**624453
Analysis Method: 8270D **Signal ID:**1

		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**
	Result ==>	59,038	13.41	51,353	7.60
	Upper Limit ==>	118,076	13.91	102,706	8.10
	Lower Limit ==>	29,519	12.91	25,677	7.10
Associated Analyses					
Continuing Calibration Verification	KQ1901640-01	68259	13.42	44972	7.60
Method Blank	KQ1901375-04	66045	13.42	59025	7.60
PDI-ST-T07B-1901MS	KQ1901375-01	93341	13.45	69864	7.60
PDI-ST-T07B-1901DMS	KQ1901375-02	95663	13.45	69843	7.60
PDI-ST-T07B-1901	K1900892-004	97001	13.45	75396	7.60
PDI-ST-T06B-1901	K1900892-001	97453	13.45	74902	7.60
PDI-ST-T06A-1901	K1900892-002	97134	13.45	75480	7.60
PDI-ST-T07A-1901	K1900892-003	97412	13.45	74655	7.60

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/07/19 09:27

Internal Standard Area and RT SUMMARY

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020719\0207F002.D\ **Lab Code:**KQ1901673-01
Instrument ID: K-MS-14 **Analysis Lot:**624534
Analysis Method: 8270D **Signal ID:**1

		Acenaphthene-d10		Chrysene-d12		Naphthalene-d8	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	23,233	6.37	53,837	10.19	50,298	4.81
	Upper Limit ==>	46,466	6.87	107,674	10.69	100,596	5.31
	Lower Limit ==>	11,617	5.87	26,919	9.69	25,149	4.31
Associated Analyses							
Continuing Calibration Verification	KQ1901673-01	27609	6.36	70148	10.19	59888	4.80
Lab Control Sample	KQ1901375-03	32059	6.36	72157	10.19	79273	4.81

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/07/19 09:27

Internal Standard Area and RT SUMMARY

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020719\0207F002.D\ **Lab Code:**KQ1901673-01
Instrument ID: K-MS-14 **Analysis Lot:**624534
Analysis Method: 8270D **Signal ID:**1

		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**
	Result ==>	59,038	13.41	51,353	7.60
	Upper Limit ==>	118,076	13.91	102,706	8.10
	Lower Limit ==>	29,519	12.91	25,677	7.10
Associated Analyses					
Continuing Calibration Verification	KQ1901673-01	82262	13.43	56159	7.60
Lab Control Sample	KQ1901375-03	85314	13.44	66592	7.60

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
		Date Analyzed:	02/6/19
		Date Extracted:	02/4/19

Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry
Analysis Method:	8270D		
Prep Method:	EPA 3541		

		Matrix Spike KQ1901375-01			Duplicate Matrix Spike KQ1901375-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2-Methylnaphthalene	0.40 J	96.5	198	49 *	99.4	194	51 *	70-130	3	40
Acenaphthene	0.30 J	115	198	58 *	121	194	62 *	70-130	4	40
Acenaphthylene	0.39 J	112	198	56 *	117	194	60 *	70-130	4	40
Anthracene	0.97 J	127	198	64 *	132	194	67 *	70-130	4	40
Benz(a)anthracene	4.2	129	198	63 *	131	194	65 *	70-130	2	40
Benzo(a)pyrene	11 X	146	198	68 *	148	194	71	70-130	2	40
Benzo(b)fluoranthene	7.4	130	198	62 *	131	194	63 *	70-130	<1	40
Benzo(g,h,i)perylene	5.2	122	198	59 *	124	194	61 *	70-130	2	40
Benzo(k)fluoranthene	3.1	130	198	64 *	132	194	66 *	70-130	2	40
Chrysene	6.6	142	198	69 *	143	194	70	70-130	<1	40
Dibenz(a,h)anthracene	0.79 J	120	198	60 *	121	194	62 *	70-130	<1	40
Dibenzofuran	0.38 J	115	198	58 *	119	194	61 *	70-130	4	40
Fluoranthene	9.2	148	198	70	142	194	68 *	70-130	4	40
Fluorene	0.35 J	111	198	56 *	115	194	59 *	70-130	4	40
Indeno(1,2,3-cd)pyrene	4.4	112	198	55 *	114	194	57 *	70-130	2	40
Naphthalene	0.80 J	94.3	198	47 *	99.0	194	51 *	70-130	5	40
Phenanthrene	4.3	126	198	62 *	127	194	63 *	70-130	<1	40
Pyrene	9.2	139	198	66 *	133	194	64 *	70-130	4	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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19
Sample Matrix:	Sediment	**Date Extracted:**	02/04/19

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method:	8270D	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	624534

Lab Control Sample
KQ1901375-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2-Methylnaphthalene	58.3	100	58	52-85
Acenaphthene	66.2	100	66	51-82
Acenaphthylene	64.8	100	65	51-80
Anthracene	68.6	100	69	56-87
Benz(a)anthracene	69.4	100	69	65-97
Benzo(a)pyrene	66.6	100	67	64-103
Benzo(b)fluoranthene	71.3	100	71	63-99
Benzo(g,h,i)perylene	65.7	100	66	56-101
Benzo(k)fluoranthene	70.8	100	71	62-99
Chrysene	71.5	100	71	63-100
Dibenz(a,h)anthracene	68.3	100	68	56-104
Dibenzofuran	67.8	100	68	14-125
Fluoranthene	68.0	100	68	45-96
Fluorene	61.5	100	61	52-83
Indeno(1,2,3-cd)pyrene	62.9	100	63	61-105
Naphthalene	60.3	100	60	48-77
Phenanthrene	65.1	100	65	48-85
Pyrene	65.8	100	66	59-98

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/06/19 07:23
Sample Matrix:	Sediment	**Date Extracted:**	02/04/19

Method Blank Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Sample Name:	Method Blank	**Instrument ID:**	K-MS-14
Lab Code:	KQ1901375-04	**File ID:**	J:\MS14\DATA\020619\0206F005.D\
Analysis Method:	8270D	**Analysis Lot:**	624453,624534
Prep Method:	EPA 3541	**Extraction Lot:**	330728

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
PDI-ST-T07B-1901MS	KQ1901375-01	J:\MS14\DATA\020619\0206F011.D\	02/06/19 10:20
PDI-ST-T07B-1901DMS	KQ1901375-02	J:\MS14\DATA\020619\0206F012.D\	02/06/19 10:49
PDI-ST-T07B-1901	K1900892-004	J:\MS14\DATA\020619\0206F013.D\	02/06/19 11:19
PDI-ST-T06B-1901	K1900892-001	J:\MS14\DATA\020619\0206F014.D\	02/06/19 11:48
PDI-ST-T06A-1901	K1900892-002	J:\MS14\DATA\020619\0206F015.D\	02/06/19 12:18
PDI-ST-T07A-1901	K1900892-003	J:\MS14\DATA\020619\0206F016.D\	02/06/19 12:47
Lab Control Sample	KQ1901375-03	J:\MS14\DATA\020719\0207F004.D\	02/07/19 10:26

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/07/19 10:26
Sample Matrix:	Sediment	**Date Extracted:**	02/04/19

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-14
Lab Code:	KQ1901375-03	**File ID:**	J:\MS14\DATA\020719\0207F004.D\
Analysis Method:	8270D	**Analysis Lot:**	624453,624534
Prep Method:	EPA 3541	**Extraction Lot:**	330728

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901375-04	J:\MS14\DATA\020619\0206F005.D\	02/06/19 07:23
PDI-ST-T07B-1901MS	KQ1901375-01	J:\MS14\DATA\020619\0206F011.D\	02/06/19 10:20
PDI-ST-T07B-1901DMS	KQ1901375-02	J:\MS14\DATA\020619\0206F012.D\	02/06/19 10:49
PDI-ST-T07B-1901	K1900892-004	J:\MS14\DATA\020619\0206F013.D\	02/06/19 11:19
PDI-ST-T06B-1901	K1900892-001	J:\MS14\DATA\020619\0206F014.D\	02/06/19 11:48
PDI-ST-T06A-1901	K1900892-002	J:\MS14\DATA\020619\0206F015.D\	02/06/19 12:18
PDI-ST-T07A-1901	K1900892-003	J:\MS14\DATA\020619\0206F016.D\	02/06/19 12:47

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/06/19 05:24

Tune Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020619\0206F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-14 **Analysis Lot:** 624453

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	54.25	126125	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	49.93	116069	Pass
70	69	0	2	0.71	822	Pass
127	198	10	80	51.97	120808	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	51.28	232469	Pass
199	198	5	9	6.88	15992	Pass
275	198	10	60	34.73	80736	Pass
365	442	1	50	3.31	14988	Pass
441	443	0.01	100	78.00	67898	Pass
442	442	30	100	100.00	453312	Pass
443	442	15	24	19.20	87050	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901640-01	J:\MS14\DATA\020619\0206F002.D\	02/06/19 05:54	
Method Blank	KQ1901375-04	J:\MS14\DATA\020619\0206F005.D\	02/06/19 07:23	
PDI-ST-T07B-1901	KQ1901375-01	J:\MS14\DATA\020619\0206F011.D\	02/06/19 10:20	
PDI-ST-T07B-1901	KQ1901375-02	J:\MS14\DATA\020619\0206F012.D\	02/06/19 10:49	
PDI-ST-T07B-1901	K1900892-004	J:\MS14\DATA\020619\0206F013.D\	02/06/19 11:19	
PDI-ST-T06B-1901	K1900892-001	J:\MS14\DATA\020619\0206F014.D\	02/06/19 11:48	
PDI-ST-T06A-1901	K1900892-002	J:\MS14\DATA\020619\0206F015.D\	02/06/19 12:18	
PDI-ST-T07A-1901	K1900892-003	J:\MS14\DATA\020619\0206F016.D\	02/06/19 12:47	

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/07/19 08:57

Tune Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

File ID: J:\MS14\DATA\020719\0207F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-14 **Analysis Lot:** 624534

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	52.45	138032	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	49.98	131533	Pass
70	69	0	2	0.80	1053	Pass
127	198	10	80	50.33	132458	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	53.60	263189	Pass
199	198	5	9	6.92	18207	Pass
275	198	10	60	36.21	95298	Pass
365	442	1	50	3.20	15699	Pass
441	443	0.01	100	71.86	71650	Pass
442	442	30	100	100.00	491050	Pass
443	442	15	24	20.31	99714	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901673-01	J:\MS14\DATA\020719\0207F002.D\	02/07/19 09:27	
Lab Control Sample	KQ1901375-03	J:\MS14\DATA\020719\0207F004.D\	02/07/19 10:26	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900055-01	SIM-PAH ICAL @.002ug/mL | SVM59-4A	J:\MS14\DATA\122618A\1226F006.D	12/26/2018 08:15
02	KC1900055-02	SIM-PAH ICAL @.004ug/mL | SVM59-4B	J:\MS14\DATA\122618A\1226F007.D	12/26/2018 08:41
03	KC1900055-03	SIM-PAH ICAL @.008ug/mL | SVM59-4C	J:\MS14\DATA\122618A\1226F008.D	12/26/2018 09:07
04	KC1900055-04	SIM-PAH ICAL @0.02ug/mL | SVM59-4D	J:\MS14\DATA\122618A\1226F009.D	12/26/2018 09:33
05	KC1900055-05	SIM-PAH ICAL @0.1ug/mL | SVM59-4E	J:\MS14\DATA\122618A\1226F010.D	12/26/2018 09:59
06	KC1900055-06	SIM-PAH ICAL @0.2ug/mL | SVM59-4F	J:\MS14\DATA\122618A\1226F011.D	12/26/2018 10:26
07	KC1900055-07	SIM-PAH ICAL @0.4ug/mL | SVM59-4G	J:\MS14\DATA\122618A\1226F012.D	12/26/2018 10:52
08	KC1900055-08	SIM-PAH ICAL @1.0ug/mL | SVM59-4H	J:\MS14\DATA\122618A\1226F013.D	12/26/2018 11:18
09	KC1900055-09	SIM-PAH ICAL @1.6ug/mL | SVM59-4I	J:\MS14\DATA\122618A\1226F014.D	12/26/2018 11:45
10	KC1900055-10	SIM-PAH ICAL @2.0ug/mL | SVM59-4J	J:\MS14\DATA\122618A\1226F015.D	12/26/2018 12:12

