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

February 22, 2019

**Analytical Report for Service Request No: K1805850**  
**Revised Service Request No: K1805850.OXY**

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

**RE: Portland Harbor Pre-Remedial Design Investigation / 60566335**

Dear Amy,

Enclosed is the revised report for the sample(s) submitted to our laboratory June 20, 2018  
For your reference, these analyses have been assigned our service request number **K1805850**.

This report contains Oxychlordan data.

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](http://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](mailto:howard.holmes@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Howard Holmes  
Project Manager



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## 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**

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



## Case Narrative

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

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

**Service Request:** K1805850  
**Date Received:** 06/20/2018

#### **CASE NARRATIVE**

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

#### **Sample Receipt:**

Three sediment samples were received for analysis at ALS Environmental on 06/20/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

#### **Semivolatiles by GC/MS:**

Oxychlordanes: No anomalies.

Approved by



Date

02/22/2019



## Chain of Custody

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Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

[illegible]

PC HH

## Cooler Receipt and Preservation Form

Client AECOMService Request K18 05850Received: U120118 Opened: U120118 By: BR Unloaded: U120118 By: BR1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered2. Samples were received in: (circle) Cooler Box Envelope Other3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front NAIf 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	File
<u>3.1</u>	<u>3.0</u>	<u>24</u>	<u>23</u>	<u>-0.1</u>	<u>318</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y NIf applicable, tissue samples were received: Frozen Partially Thawed Thawed7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N11. Were VOA vials received without headspace? Indicate in the table below. NA Y N12. 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, &amp; Resolutions: \_\_\_\_\_



# Organochlorine Pesticides

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ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335  
**Sample Matrix:** Sediment  
  
**Sample Name:** PDI-SG-B191-BL1  
**Lab Code:** K1805850-001

**Service Request:** K1805850  
**Date Collected:** 06/18/18 16:31  
**Date Received:** 06/20/18 12:30  
  
**Units:** ug/Kg  
**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
Oxychlordane	ND U	0.56	0.37	1	08/12/18 01:07	8/2/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_Oxychlordane-13C10	30	5 - 144	08/12/18 01:07	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335  
**Sample Matrix:** Sediment  
  
**Sample Name:** PDI-SG-B114-BL1  
**Lab Code:** K1805850-002

**Service Request:** K1805850  
**Date Collected:** 06/18/18 10:22  
**Date Received:** 06/20/18 12:30  
  
**Units:** ug/Kg  
**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
Oxychlordane	ND U	0.54	0.36	1	08/12/18 01:35	8/2/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_Oxychlordane-13C10	33	5 - 144	08/12/18 01:35	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335  
**Sample Matrix:** Sediment  
  
**Sample Name:** PDI-SG-B425-BL1  
**Lab Code:** K1805850-003

**Service Request:** K1805850  
**Date Collected:** 06/19/18 12:01  
**Date Received:** 06/20/18 12:30  
  
**Units:** ug/Kg  
**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
Oxychlordane	ND U	0.86	0.56	1	08/12/18 02:03	8/2/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_Oxychlordane-13C10	29	5 - 144	08/12/18 