Analyte

2-Methylnaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	0.7405	02	4.000	0.8066	03	8.000	0.7507	04	20.000	0.7419
05	100.000	0.7214	06	200.000	0.6641	07	400.000	0.6616	08	1000.000	0.65
09	1600.000	0.6553	10	2000.000	0.635						

Acenaphthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.535	02	4.000	1.424	03	8.000	1.393	04	20.000	1.393
05	100.000	1.404	06	200.000	1.397	07	400.000	1.409	08	1000.000	1.404
09	1600.000	1.415	10	2000.000	1.387						

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	2.712	02	4.000	2.541	03	8.000	2.41	04	20.000	2.415
05	100.000	2.473	06	200.000	2.45	07	400.000	2.46	08	1000.000	2.472
09	1600.000	2.478	10	2000.000	2.415						

Anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.234	02	4.000	1.215	03	8.000	1.233	04	20.000	1.189
05	100.000	1.248	06	200.000	1.234	07	400.000	1.222	08	1000.000	1.228
09	1600.000	1.224	10	2000.000	1.194						

Benz(a)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.753	02	4.000	1.471	03	8.000	1.414	04	20.000	1.366
05	100.000	1.35	06	200.000	1.36	07	400.000	1.391	08	1000.000	1.415
09	1600.000	1.435	10	2000.000	1.397						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

Analyte

Benzo(a)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.48	03	8.000	1.317	04	20.000	1.25	05	100.000	1.239
06	200.000	1.205	07	400.000	1.208	08	1000.000	1.209	09	1600.000	1.204
10	2000.000	1.168									

Benzo(b)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.4	02	4.000	1.295	03	8.000	1.273	04	20.000	1.305
05	100.000	1.332	06	200.000	1.324	07	400.000	1.368	08	1000.000	1.377
09	1600.000	1.351	10	2000.000	1.311						

Benzo(g,h,i)perylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.474	02	4.000	1.359	03	8.000	1.34	04	20.000	1.387
05	100.000	1.394	06	200.000	1.352	07	400.000	1.328	08	1000.000	1.31
09	1600.000	1.302	10	2000.000	1.252						

Benzo(k)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.234	02	4.000	1.247	03	8.000	1.168	04	20.000	1.26
05	100.000	1.298	06	200.000	1.271	07	400.000	1.307	08	1000.000	1.294
09	1600.000	1.284	10	2000.000	1.247						

Chrysene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.326	02	4.000	1.272	03	8.000	1.27	04	20.000	1.298
05	100.000	1.285	06	200.000	1.302	07	400.000	1.309	08	1000.000	1.315
09	1600.000	1.351	10	2000.000	1.315						

Dibenz(a,h)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.074	02	4.000	1.033	03	8.000	0.995	04	20.000	1.12
05	100.000	1.217	06	200.000	1.186	07	400.000	1.111	08	1000.000	1.107
09	1600.000	1.154	10	2000.000	1.116						

Dibenzofuran

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	2.546	02	4.000	2.255	03	8.000	2.301	04	20.000	2.218
05	100.000	2.287	06	200.000	2.268	07	400.000	2.242	08	1000.000	2.244
09	1600.000	2.26	10	2000.000	2.22						

Fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.564	02	4.000	1.437	03	8.000	1.441	04	20.000	1.429
05	100.000	1.464	06	200.000	1.46	07	400.000	1.445	08	1000.000	1.45
09	1600.000	1.447	10	2000.000	1.407						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

Analyte

Fluoranthene-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.191	02	4.000	1.137	03	8.000	1.13	04	20.000	1.124
05	100.000	1.157	06	200.000	1.17	07	400.000	1.179	08	1000.000	1.212
09	1600.000	1.218	10	2000.000	1.191						

Fluorene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	2.111	02	4.000	1.863	03	8.000	1.847	04	20.000	1.793
05	100.000	1.843	06	200.000	1.809	07	400.000	1.763	08	1000.000	1.748
09	1600.000	1.777	10	2000.000	1.747						

Fluorene-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.65	03	8.000	1.486	04	20.000	1.367	05	100.000	1.347
06	200.000	1.341	07	400.000	1.31	08	1000.000	1.314	09	1600.000	1.343
10	2000.000	1.313									

Indeno(1,2,3-cd)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.255	02	4.000	1.138	03	8.000	1.138	04	20.000	1.165
05	100.000	1.215	06	200.000	1.217	07	400.000	1.21	08	1000.000	1.201
09	1600.000	1.206	10	2000.000	1.173						

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.263	02	4.000	1.124	03	8.000	1.183	04	20.000	1.165
05	100.000	1.127	06	200.000	1.104	07	400.000	1.087	08	1000.000	1.069
09	1600.000	1.075	10	2000.000	1.034						

Phenanthrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.344	02	4.000	1.32	03	8.000	1.36	04	20.000	1.261
05	100.000	1.264	06	200.000	1.244	07	400.000	1.239	08	1000.000	1.246
09	1600.000	1.245	10	2000.000	1.212						

Pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.588	02	4.000	1.577	03	8.000	1.561	04	20.000	1.467
05	100.000	1.478	06	200.000	1.463	07	400.000	1.457	08	1000.000	1.478
09	1600.000	1.521	10	2000.000	1.489						

Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.117	03	8.000	0.9776	04	20.000	0.8752	05	100.000	0.8447
06	200.000	0.838	07	400.000	0.8281	08	1000.000	0.8213	09	1600.000	0.8335
10	2000.000	0.8045									

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2-Methylnaphthalene	TRG	Average RF	% RSD	8.1	≤20	0.7027	0.40
Acenaphthene	TRG	Average RF	% RSD	3.1	≤20	1.416	0.90
Acenaphthylene	TRG	Average RF	% RSD	3.6	≤20	2.483	0.90
Anthracene	TRG	Average RF	% RSD	1.5	≤20	1.222	0.70
Benz(a)anthracene	TRG	Average RF	% RSD	8.2	≤20	1.435	0.80
Benzo(a)pyrene	TRG	Average RF	% RSD	7.5	≤20	1.253	0.70
Benzo(b)fluoranthene	TRG	Average RF	% RSD	3.0	≤20	1.334	0.70
Benzo(g,h,i)perylene	TRG	Average RF	% RSD	4.5	≤20	1.35	0.50
Benzo(k)fluoranthene	TRG	Average RF	% RSD	3.2	≤20	1.261	0.70
Chrysene	TRG	Average RF	% RSD	1.9	≤20	1.304	0.70
Dibenz(a,h)anthracene	TRG	Average RF	% RSD	6.0	≤20	1.111	0.40
Dibenzofuran	TRG	Average RF	% RSD	4.2	≤20	2.284	0.80
Fluoranthene	TRG	Average RF	% RSD	2.9	≤20	1.454	0.60
Fluoranthene-d10	SURR	Average RF	% RSD	2.8	≤20	1.171	0.01
Fluorene	TRG	Average RF	% RSD	5.8	≤20	1.83	0.90
Fluorene-d10	SURR	Average RF	% RSD	8.1	≤20	1.386	0.01
Indeno(1,2,3-cd)pyrene	TRG	Average RF	% RSD	3.2	≤20	1.192	0.50
Naphthalene	TRG	Average RF	% RSD	5.9	≤20	1.123	0.70
Phenanthrene	TRG	Average RF	% RSD	3.9	≤20	1.273	0.70
Pyrene	TRG	Average RF	% RSD	3.3	≤20	1.508	0.60
Terphenyl-d14	SURR	Average RF	% RSD	11.5	≤20	0.8822	0.01

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1900055-11	SIM-PAH ICV @0.4ug/mL | SVM60 -14A	J:\MS14\DATA\122618A\1226F016.D	12/26/2018 12:38

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2-Methylnaphthalene	400	379	7.027E-1	6.658E-1	-5.250	±30	Average RF
Acenaphthene	400	380	1.416E0	1.344E0	-5.107	±30	Average RF
Acenaphthylene	400	385	2.483E0	2.39E0	-3.747	±30	Average RF
Anthracene	400	391	1.222E0	1.194E0	-2.293	±30	Average RF
Benz(a)anthracene	400	367	1.435E0	1.316E0	-8.324	±30	Average RF
Benzo(a)pyrene	400	373	1.253E0	1.168E0	-6.824	±30	Average RF
Benzo(b)fluoranthene	400	400	1.334E0	1.333E0	-0.009	±30	Average RF
Benzo(g,h,i)perylene	400	360	1.35E0	1.215E0	-9.967	±30	Average RF
Benzo(k)fluoranthene	400	407	1.261E0	1.284E0	1.80	±30	Average RF
Chrysene	400	381	1.304E0	1.243E0	-4.701	±30	Average RF
Dibenz(a,h)anthracene	400	377	1.111E0	1.046E0	-5.872	±30	Average RF
Dibenzofuran	400	370	2.284E0	2.113E0	-7.486	±30	Average RF
Fluoranthene	400	406	1.454E0	1.475E0	1.43	±30	Average RF
Fluorene	400	381	1.83E0	1.743E0	-4.741	±30	Average RF
Indeno(1,2,3-cd)pyrene	400	381	1.192E0	1.136E0	-4.687	±30	Average RF
Naphthalene	400	380	1.123E0	1.069E0	-4.880	±30	Average RF
Phenanthrene	400	375	1.273E0	1.195E0	-6.159	±30	Average RF
Pyrene	400	371	1.508E0	1.397E0	-7.329	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Fluoranthene-d10	400	410	1.171E0	1.199E0	2.40	±30	Average RF
Fluorene-d10	400	389	1.386E0	1.347E0	-2.785	±30	Average RF
Terphenyl-d14	400	379	8.822E-1	8.367E-1	-5.153	±30	Average RF

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 02/06/19 05:54

Continuing Calibration Verification (CCV) Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D **Calibration Date:** 12/26/2018
File ID: J:\MS14\DATA\020619\0206F002.D\ **Calibration ID:** KC1900055
Signal ID: 1 **Analysis Lot:** 624453
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2-Methylnaphthalene	400	382	0.7027	0.6709	-4.5	NA	±20	Average RF
Acenaphthene	400	384	1.4162	1.3612	-3.9	NA	±20	Average RF
Acenaphthylene	400	368	2.4827	2.2855	-7.9	NA	±20	Average RF
Anthracene	400	418	1.2221	1.2762	4.4	NA	±20	Average RF
Benz(a)anthracene	400	391	1.4352	1.4018	-2.3	NA	±20	Average RF
Benzo(a)pyrene	400	373	1.2532	1.1674	-6.8	NA	±20	Average RF
Benzo(b)fluoranthene	400	396	1.3335	1.3216	-0.9	NA	±20	Average RF
Benzo(g,h,i)perylene	400	386	1.3498	1.3024	-3.5	NA	±20	Average RF
Benzo(k)fluoranthene	400	422	1.2609	1.3294	5.4	NA	±20	Average RF
Chrysene	400	410	1.3043	1.338	2.6	NA	±20	Average RF
Dibenz(a,h)anthracene	400	399	1.1113	1.1081	-0.3	NA	±20	Average RF
Dibenzofuran	400	368	2.2839	2.1006	-8.0	NA	±20	Average RF
Fluoranthene	400	468	1.4544	1.702	17.0	NA	±20	Average RF
Fluorene	400	347	1.8302	1.5894	-13.2	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	400	345	1.1919	1.0284	-13.7	NA	±20	Average RF
Naphthalene	400	393	1.1234	1.1028	-1.8	NA	±20	Average RF
Phenanthrene	400	407	1.2735	1.2947	1.7	NA	±20	Average RF
Pyrene	400	364	1.5079	1.3725	-9.0	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Fluoranthene-d10	400	475	1.1709	1.3892	18.6	NA	±20	Average RF
Fluorene-d10	400	338	1.3856	1.1705	-15.5	NA	±20	Average RF
Terphenyl-d14	400	377	0.8822	0.8306	-5.8	NA	±20	Average RF

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Service Request: K1900892
Date Analyzed: 02/07/19 09:27

Continuing Calibration Verification (CCV) Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: 8270D
File ID: J:\MS14\DATA\020719\0207F002.D\
Signal ID: 1
Calibration Date: 12/26/2018
Calibration ID: KC1900055
Analysis Lot: 624534
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2-Methylnaphthalene	400	377	0.7027	0.6621	-5.8	NA	±20	Average RF
Acenaphthene	400	384	1.4162	1.3592	-4.0	NA	±20	Average RF
Acenaphthylene	400	365	2.4827	2.2651	-8.8	NA	±20	Average RF
Anthracene	400	417	1.2221	1.2749	4.3	NA	±20	Average RF
Benz(a)anthracene	400	393	1.4352	1.4089	-1.8	NA	±20	Average RF
Benzo(a)pyrene	400	374	1.2532	1.1721	-6.5	NA	±20	Average RF
Benzo(b)fluoranthene	400	395	1.3335	1.3182	-1.1	NA	±20	Average RF
Benzo(g,h,i)perylene	400	412	1.3498	1.3906	3.0	NA	±20	Average RF
Benzo(k)fluoranthene	400	408	1.2609	1.286	2.0	NA	±20	Average RF
Chrysene	400	405	1.3043	1.321	1.3	NA	±20	Average RF
Dibenz(a,h)anthracene	400	437	1.1113	1.2132	9.2	NA	±20	Average RF
Dibenzofuran	400	384	2.2839	2.1926	-4.0	NA	±20	Average RF
Fluoranthene	400	442	1.4544	1.6064	10.4	NA	±20	Average RF
Fluorene	400	358	1.8302	1.6359	-10.6	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	400	387	1.1919	1.1518	-3.4	NA	±20	Average RF
Naphthalene	400	390	1.1234	1.095	-2.5	NA	±20	Average RF
Phenanthrene	400	401	1.2735	1.2765	0.2	NA	±20	Average RF
Pyrene	400	368	1.5079	1.3859	-8.1	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Fluoranthene-d10	400	449	1.1709	1.3154	12.3	NA	±20	Average RF
Fluorene-d10	400	348	1.3856	1.2038	-13.1	NA	±20	Average RF
Terphenyl-d14	400	372	0.8822	0.8215	-6.9	NA	±20	Average RF

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QA/QC Report

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: **Analysis Lot:**624453
Instrument ID:K-MS-14

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS14\DATA\020619\0206F001.D\	ZZZZZZZ	ZZZZZZZ	2/6/2019	05:24:00	
J:\MS14\DATA\020619\0206F002.D\	Continuing Calibration Verification	KQ1901640-01	2/6/2019	05:54:00	
J:\MS14\DATA\020619\0206F005.D\	Method Blank	KQ1901375-04	2/6/2019	07:23:00	
J:\MS14\DATA\020619\0206F006.D\	ZZZZZZZ	ZZZZZZZ	2/6/2019	07:53:00	
J:\MS14\DATA\020619\0206F011.D\	PDI-ST-T07B-1901 MS	KQ1901375-01	2/6/2019	10:20:00	
J:\MS14\DATA\020619\0206F012.D\	PDI-ST-T07B-1901 DMS	KQ1901375-02	2/6/2019	10:49:00	
J:\MS14\DATA\020619\0206F013.D\	PDI-ST-T07B-1901	K1900892-004	2/6/2019	11:19:00	
J:\MS14\DATA\020619\0206F014.D\	PDI-ST-T06B-1901	K1900892-001	2/6/2019	11:48:00	
J:\MS14\DATA\020619\0206F015.D\	PDI-ST-T06A-1901	K1900892-002	2/6/2019	12:18:00	
J:\MS14\DATA\020619\0206F016.D\	PDI-ST-T07A-1901	K1900892-003	2/6/2019	12:47:00	

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Analysis Method: **Analysis Lot:**624534
Instrument ID:K-MS-14

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS14\DATA\020719\0207F001.D\	ZZZZZZZ	ZZZZZZZ	2/7/2019	08:57:00	
J:\MS14\DATA\020719\0207F002.D\	Continuing Calibration Verification	KQ1901673-01	2/7/2019	09:27:00	
J:\MS14\DATA\020719\0207F004.D\	Lab Control Sample	KQ1901375-03	2/7/2019	10:26:00	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Polynuclear Aromatic Hydrocarbons by GC/MS SIM Ultra Low Level

Prep Method: EPA 3541 **Extraction Lot:** 330728
Analytical Method: 8270D **Extraction Date:** 02/04/19 08:13

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-ST-T06B-1901	K1900892-001	1/30/19	1/31/19	39.411 g	2 mL	25.0
PDI-ST-T06A-1901	K1900892-002	1/30/19	1/31/19	39.278 g	2 mL	25.6
PDI-ST-T07A-1901	K1900892-003	1/30/19	1/31/19	39.156 g	2 mL	24.6
PDI-ST-T07B-1901	K1900892-004	1/30/19	1/31/19	38.366 g	2 mL	26.3
Matrix Spike	KQ1901375-01MS	1/30/19	1/31/19	38.418 g	2 mL	26.3
Duplicate Matrix Spike	KQ1901375-02DMS	1/30/19	1/31/19	39.133 g	2 mL	26.3
Lab Control Sample	KQ1901375-03LCS	NA	NA	20.00 g	2 mL	
Method Blank	KQ1901375-04MB	NA	NA	39.4110 g	2 mL	

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Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/29/19 18:45
Sample Matrix:	Water	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-RB-ST-190129	**Units:**	ug/L
Lab Code:	K1900892-005	**Basis:**	NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.0036**	**J**	0.020	0.0013	1	02/05/19 06:46	2/1/19	
Acenaphthene	ND	U	0.020	0.0012	1	02/05/19 06:46	2/1/19	
Acenaphthylene	ND	U	0.020	0.0011	1	02/05/19 06:46	2/1/19	
Anthracene	ND	U	0.020	0.00082	1	02/05/19 06:46	2/1/19	
Benz(a)anthracene	**0.0023**	**J**	0.020	0.00097	1	02/05/19 06:46	2/1/19	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	02/05/19 06:46	2/1/19	
Benzo(b)fluoranthene	ND	U	0.020	0.00083	1	02/05/19 06:46	2/1/19	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	02/05/19 06:46	2/1/19	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	02/05/19 06:46	2/1/19	
Chrysene	ND	U	0.020	0.00076	1	02/05/19 06:46	2/1/19	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	02/05/19 06:46	2/1/19	
Fluoranthene	ND	U	0.020	0.00082	1	02/05/19 06:46	2/1/19	
Fluorene	**0.0012**	**J**	0.020	0.0011	1	02/05/19 06:46	2/1/19	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	02/05/19 06:46	2/1/19	
Naphthalene	**0.0053**	**J**	0.020	0.0014	1	02/05/19 06:46	2/1/19	
Phenanthrene	**0.0046**	**J**	0.020	0.0011	1	02/05/19 06:46	2/1/19	
Pyrene	ND	U	0.020	0.0010	1	02/05/19 06:46	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	109	42 - 133	02/05/19 06:46	
Fluorene-d10	101	42 - 131	02/05/19 06:46	
Terphenyl-d14	67	32 - 129	02/05/19 06:46	

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Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901387-06	**Basis:**	NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	**0.0022**	**J**	0.020	0.0013	1	02/04/19 08:45	2/1/19	
Acenaphthene	ND	U	0.020	0.0012	1	02/04/19 08:45	2/1/19	
Acenaphthylene	ND	U	0.020	0.0011	1	02/04/19 08:45	2/1/19	
Anthracene	ND	U	0.020	0.00082	1	02/04/19 08:45	2/1/19	
Benz(a)anthracene	**0.0023**	**J**	0.020	0.00097	1	02/04/19 08:45	2/1/19	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	02/04/19 08:45	2/1/19	
Benzo(b)fluoranthene	ND	U	0.020	0.00083	1	02/04/19 08:45	2/1/19	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	02/04/19 08:45	2/1/19	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	02/04/19 08:45	2/1/19	
Chrysene	ND	U	0.020	0.00076	1	02/04/19 08:45	2/1/19	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	02/04/19 08:45	2/1/19	
Fluoranthene	ND	U	0.020	0.00082	1	02/04/19 08:45	2/1/19	
Fluorene	ND	U	0.020	0.0011	1	02/04/19 08:45	2/1/19	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	02/04/19 08:45	2/1/19	
Naphthalene	**0.0036**	**J**	0.020	0.0014	1	02/04/19 08:45	2/1/19	
Phenanthrene	**0.0019**	**J**	0.020	0.0011	1	02/04/19 08:45	2/1/19	
Pyrene	ND	U	0.020	0.0010	1	02/04/19 08:45	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	97	42 - 133	02/04/19 08:45	
Fluorene-d10	89	42 - 131	02/04/19 08:45	
Terphenyl-d14	79	32 - 129	02/04/19 08:45	

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10 42-133	Fluorene-d10 42-131	Terphenyl-d14 32-129
Batch QC	K1900657-003	96	90	58
Batch QC	K1900657-006	133	118	90
PDI-RB-ST-190129	K1900892-005	109	101	67
Method Blank	KQ1901387-06	97	89	79
Lab Control Sample	KQ1901387-05	99	88	78
Batch QC	KQ1901387-01	102	92	75
Batch QC	KQ1901387-02	102	91	70
Batch QC	KQ1901387-03	114	103	84
Batch QC	KQ1901387-04	105	93	73

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QA/QC Report

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/04/19 08:15

Internal Standard Area and RT SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020419\0204F002.D\ **Lab Code:**KQ1901569-02
Instrument ID: K-MS-14 **Analysis Lot:**624195
Analysis Method: 8270D **Signal ID:**1

		Acenaphthene-d10		Chrysene-d12		Naphthalene-d8	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	30,532	6.37	83,434	10.21	69,325	4.82
	Upper Limit ==>	61,064	6.87	166,868	10.71	138,650	5.32
	Lower Limit ==>	15,266	5.87	41,717	9.71	34,663	4.32
Associated Analyses							
Continuing Calibration Verification	KQ1901569-02	30532	6.37	83434	10.21	69325	4.82
Method Blank	KQ1901387-06	39777	6.37	85242	10.21	92951	4.83
Lab Control Sample	KQ1901387-05	35530	6.37	77614	10.21	87961	4.83
Batch QCMS	KQ1901387-01	33167	6.37	76095	10.21	80830	4.83
Batch QCDMS	KQ1901387-02	33064	6.37	75842	10.21	81363	4.83
Batch QCMS	KQ1901387-03	31485	6.37	72201	10.21	78339	4.83
Batch QCDMS	KQ1901387-04	31728	6.37	74255	10.21	78862	4.83
Batch QC	K1900657-003	33335	6.37	78476	10.20	76677	4.82
Batch QC	K1900657-006	31361	6.37	74558	10.20	72048	4.83

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QA/QC Report

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/04/19 08:15

Internal Standard Area and RT SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020419\0204F002.D\ **Lab Code:**KQ1901569-02
Instrument ID: K-MS-14 **Analysis Lot:**624195
Analysis Method: 8270D **Signal ID:**1

		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**
	Result ==>	93,026	13.47	61,752	7.62
	Upper Limit ==>	186,052	13.97	123,504	8.12
	Lower Limit ==>	46,513	12.97	30,876	7.12
Associated Analyses					
Continuing Calibration Verification	KQ1901569-02	93026	13.47	61752	7.62
Method Blank	KQ1901387-06	91227	13.46	82257	7.62
Lab Control Sample	KQ1901387-05	85743	13.47	73458	7.62
Batch QCMS	KQ1901387-01	87347	13.46	69214	7.62
Batch QCDMS	KQ1901387-02	87291	13.46	68567	7.62
Batch QCMS	KQ1901387-03	85273	13.47	66548	7.62
Batch QCDMS	KQ1901387-04	84016	13.46	66571	7.61
Batch QC	K1900657-003	89877	13.45	69191	7.61
Batch QC	K1900657-006	83767	13.45	66008	7.62

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 02/05/19 05:48

Internal Standard Area and RT SUMMARY

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020519\0205F002.D\ **Lab Code:** KQ1901616-01

Instrument ID: K-MS-14 **Analysis Lot:** 624197

Analysis Method: 8270D **Signal ID:** 1

		Acenaphthene-d10		Chrysene-d12		Naphthalene-d8	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Result ==>	23,730	6.37	59,486	10.20	53,263	4.81
	Upper Limit ==>	47,460	6.87	118,972	10.70	106,526	5.31
	Lower Limit ==>	11,865	5.87	29,743	9.70	26,632	4.31
Associated Analyses							
Continuing Calibration Verification	KQ1901616-01	23730	6.37	59486	10.20	53263	4.81
PDI-RB-ST-190129	K1900892-005	30418	6.37	68766	10.20	71593	4.82

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 02/05/19 05:48

Internal Standard Area and RT SUMMARY

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020519\0205F002.D\ **Lab Code:** KQ1901616-01

Instrument ID: K-MS-14 **Analysis Lot:** 624197

Analysis Method: 8270D **Signal ID:** 1

		Perylene-d12		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**
	Result ==>	64,478	13.44	45,540	7.61
	Upper Limit ==>	128,956	13.94	91,080	8.11
	Lower Limit ==>	32,239	12.94	22,770	7.11
Associated Analyses					
Continuing Calibration Verification	KQ1901616-01	64478	13.44	45540	7.61
PDI-RB-ST-190129	K1900892-005	78787	13.44	64232	7.61

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	02/4/19
		Date Extracted:	02/1/19

Duplicate Matrix Spike Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1900657-003	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3511		

		Matrix Spike KQ1901387-01			Duplicate Matrix Spike KQ1901387-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2-Methylnaphthalene	0.025	2.16	2.78	77	2.05	2.78	73	58-111	5	30
Acenaphthene	0.0020 J	2.45	2.78	88	2.38	2.78	86	63-121	3	30
Acenaphthylene	ND U	2.45	2.78	88	2.34	2.78	84	61-118	4	30
Anthracene	0.0046 J	2.64	2.78	95	2.51	2.78	90	69-125	5	30
Benz(a)anthracene	0.0082 J	2.50	2.78	90	2.37	2.78	85	71-127	5	30
Benzo(a)pyrene	0.0070 J	2.35	2.78	84	2.23	2.78	80	69-132	5	30
Benzo(b)fluoranthene	0.0044 J	2.55	2.78	92	2.42	2.78	87	65-139	5	30
Benzo(g,h,i)perylene	0.0034 J	2.25	2.78	81	2.13	2.78	76	63-129	6	30
Benzo(k)fluoranthene	ND U	2.61	2.78	94	2.47	2.78	89	65-137	6	30
Chrysene	0.0094 J	2.62	2.78	94	2.47	2.78	89	75-130	6	30
Dibenz(a,h)anthracene	ND U	2.27	2.78	82	2.16	2.78	78	61-138	5	30
Fluoranthene	0.0079 J	2.53	2.78	91	2.41	2.78	87	69-125	5	30
Fluorene	0.0065 J	2.29	2.78	82	2.20	2.78	79	66-123	4	30
Indeno(1,2,3-cd)pyrene	ND U	2.06	2.78	74	1.95	2.78	70	62-142	5	30
Naphthalene	0.010 J	2.31	2.78	83	2.17	2.78	78	45-123	6	30
Phenanthrene	0.027	2.48	2.78	88	2.40	2.78	86	65-124	3	30
Pyrene	0.0094 J	2.48	2.78	89	2.34	2.78	84	59-134	6	30

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.

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	02/4/19
		Date Extracted:	02/1/19

Duplicate Matrix Spike Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K1900657-006	**Basis:**	NA
Analysis Method:	8270D		
Prep Method:	EPA 3511		

		Matrix Spike KQ1901387-03			Duplicate Matrix Spike KQ1901387-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2-Methylnaphthalene	0.0083 J	2.10	2.78	75	2.08	2.78	75	58-111	<1	30
Acenaphthene	ND U	2.47	2.78	89	2.42	2.78	87	63-121	2	30
Acenaphthylene	ND U	2.49	2.78	90	2.39	2.78	86	61-118	4	30
Anthracene	0.0012 J	2.62	2.78	94	2.49	2.78	90	69-125	5	30
Benz(a)anthracene	0.0037 J	2.49	2.78	89	2.37	2.78	85	71-127	5	30
Benzo(a)pyrene	0.0030 J	2.43	2.78	87	2.28	2.78	82	69-132	6	30
Benzo(b)fluoranthene	ND U	2.61	2.78	94	2.46	2.78	89	65-139	6	30
Benzo(g,h,i)perylene	ND U	2.24	2.78	81	2.16	2.78	78	63-129	4	30
Benzo(k)fluoranthene	ND U	2.69	2.78	97	2.54	2.78	92	65-137	6	30
Chrysene	0.0026 J	2.61	2.78	94	2.47	2.78	89	75-130	5	30
Dibenz(a,h)anthracene	ND U	2.39	2.78	86	2.18	2.78	79	61-138	9	30
Fluoranthene	0.0046 J	2.53	2.78	91	2.42	2.78	87	69-125	4	30
Fluorene	0.0034 J	2.29	2.78	82	2.20	2.78	79	66-123	4	30
Indeno(1,2,3-cd)pyrene	ND U	2.10	2.78	76	2.00	2.78	72	62-142	5	30
Naphthalene	0.0069 J	2.28	2.78	82	2.25	2.78	81	45-123	1	30
Phenanthrene	0.0092 J	2.45	2.78	88	2.37	2.78	85	65-124	4	30
Pyrene	0.0036 J	2.47	2.78	89	2.32	2.78	83	59-134	6	30

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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/04/19
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method:	8270D	**Units:**	ug/L
Prep Method:	EPA 3511	**Basis:**	NA
		Analysis Lot:	624195

Lab Control Sample
KQ1901387-05

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2-Methylnaphthalene	2.02	2.78	73	48-120
Acenaphthene	2.27	2.78	82	63-121
Acenaphthylene	2.31	2.78	83	58-124
Anthracene	2.42	2.78	87	68-127
Benz(a)anthracene	2.35	2.78	85	74-124
Benzo(a)pyrene	2.33	2.78	84	75-131
Benzo(b)fluoranthene	2.50	2.78	90	73-136
Benzo(g,h,i)perylene	2.12	2.78	76	63-127
Benzo(k)fluoranthene	2.54	2.78	91	74-134
Chrysene	2.45	2.78	88	74-132
Dibenz(a,h)anthracene	2.26	2.78	81	59-135
Fluoranthene	2.31	2.78	83	70-127
Fluorene	2.08	2.78	75	68-121
Indeno(1,2,3-cd)pyrene	2.04	2.78	73	63-136
Naphthalene	2.17	2.78	78	52-115
Phenanthrene	2.28	2.78	82	64-126
Pyrene	2.35	2.78	84	72-127

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/04/19 08:45
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Method Blank Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Sample Name:	Method Blank	**Instrument ID:**	K-MS-14
Lab Code:	KQ1901387-06	**File ID:**	J:\MS14\DATA\020419\0204F003.D\
Analysis Method:	8270D	**Analysis Lot:**	624195,624197
Prep Method:	EPA 3511	**Extraction Lot:**	330750

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901387-05	J:\MS14\DATA\020419\0204F006.D\	02/04/19 10:13
Batch QCMS	KQ1901387-01	J:\MS14\DATA\020419\0204F013.D\	02/04/19 13:39
Batch QCDMS	KQ1901387-02	J:\MS14\DATA\020419\0204F014.D\	02/04/19 14:09
Batch QCMS	KQ1901387-03	J:\MS14\DATA\020419\0204F015.D\	02/04/19 14:38
Batch QCDMS	KQ1901387-04	J:\MS14\DATA\020419\0204F016.D\	02/04/19 15:08
Batch QC	K1900657-003	J:\MS14\DATA\020419\0204F017.D\	02/04/19 15:37
Batch QC	K1900657-006	J:\MS14\DATA\020419\0204F018.D\	02/04/19 16:07
PDI-RB-ST-190129	K1900892-005	J:\MS14\DATA\020519\0205F004.D\	02/05/19 06:46

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/04/19 10:13
Sample Matrix:	Water	**Date Extracted:**	02/01/19

Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-14
Lab Code:	KQ1901387-05	**File ID:**	J:\MS14\DATA\020419\0204F006.D\
Analysis Method:	8270D	**Analysis Lot:**	624195,624197
Prep Method:	EPA 3511	**Extraction Lot:**	330750

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901387-06	J:\MS14\DATA\020419\0204F003.D\	02/04/19 08:45
Batch QCMS	KQ1901387-01	J:\MS14\DATA\020419\0204F013.D\	02/04/19 13:39
Batch QCDMS	KQ1901387-02	J:\MS14\DATA\020419\0204F014.D\	02/04/19 14:09
Batch QCMS	KQ1901387-03	J:\MS14\DATA\020419\0204F015.D\	02/04/19 14:38
Batch QCDMS	KQ1901387-04	J:\MS14\DATA\020419\0204F016.D\	02/04/19 15:08
Batch QC	K1900657-003	J:\MS14\DATA\020419\0204F017.D\	02/04/19 15:37
Batch QC	K1900657-006	J:\MS14\DATA\020419\0204F018.D\	02/04/19 16:07
PDI-RB-ST-190129	K1900892-005	J:\MS14\DATA\020519\0205F004.D\	02/05/19 06:46

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/04/19 07:45

Tune Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020419\0204F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-14 **Analysis Lot:** 624195

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	47.36	127765	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	47.69	128653	Pass
70	69	0	2	0.75	971	Pass
127	198	10	80	49.26	132896	Pass
197	198	0	2	0.34	912	Pass
198	442	30	100	49.82	269760	Pass
199	198	5	9	6.84	18444	Pass
275	198	10	60	35.06	94581	Pass
365	442	1	50	2.87	15532	Pass
441	443	0.01	100	77.95	79936	Pass
442	442	30	100	100.00	541418	Pass
443	442	15	24	18.94	102554	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901569-02	J:\MS14\DATA\020419\0204F002.D\	02/04/19 08:15	
Method Blank	KQ1901387-06	J:\MS14\DATA\020419\0204F003.D\	02/04/19 08:45	
Lab Control Sample	KQ1901387-05	J:\MS14\DATA\020419\0204F006.D\	02/04/19 10:13	
Batch QC	KQ1901387-01	J:\MS14\DATA\020419\0204F013.D\	02/04/19 13:39	
Batch QC	KQ1901387-02	J:\MS14\DATA\020419\0204F014.D\	02/04/19 14:09	
Batch QC	KQ1901387-03	J:\MS14\DATA\020419\0204F015.D\	02/04/19 14:38	
Batch QC	KQ1901387-04	J:\MS14\DATA\020419\0204F016.D\	02/04/19 15:08	
Batch QC	K1900657-003	J:\MS14\DATA\020419\0204F017.D\	02/04/19 15:37	
Batch QC	K1900657-006	J:\MS14\DATA\020419\0204F018.D\	02/04/19 16:07	

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/05/19 05:18

Tune Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

File ID: J:\MS14\DATA\020519\0205F001.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-14 **Analysis Lot:** 624197

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	49.55	117685	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	46.10	109496	Pass
70	69	0	2	0.51	556	Pass
127	198	10	80	48.99	116370	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	47.13	237525	Pass
199	198	5	9	6.98	16570	Pass
275	198	10	60	36.48	86658	Pass
365	442	1	50	3.19	16090	Pass
441	443	0.01	100	76.29	74232	Pass
442	442	30	100	100.00	503936	Pass
443	442	15	24	19.31	97304	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901616-01	J:\MS14\DATA\020519\0205F002.D\	02/05/19 05:48	
PDI-RB-ST-190129	K1900892-005	J:\MS14\DATA\020519\0205F004.D\	02/05/19 06:46	

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900055-01	SIM-PAH ICAL @.002ug/mL | SVM59-4A	J:\MS14\DATA\122618A\1226F006.D	12/26/2018 08:15
02	KC1900055-02	SIM-PAH ICAL @.004ug/mL | SVM59-4B	J:\MS14\DATA\122618A\1226F007.D	12/26/2018 08:41
03	KC1900055-03	SIM-PAH ICAL @.008ug/mL | SVM59-4C	J:\MS14\DATA\122618A\1226F008.D	12/26/2018 09:07
04	KC1900055-04	SIM-PAH ICAL @0.02ug/mL | SVM59-4D	J:\MS14\DATA\122618A\1226F009.D	12/26/2018 09:33
05	KC1900055-05	SIM-PAH ICAL @0.1ug/mL | SVM59-4E	J:\MS14\DATA\122618A\1226F010.D	12/26/2018 09:59
06	KC1900055-06	SIM-PAH ICAL @0.2ug/mL | SVM59-4F	J:\MS14\DATA\122618A\1226F011.D	12/26/2018 10:26
07	KC1900055-07	SIM-PAH ICAL @0.4ug/mL | SVM59-4G	J:\MS14\DATA\122618A\1226F012.D	12/26/2018 10:52
08	KC1900055-08	SIM-PAH ICAL @1.0ug/mL | SVM59-4H	J:\MS14\DATA\122618A\1226F013.D	12/26/2018 11:18
09	KC1900055-09	SIM-PAH ICAL @1.6ug/mL | SVM59-4I	J:\MS14\DATA\122618A\1226F014.D	12/26/2018 11:45
10	KC1900055-10	SIM-PAH ICAL @2.0ug/mL | SVM59-4J	J:\MS14\DATA\122618A\1226F015.D	12/26/2018 12:12

Analyte

2-Methylnaphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	0.7405	02	4.000	0.8066	03	8.000	0.7507	04	20.000	0.7419
05	100.000	0.7214	06	200.000	0.6641	07	400.000	0.6616	08	1000.000	0.65
09	1600.000	0.6553	10	2000.000	0.635						

Acenaphthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.535	02	4.000	1.424	03	8.000	1.393	04	20.000	1.393
05	100.000	1.404	06	200.000	1.397	07	400.000	1.409	08	1000.000	1.404
09	1600.000	1.415	10	2000.000	1.387						

Acenaphthylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	2.712	02	4.000	2.541	03	8.000	2.41	04	20.000	2.415
05	100.000	2.473	06	200.000	2.45	07	400.000	2.46	08	1000.000	2.472
09	1600.000	2.478	10	2000.000	2.415						

Anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.234	02	4.000	1.215	03	8.000	1.233	04	20.000	1.189
05	100.000	1.248	06	200.000	1.234	07	400.000	1.222	08	1000.000	1.228
09	1600.000	1.224	10	2000.000	1.194						

Benz(a)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.753	02	4.000	1.471	03	8.000	1.414	04	20.000	1.366
05	100.000	1.35	06	200.000	1.36	07	400.000	1.391	08	1000.000	1.415
09	1600.000	1.435	10	2000.000	1.397						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

Analyte

Benzo(a)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.48	03	8.000	1.317	04	20.000	1.25	05	100.000	1.239
06	200.000	1.205	07	400.000	1.208	08	1000.000	1.209	09	1600.000	1.204
10	2000.000	1.168									

Benzo(b)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.4	02	4.000	1.295	03	8.000	1.273	04	20.000	1.305
05	100.000	1.332	06	200.000	1.324	07	400.000	1.368	08	1000.000	1.377
09	1600.000	1.351	10	2000.000	1.311						

Benzo(g,h,i)perylene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.474	02	4.000	1.359	03	8.000	1.34	04	20.000	1.387
05	100.000	1.394	06	200.000	1.352	07	400.000	1.328	08	1000.000	1.31
09	1600.000	1.302	10	2000.000	1.252						

Benzo(k)fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.234	02	4.000	1.247	03	8.000	1.168	04	20.000	1.26
05	100.000	1.298	06	200.000	1.271	07	400.000	1.307	08	1000.000	1.294
09	1600.000	1.284	10	2000.000	1.247						

Chrysene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.326	02	4.000	1.272	03	8.000	1.27	04	20.000	1.298
05	100.000	1.285	06	200.000	1.302	07	400.000	1.309	08	1000.000	1.315
09	1600.000	1.351	10	2000.000	1.315						

Dibenz(a,h)anthracene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.074	02	4.000	1.033	03	8.000	0.995	04	20.000	1.12
05	100.000	1.217	06	200.000	1.186	07	400.000	1.111	08	1000.000	1.107
09	1600.000	1.154	10	2000.000	1.116						

Fluoranthene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.564	02	4.000	1.437	03	8.000	1.441	04	20.000	1.429
05	100.000	1.464	06	200.000	1.46	07	400.000	1.445	08	1000.000	1.45
09	1600.000	1.447	10	2000.000	1.407						

Fluoranthene-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.191	02	4.000	1.137	03	8.000	1.13	04	20.000	1.124
05	100.000	1.157	06	200.000	1.17	07	400.000	1.179	08	1000.000	1.212
09	1600.000	1.218	10	2000.000	1.191						

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

Analyte

Fluorene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	2.111	02	4.000	1.863	03	8.000	1.847	04	20.000	1.793
05	100.000	1.843	06	200.000	1.809	07	400.000	1.763	08	1000.000	1.748
09	1600.000	1.777	10	2000.000	1.747						

Fluorene-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.65	03	8.000	1.486	04	20.000	1.367	05	100.000	1.347
06	200.000	1.341	07	400.000	1.31	08	1000.000	1.314	09	1600.000	1.343
10	2000.000	1.313									

Indeno(1,2,3-cd)pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.255	02	4.000	1.138	03	8.000	1.138	04	20.000	1.165
05	100.000	1.215	06	200.000	1.217	07	400.000	1.21	08	1000.000	1.201
09	1600.000	1.206	10	2000.000	1.173						

Naphthalene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.263	02	4.000	1.124	03	8.000	1.183	04	20.000	1.165
05	100.000	1.127	06	200.000	1.104	07	400.000	1.087	08	1000.000	1.069
09	1600.000	1.075	10	2000.000	1.034						

Phenanthrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.344	02	4.000	1.32	03	8.000	1.36	04	20.000	1.261
05	100.000	1.264	06	200.000	1.244	07	400.000	1.239	08	1000.000	1.246
09	1600.000	1.245	10	2000.000	1.212						

Pyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.000	1.588	02	4.000	1.577	03	8.000	1.561	04	20.000	1.467
05	100.000	1.478	06	200.000	1.463	07	400.000	1.457	08	1000.000	1.478
09	1600.000	1.521	10	2000.000	1.489						

Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	4.000	1.117	03	8.000	0.9776	04	20.000	0.8752	05	100.000	0.8447
06	200.000	0.838	07	400.000	0.8281	08	1000.000	0.8213	09	1600.000	0.8335
10	2000.000	0.8045									

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2-Methylnaphthalene	TRG	Average RF	% RSD	8.1	≤20	0.7027	0.40
Acenaphthene	TRG	Average RF	% RSD	3.1	≤20	1.416	0.90
Acenaphthylene	TRG	Average RF	% RSD	3.6	≤20	2.483	0.90
Anthracene	TRG	Average RF	% RSD	1.5	≤20	1.222	0.70
Benz(a)anthracene	TRG	Average RF	% RSD	8.2	≤20	1.435	0.80
Benzo(a)pyrene	TRG	Average RF	% RSD	7.5	≤20	1.253	0.70
Benzo(b)fluoranthene	TRG	Average RF	% RSD	3.0	≤20	1.334	0.70
Benzo(g,h,i)perylene	TRG	Average RF	% RSD	4.5	≤20	1.35	0.50
Benzo(k)fluoranthene	TRG	Average RF	% RSD	3.2	≤20	1.261	0.70
Chrysene	TRG	Average RF	% RSD	1.9	≤20	1.304	0.70
Dibenz(a,h)anthracene	TRG	Average RF	% RSD	6.0	≤20	1.111	0.40
Fluoranthene	TRG	Average RF	% RSD	2.9	≤20	1.454	0.60
Fluoranthene-d10	SURR	Average RF	% RSD	2.8	≤20	1.171	0.01
Fluorene	TRG	Average RF	% RSD	5.8	≤20	1.83	0.90
Fluorene-d10	SURR	Average RF	% RSD	8.1	≤20	1.386	0.01
Indeno(1,2,3-cd)pyrene	TRG	Average RF	% RSD	3.2	≤20	1.192	0.50
Naphthalene	TRG	Average RF	% RSD	5.9	≤20	1.123	0.70
Phenanthrene	TRG	Average RF	% RSD	3.9	≤20	1.273	0.70
Pyrene	TRG	Average RF	% RSD	3.3	≤20	1.508	0.60
Terphenyl-d14	SURR	Average RF	% RSD	11.5	≤20	0.8822	0.01

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 12/26/2018

Initial Calibration Verification Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Calibration ID: KC1900055 **Signal ID:** 1
Instrument ID: K-MS-14

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1900055-11	SIM-PAH ICV @0.4ug/mL | SVM60 -14A	J:\MS14\DATA\122618A\1226F016.D	12/26/2018 12:38

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2-Methylnaphthalene	400	379	7.027E-1	6.658E-1	-5.250	±30	Average RF
Acenaphthene	400	380	1.416E0	1.344E0	-5.107	±30	Average RF
Acenaphthylene	400	385	2.483E0	2.39E0	-3.747	±30	Average RF
Anthracene	400	391	1.222E0	1.194E0	-2.293	±30	Average RF
Benz(a)anthracene	400	367	1.435E0	1.316E0	-8.324	±30	Average RF
Benzo(a)pyrene	400	373	1.253E0	1.168E0	-6.824	±30	Average RF
Benzo(b)fluoranthene	400	400	1.334E0	1.333E0	-0.009	±30	Average RF
Benzo(g,h,i)perylene	400	360	1.35E0	1.215E0	-9.967	±30	Average RF
Benzo(k)fluoranthene	400	407	1.261E0	1.284E0	1.80	±30	Average RF
Chrysene	400	381	1.304E0	1.243E0	-4.701	±30	Average RF
Dibenz(a,h)anthracene	400	377	1.111E0	1.046E0	-5.872	±30	Average RF
Fluoranthene	400	406	1.454E0	1.475E0	1.43	±30	Average RF
Fluorene	400	381	1.83E0	1.743E0	-4.741	±30	Average RF
Indeno(1,2,3-cd)pyrene	400	381	1.192E0	1.136E0	-4.687	±30	Average RF
Naphthalene	400	380	1.123E0	1.069E0	-4.880	±30	Average RF
Phenanthrene	400	375	1.273E0	1.195E0	-6.159	±30	Average RF
Pyrene	400	371	1.508E0	1.397E0	-7.329	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Fluoranthene-d10	400	410	1.171E0	1.199E0	2.40	±30	Average RF
Fluorene-d10	400	389	1.386E0	1.347E0	-2.785	±30	Average RF
Terphenyl-d14	400	379	8.822E-1	8.367E-1	-5.153	±30	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/04/19 08:15

Continuing Calibration Verification (CCV) Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method:	8270D	**Calibration Date:**	12/26/2018
File ID:	J:\MS14\DATA\020419\0204F002.D\	**Calibration ID:**	KC1900055
Signal ID:	1	**Analysis Lot:**	624195
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2-Methylnaphthalene	400	388	0.7027	0.6825	-2.9	NA	±20	Average RF
Acenaphthene	400	398	1.4162	1.4107	-0.4	NA	±20	Average RF
Acenaphthylene	400	377	2.4827	2.3408	-5.7	NA	±20	Average RF
Anthracene	400	396	1.2221	1.209	-1.1	NA	±20	Average RF
Benz(a)anthracene	400	386	1.4352	1.3863	-3.4	NA	±20	Average RF
Benzo(a)pyrene	400	382	1.2532	1.1971	-4.5	NA	±20	Average RF
Benzo(b)fluoranthene	400	411	1.3335	1.3691	2.7	NA	±20	Average RF
Benzo(g,h,i)perylene	400	408	1.3498	1.378	2.1	NA	±20	Average RF
Benzo(k)fluoranthene	400	416	1.2609	1.3111	4.0	NA	±20	Average RF
Chrysene	400	401	1.3043	1.3062	0.1	NA	±20	Average RF
Dibenz(a,h)anthracene	400	434	1.1113	1.2051	8.4	NA	±20	Average RF
Fluoranthene	400	462	1.4544	1.681	15.6	NA	±20	Average RF
Fluorene	400	355	1.8302	1.6221	-11.4	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	400	379	1.1919	1.129	-5.3	NA	±20	Average RF
Naphthalene	400	379	1.1234	1.0645	-5.2	NA	±20	Average RF
Phenanthrene	400	388	1.2735	1.234	-3.1	NA	±20	Average RF
Pyrene	400	362	1.5079	1.3643	-9.5	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Fluoranthene-d10	400	495	1.1709	1.4503	23.9*	NA	±20	Average RF
Fluorene-d10	400	368	1.3856	1.2745	-8.0	NA	±20	Average RF
Terphenyl-d14	400	371	0.8822	0.8193	-7.1	NA	±20	Average RF

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 02/05/19 05:48

Continuing Calibration Verification (CCV) Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D **Calibration Date:** 12/26/2018
File ID: J:\MS14\DATA\020519\0205F002.D\ **Calibration ID:** KC1900055
Signal ID: 1 **Analysis Lot:** 624197
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2-Methylnaphthalene	400	383	0.7027	0.6731	-4.2	NA	±20	Average RF
Acenaphthene	400	380	1.4162	1.3442	-5.1	NA	±20	Average RF
Acenaphthylene	400	365	2.4827	2.2677	-8.7	NA	±20	Average RF
Anthracene	400	414	1.2221	1.2636	3.4	NA	±20	Average RF
Benz(a)anthracene	400	386	1.4352	1.385	-3.5	NA	±20	Average RF
Benzo(a)pyrene	400	376	1.2532	1.1769	-6.1	NA	±20	Average RF
Benzo(b)fluoranthene	400	407	1.3335	1.3552	1.6	NA	±20	Average RF
Benzo(g,h,i)perylene	400	388	1.3498	1.3098	-3.0	NA	±20	Average RF
Benzo(k)fluoranthene	400	432	1.2609	1.3607	7.9	NA	±20	Average RF
Chrysene	400	409	1.3043	1.3348	2.3	NA	±20	Average RF
Dibenz(a,h)anthracene	400	395	1.1113	1.0977	-1.2	NA	±20	Average RF
Fluoranthene	400	462	1.4544	1.6803	15.5	NA	±20	Average RF
Fluorene	400	349	1.8302	1.5966	-12.8	NA	±20	Average RF
Indeno(1,2,3-cd)pyrene	400	346	1.1919	1.0317	-13.4	NA	±20	Average RF
Naphthalene	400	393	1.1234	1.1043	-1.7	NA	±20	Average RF
Phenanthrene	400	400	1.2735	1.2748	0.1	NA	±20	Average RF
Pyrene	400	368	1.5079	1.3887	-7.9	NA	±20	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Fluoranthene-d10	400	467	1.1709	1.3675	16.8	NA	±20	Average RF
Fluorene-d10	400	339	1.3856	1.1754	-15.2	NA	±20	Average RF
Terphenyl-d14	400	381	0.8822	0.8408	-4.7	NA	±20	Average RF

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: **Analysis Lot:**624195
Instrument ID:K-MS-14

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS14\DATA\020419\0204F001.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	07:45:00	
J:\MS14\DATA\020419\0204F002.D\	Continuing Calibration Verification	KQ1901569-02	2/4/2019	08:15:00	
J:\MS14\DATA\020419\0204F003.D\	Method Blank	KQ1901387-06	2/4/2019	08:45:00	
J:\MS14\DATA\020419\0204F006.D\	Lab Control Sample	KQ1901387-05	2/4/2019	10:13:00	
J:\MS14\DATA\020419\0204F007.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	10:42:00	
J:\MS14\DATA\020419\0204F012.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	13:10:00	
J:\MS14\DATA\020419\0204F013.D\	Batch QC MS	KQ1901387-01	2/4/2019	13:39:00	
J:\MS14\DATA\020419\0204F014.D\	Batch QC DMS	KQ1901387-02	2/4/2019	14:09:00	
J:\MS14\DATA\020419\0204F015.D\	Batch QC MS	KQ1901387-03	2/4/2019	14:38:00	
J:\MS14\DATA\020419\0204F016.D\	Batch QC DMS	KQ1901387-04	2/4/2019	15:08:00	
J:\MS14\DATA\020419\0204F017.D\	Batch QC	K1900657-003	2/4/2019	15:37:00	
J:\MS14\DATA\020419\0204F018.D\	Batch QC	K1900657-006	2/4/2019	16:07:00	
J:\MS14\DATA\020419\0204F019.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	16:37:00	
J:\MS14\DATA\020419\0204F020.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	17:06:00	
J:\MS14\DATA\020419\0204F021.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	17:36:00	
J:\MS14\DATA\020419\0204F022.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	18:05:00	
J:\MS14\DATA\020419\0204F023.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	18:35:00	
J:\MS14\DATA\020419\0204F024.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	19:04:00	
J:\MS14\DATA\020419\0204F025.D\	ZZZZZZZ	ZZZZZZZ	2/4/2019	19:34:00	

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: **Analysis Lot:**624197
Instrument ID:K-MS-14

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS14\DATA\020519\0205F001.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	05:18:00	
J:\MS14\DATA\020519\0205F002.D\	Continuing Calibration Verification	KQ1901616-01	2/5/2019	05:48:00	
J:\MS14\DATA\020519\0205F004.D\	PDI-RB-ST-190129	K1900892-005	2/5/2019	06:46:00	
J:\MS14\DATA\020519\0205F005.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	07:15:00	
J:\MS14\DATA\020519\0205F006.D\	ZZZZZZZ	ZZZZZZZ	2/5/2019	07:44:00	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Water

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Prep Method: EPA 3511 **Extraction Lot:** 330750
Analytical Method: 8270D **Extraction Date:** 02/01/19 08:37

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1900657-003	NA	NA	450 mL	2 mL	
Batch QC	K1900657-006	NA	NA	450 mL	2 mL	
PDI-RB-ST-190129	K1900892-005	1/29/19	1/31/19	450 mL	2 mL	
Matrix Spike	KQ1901387-01MS	NA	NA	450 mL	2 mL	
Duplicate Matrix Spike	KQ1901387-02DMS	NA	NA	450 mL	2 mL	
Matrix Spike	KQ1901387-03MS	NA	NA	450 mL	2 mL	
Duplicate Matrix Spike	KQ1901387-04DMS	NA	NA	450 mL	2 mL	
Lab Control Sample	KQ1901387-05LCS	NA	NA	450 mL	2 mL	
Method Blank	KQ1901387-06MB	NA	NA	450 mL	2 mL	

Low Level Semivolatile Organic Compounds by GC/MS

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

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:25
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-001	**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	**98 J**	200	19	1	02/08/19 20:40	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	47	30 - 102	02/08/19 20:40	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 18:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T06A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-002	**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	**110 J**	200	18	1	02/08/19 21:08	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	47	30 - 102	02/08/19 21:08	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:45
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07A-1901	**Units:**	ug/Kg
Lab Code:	K1900892-003	**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	**79 J**	210	19	1	02/08/19 21:37	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	43	30 - 102	02/08/19 21:37	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19 17:15
Sample Matrix:	Sediment	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**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**	200	18	1	02/08/19 20:11	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	41	30 - 102	02/08/19 20:11	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/29/19 18:45
Sample Matrix:	Water	**Date Received:**	01/31/19 12:00
Sample Name:	PDI-RB-ST-190129	**Units:**	ug/L
Lab Code:	K1900892-005	**Basis:**	NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	**0.73** J	0.95	0.13	1	02/08/19 17:50	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	77	48 - 109	02/08/19 17:50	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901376-04	**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	**15 J**	51	8.9	1	02/08/19 18:18	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	48	30 - 102	02/08/19 18:18	

Analytical Report

Client:	AECOM	**Service Request:**	K1900892
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:	KQ1901379-03	**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	02/08/19 16:25	2/1/19	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
p-Terphenyl-d14	86	48 - 109	02/08/19 16:25	

Client: AECOM **Service Request:** K1900892

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-ST-T06B-1901	K1900892-001	47
PDI-ST-T06A-1901	K1900892-002	47
PDI-ST-T07A-1901	K1900892-003	43
PDI-ST-T07B-1901	K1900892-004	41
Method Blank	KQ1901376-04	48
Lab Control Sample	KQ1901376-03	48
PDI-ST-T07B-1901	KQ1901376-01	49
PDI-ST-T07B-1901	KQ1901376-02	43

Client: AECOM **Service Request:** K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Water

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

Analysis Method: 8270D

Extraction Method: EPA 3541

Sample Name	Lab Code	p-Terphenyl-d14 30-102
PDI-RB-ST-190129	K1900892-005	77
Method Blank	KQ1901379-03	86
Lab Control Sample	KQ1901379-01	77
Duplicate Lab Control Sample	KQ1901379-02	69

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/08/19 15:56

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

File ID: J:\MS29\DATA\020819\0208F016.D\ **Lab Code:**KQ1901793-04
Instrument ID: K-MS-29 **Analysis Lot:**624793
Analysis Method: 8270D **Signal ID:**1

		Chrysene-d12	
		Area	**RT**
	Result ==>	121,517	15.32
	Upper Limit ==>	243,034	15.82
	Lower Limit ==>	60,759	14.82
Associated Analyses			
Method Blank	KQ1901379-03	88386	15.32
Lab Control Sample	KQ1901379-01	109113	15.32
Duplicate Lab Control Sample	KQ1901379-02	107849	15.32
PDI-RB-ST-190129	K1900892-005	90026	15.32
Method Blank	KQ1901376-04	107233	15.32
Lab Control Sample	KQ1901376-03	120326	15.32
PDI-ST-T07B-1901MS	KQ1901376-01	149057	15.33
PDI-ST-T07B-1901DMS	KQ1901376-02	151384	15.33
PDI-ST-T07B-1901	K1900892-004	157689	15.33
PDI-ST-T06B-1901	K1900892-001	159359	15.33
PDI-ST-T06A-1901	K1900892-002	159839	15.33
PDI-ST-T07A-1901	K1900892-003	152450	15.33

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	01/30/19
Sample Matrix:	Sediment	**Date Received:**	01/31/19
		Date Analyzed:	02/8/19
		Date Extracted:	02/1/19

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

Sample Name:	PDI-ST-T07B-1901	**Units:**	ug/Kg
Lab Code:	K1900892-004	**Basis:**	Dry
Analysis Method:	8270D		
Prep Method:	EPA 3541		

		Matrix Spike KQ1901376-01			Duplicate Matrix Spike KQ1901376-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bis(2-ethylhexyl) Phthalate	110 J	388	496	57	341	497	47	23-123	13	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:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

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:	624793

Lab Control Sample
KQ1901376-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	151	250	60	39-113

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19
Sample Matrix:	Water	**Date Extracted:**	02/01/19

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:	624793

	Lab Control Sample KQ1901379-01			Duplicate Lab Control Sample KQ1901379-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Bis(2-ethylhexyl) Phthalate	4.03	5.00	81	3.95	5.00	79	42-147	2	30

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 16:25
Sample Matrix:	Water	**Date Extracted:**	02/01/19

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901379-03	**File ID:**	J:\MS29\DATA\020819\0208F017.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3520C	**Extraction Lot:**	330738

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901379-01	J:\MS29\DATA\020819\0208F018.D\	02/08/19 16:53
Duplicate Lab Control Sample	KQ1901379-02	J:\MS29\DATA\020819\0208F019.D\	02/08/19 17:21
PDI-RB-ST-190129	K1900892-005	J:\MS29\DATA\020819\0208F020.D\	02/08/19 17:50

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QA/QC Report

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 18:18
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901376-04	**File ID:**	J:\MS29\DATA\020819\0208F021.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3541	**Extraction Lot:**	330729

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901376-03	J:\MS29\DATA\020819\0208F022.D\	02/08/19 18:46
PDI-ST-T07B-1901MS	KQ1901376-01	J:\MS29\DATA\020819\0208F023.D\	02/08/19 19:15
PDI-ST-T07B-1901DMS	KQ1901376-02	J:\MS29\DATA\020819\0208F024.D\	02/08/19 19:43
PDI-ST-T07B-1901	K1900892-004	J:\MS29\DATA\020819\0208F025.D\	02/08/19 20:11
PDI-ST-T06B-1901	K1900892-001	J:\MS29\DATA\020819\0208F026.D\	02/08/19 20:40
PDI-ST-T06A-1901	K1900892-002	J:\MS29\DATA\020819\0208F027.D\	02/08/19 21:08
PDI-ST-T07A-1901	K1900892-003	J:\MS29\DATA\020819\0208F028.D\	02/08/19 21:37

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 16:25
Sample Matrix:	Water	**Date Extracted:**	02/01/19

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901379-03	**File ID:**	J:\MS29\DATA\020819\0208F017.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3520C	**Extraction Lot:**	330738

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901379-01	J:\MS29\DATA\020819\0208F018.D\	02/08/19 16:53
Duplicate Lab Control Sample	KQ1901379-02	J:\MS29\DATA\020819\0208F019.D\	02/08/19 17:21
PDI-RB-ST-190129	K1900892-005	J:\MS29\DATA\020819\0208F020.D\	02/08/19 17:50

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 18:18
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

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

Sample Name:	Method Blank	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901376-04	**File ID:**	J:\MS29\DATA\020819\0208F021.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3541	**Extraction Lot:**	330729

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1901376-03	J:\MS29\DATA\020819\0208F022.D\	02/08/19 18:46
PDI-ST-T07B-1901MS	KQ1901376-01	J:\MS29\DATA\020819\0208F023.D\	02/08/19 19:15
PDI-ST-T07B-1901DMS	KQ1901376-02	J:\MS29\DATA\020819\0208F024.D\	02/08/19 19:43
PDI-ST-T07B-1901	K1900892-004	J:\MS29\DATA\020819\0208F025.D\	02/08/19 20:11
PDI-ST-T06B-1901	K1900892-001	J:\MS29\DATA\020819\0208F026.D\	02/08/19 20:40
PDI-ST-T06A-1901	K1900892-002	J:\MS29\DATA\020819\0208F027.D\	02/08/19 21:08
PDI-ST-T07A-1901	K1900892-003	J:\MS29\DATA\020819\0208F028.D\	02/08/19 21:37

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 16:53
Sample Matrix:	Water	**Date Extracted:**	02/01/19

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901379-01	**File ID:**	J:\MS29\DATA\020819\0208F018.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3520C	**Extraction Lot:**	330738

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901379-03	J:\MS29\DATA\020819\0208F017.D\	02/08/19 16:25
Duplicate Lab Control Sample	KQ1901379-02	J:\MS29\DATA\020819\0208F019.D\	02/08/19 17:21
PDI-RB-ST-190129	K1900892-005	J:\MS29\DATA\020819\0208F020.D\	02/08/19 17:50

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 18:46
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901376-03	**File ID:**	J:\MS29\DATA\020819\0208F022.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3541	**Extraction Lot:**	330729

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901376-04	J:\MS29\DATA\020819\0208F021.D\	02/08/19 18:18
PDI-ST-T07B-1901MS	KQ1901376-01	J:\MS29\DATA\020819\0208F023.D\	02/08/19 19:15
PDI-ST-T07B-1901DMS	KQ1901376-02	J:\MS29\DATA\020819\0208F024.D\	02/08/19 19:43
PDI-ST-T07B-1901	K1900892-004	J:\MS29\DATA\020819\0208F025.D\	02/08/19 20:11
PDI-ST-T06B-1901	K1900892-001	J:\MS29\DATA\020819\0208F026.D\	02/08/19 20:40
PDI-ST-T06A-1901	K1900892-002	J:\MS29\DATA\020819\0208F027.D\	02/08/19 21:08
PDI-ST-T07A-1901	K1900892-003	J:\MS29\DATA\020819\0208F028.D\	02/08/19 21:37

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 16:53
Sample Matrix:	Water	**Date Extracted:**	02/01/19

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901379-01	**File ID:**	J:\MS29\DATA\020819\0208F018.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3520C	**Extraction Lot:**	330738

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901379-03	J:\MS29\DATA\020819\0208F017.D\	02/08/19 16:25
Duplicate Lab Control Sample	KQ1901379-02	J:\MS29\DATA\020819\0208F019.D\	02/08/19 17:21
PDI-RB-ST-190129	K1900892-005	J:\MS29\DATA\020819\0208F020.D\	02/08/19 17:50

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 18:46
Sample Matrix:	Sediment	**Date Extracted:**	02/01/19

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-29
Lab Code:	KQ1901376-03	**File ID:**	J:\MS29\DATA\020819\0208F022.D\
Analysis Method:	8270D	**Analysis Lot:**	624793
Prep Method:	EPA 3541	**Extraction Lot:**	330729

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1901376-04	J:\MS29\DATA\020819\0208F021.D\	02/08/19 18:18
PDI-ST-T07B-1901MS	KQ1901376-01	J:\MS29\DATA\020819\0208F023.D\	02/08/19 19:15
PDI-ST-T07B-1901DMS	KQ1901376-02	J:\MS29\DATA\020819\0208F024.D\	02/08/19 19:43
PDI-ST-T07B-1901	K1900892-004	J:\MS29\DATA\020819\0208F025.D\	02/08/19 20:11
PDI-ST-T06B-1901	K1900892-001	J:\MS29\DATA\020819\0208F026.D\	02/08/19 20:40
PDI-ST-T06A-1901	K1900892-002	J:\MS29\DATA\020819\0208F027.D\	02/08/19 21:08
PDI-ST-T07A-1901	K1900892-003	J:\MS29\DATA\020819\0208F028.D\	02/08/19 21:37

Client: AECOM **Service Request:**K1900892
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**02/08/19 15:28

Tune Summary
Low Level Semivolatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\020819\0208F015.D\ **Analytical Method:** 8270D
Instrument ID: K-MS-29 **Analysis Lot:** 624793

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	38.82	225706	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	42.14	245005	Pass
70	69	0	2	0.57	1392	Pass
127	198	10	80	46.15	268330	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	67.31	581418	Pass
199	198	5	9	6.76	39280	Pass
275	198	10	60	31.87	185301	Pass
365	442	1	50	2.28	19695	Pass
441	443	0.01	100	86.09	144552	Pass
442	442	30	100	100.00	863786	Pass
443	442	15	24	19.44	167914	Pass
51	198	10	80	38.82	225706	Pass
68	69	0	2	0.00	0	Pass
69	198	0	100	42.14	245005	Pass
70	69	0	2	0.57	1392	Pass
127	198	10	80	46.15	268330	Pass
197	198	0	2	0.00	0	Pass
198	442	30	100	67.31	581418	Pass
199	198	5	9	6.76	39280	Pass
275	198	10	60	31.87	185301	Pass
365	442	1	50	2.28	19695	Pass
441	443	0.01	100	86.09	144552	Pass
442	442	30	100	100.00	863786	Pass
443	442	15	24	19.44	167914	Pass

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1901793-02	J:\MS29\DATA\020819\0208F016.D\	02/08/19 15:56	
Continuing Calibration Verification	KQ1901793-04	J:\MS29\DATA\020819\0208F016.D\	02/08/19 15:56	
Method Blank	KQ1901379-03	J:\MS29\DATA\020819\0208F017.D\	02/08/19 16:25	
Lab Control Sample	KQ1901379-01	J:\MS29\DATA\020819\0208F018.D\	02/08/19 16:53	
Duplicate Lab Control Sample	KQ1901379-02	J:\MS29\DATA\020819\0208F019.D\	02/08/19 17:21	
PDI-RB-ST-190129	K1900892-005	J:\MS29\DATA\020819\0208F020.D\	02/08/19 17:50	

Method Blank	KQ1901376-04	J:\MS29\DATA\020819\0208F021.D\	02/08/19 18:18
Lab Control Sample	KQ1901376-03	J:\MS29\DATA\020819\0208F022.D\	02/08/19 18:46
PDI-ST-T07B-1901	KQ1901376-01	J:\MS29\DATA\020819\0208F023.D\	02/08/19 19:15
PDI-ST-T07B-1901	KQ1901376-02	J:\MS29\DATA\020819\0208F024.D\	02/08/19 19:43
PDI-ST-T07B-1901	K1900892-004	J:\MS29\DATA\020819\0208F025.D\	02/08/19 20:11
PDI-ST-T06B-1901	K1900892-001	J:\MS29\DATA\020819\0208F026.D\	02/08/19 20:40
PDI-ST-T06A-1901	K1900892-002	J:\MS29\DATA\020819\0208F027.D\	02/08/19 21:08
PDI-ST-T07A-1901	K1900892-003	J:\MS29\DATA\020819\0208F028.D\	02/08/19 21:37

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/8/2019

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

Calibration ID: KC1900070 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900070-01	SVO_LL ICAL @ 0.05ug/mL SVM60-33C	J:\MS29\DATA\020819\0208F004.D	02/08/2019 10:17
02	KC1900070-02	SVO_LL ICAL @ 0.1ug/mL SVM60-33D	J:\MS29\DATA\020819\0208F005.D	02/08/2019 10:45
03	KC1900070-03	SVO_LL ICAL @ 0.2ug/mL SVM60-33E	J:\MS29\DATA\020819\0208F006.D	02/08/2019 11:13
04	KC1900070-04	SVO_LL ICAL @ 0.5ug/mL SVM60-33F	J:\MS29\DATA\020819\0208F007.D	02/08/2019 11:41
05	KC1900070-05	SVO_LL ICAL @ 1.0ug/mL SVM60-33G	J:\MS29\DATA\020819\0208F008.D	02/08/2019 12:10
06	KC1900070-06	SVO_LL ICAL @ 2.0ug/mL SVM60-33H	J:\MS29\DATA\020819\0208F009.D	02/08/2019 12:38
07	KC1900070-07	SVO_LL ICAL @ 3.0ug/mL SVM60-33I	J:\MS29\DATA\020819\0208F010.D	02/08/2019 13:06
08	KC1900070-08	SVO_LL ICAL @ 5.0ug/mL SVM60-33J	J:\MS29\DATA\020819\0208F011.D	02/08/2019 13:35
09	KC1900070-09	SVO_LL ICAL @ 7.0ug/mL SVM60-33K	J:\MS29\DATA\020819\0208F012.D	02/08/2019 14:03
10	KC1900070-10	SVO_LL ICAL @ 10ug/mL SVM60-33L	J:\MS29\DATA\020819\0208F013.D	02/08/2019 14:31

Analyte

Bis(2-ethylhexyl) Phthalate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
04	500.000	0.4206	05	1000.000	0.5303	06	2000.000	0.6574	07	3000.000	0.7489
08	5000.000	0.768	09	7000.000	0.8056	10	10000.000	0.7825			

p-Terphenyl-d14

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	100.000	0.9609	03	200.000	1.127	04	500.000	1.054	05	1000.000	0.9898
06	2000.000	0.904	07	3000.000	0.908	08	5000.000	0.9055	09	7000.000	0.8949
10	10000.000	0.8451									

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/8/2019

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

Calibration ID: KC1900070 **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	Quadratic	COD	0.9987	≥0.990	0.6733	0.010
p-Terphenyl-d14	SURR	Average RF	% RSD	9.3	≤20	0.9543	0.010

Client: AECOM **Service Request:** K1900892
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 2/8/2019

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

Calibration ID: KC1900070 **Signal ID:** 1
Instrument ID: K-MS-29

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1900070-11	SVO_LL ICV @ 3.0ug/mL SVM60-49A	J:\MS29\DATA\020819\0208F014.D	02/08/2019 15:00

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	2890	6.733E-1	7.069E-1	-3.540	±30	Quadratic

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 15:56

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

Analysis Method:	8270D	**Calibration Date:**	2/8/2019
File ID:	J:\MS29\DATA\020819\0208F016.D\	**Calibration ID:**	KC1900070
Signal ID:	1	**Analysis Lot:**	624793
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	2780	0.6733	0.6763	NA	-7.3	±20	Quadratic

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
p-Terphenyl-d14	3000	2460	0.9543	0.782	-18.1	NA	±20	Average RF

Client:	AECOM	**Service Request:**	K1900892
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	02/08/19 15:56

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

Analysis Method:	8270D	**Calibration Date:**	2/8/2019
File ID:	J:\MS29\DATA\020819\0208F016.D\	**Calibration ID:**	KC1900070
Signal ID:	1	**Analysis Lot:**	624793
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Bis(2-ethylhexyl) Phthalate	3000	2780	0.6733	0.6763	NA	-7.3	±20	Quadratic

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
p-Terphenyl-d14	3000	2460	0.9543	0.782	-18.1	NA	±20	Average RF

Client: AECOM **Service Request:**K1900892

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

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

Analysis Method: **Analysis Lot:**624793

Instrument ID:K-MS-29

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS29\DATA\020819\0208F015.D\	ZZZZZZZ	ZZZZZZZ	2/8/2019	15:28:00	
J:\MS29\DATA\020819\0208F015.D\	ZZZZZZZ	ZZZZZZZ	2/8/2019	15:28:00	
J:\MS29\DATA\020819\0208F016.D\	Continuing Calibration Verification	KQ1901793-04	2/8/2019	15:56:00	
J:\MS29\DATA\020819\0208F016.D\	Continuing Calibration Verification	KQ1901793-02	2/8/2019	15:56:00	
J:\MS29\DATA\020819\0208F017.D\	Method Blank	KQ1901379-03	2/8/2019	16:25:00	
J:\MS29\DATA\020819\0208F018.D\	Lab Control Sample	KQ1901379-01	2/8/2019	16:53:00	
J:\MS29\DATA\020819\0208F019.D\	Duplicate Lab Control Sample	KQ1901379-02	2/8/2019	17:21:00	
J:\MS29\DATA\020819\0208F020.D\	PDI-RB-ST-190129	K1900892-005	2/8/2019	17:50:00	
J:\MS29\DATA\020819\0208F021.D\	Method Blank	KQ1901376-04	2/8/2019	18:18:00	
J:\MS29\DATA\020819\0208F022.D\	Lab Control Sample	KQ1901376-03	2/8/2019	18:46:00	
J:\MS29\DATA\020819\0208F023.D\	PDI-ST-T07B-1901 MS	KQ1901376-01	2/8/2019	19:15:00	
J:\MS29\DATA\020819\0208F024.D\	PDI-ST-T07B-1901 DMS	KQ1901376-02	2/8/2019	19:43:00	
J:\MS29\DATA\020819\0208F025.D\	PDI-ST-T07B-1901	K1900892-004	2/8/2019	20:11:00	
J:\MS29\DATA\020819\0208F026.D\	PDI-ST-T06B-1901	K1900892-001	2/8/2019	20:40:00	
J:\MS29\DATA\020819\0208F027.D\	PDI-ST-T06A-1901	K1900892-002	2/8/2019	21:08:00	
J:\MS29\DATA\020819\0208F028.D\	PDI-ST-T07A-1901	K1900892-003	2/8/2019	21:37:00	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
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:** 330729
Analytical Method: 8270D **Extraction Date:** 02/01/19 09:31

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-ST-T06B-1901	K1900892-001	1/30/19	1/31/19	39.429 g	2 mL	25.0
PDI-ST-T06A-1901	K1900892-002	1/30/19	1/31/19	39.197 g	2 mL	25.6
PDI-ST-T07A-1901	K1900892-003	1/30/19	1/31/19	39.137 g	2 mL	24.6
PDI-ST-T07B-1901	K1900892-004	1/30/19	1/31/19	38.262 g	2 mL	26.3
Matrix Spike	KQ1901376-01MS	1/30/19	1/31/19	38.304 g	2 mL	26.3
Duplicate Matrix Spike	KQ1901376-02DMS	1/30/19	1/31/19	38.220 g	2 mL	26.3
Lab Control Sample	KQ1901376-03LCS	NA	NA	20.00 g	2 mL	
Method Blank	KQ1901376-04MB	NA	NA	39.4290 g	2 mL	

Prep Summary Report

Client: AECOM **Service Request:** K1900892
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:** 330738
Analytical Method: 8270D **Extraction Date:** 02/01/19 08:10

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
PDI-RB-ST-190129	K1900892-005	1/29/19	1/31/19	1050.0000	2 mL	
Lab Control Sample	KQ1901379-01LCS	NA	NA	1000 mL	2 mL	
Duplicate Lab Control Sample	KQ1901379-02DLCS	NA	NA	1000 mL	2 mL	
Method Blank	KQ1901379-03MB	NA	NA	1050.0000	2 mL	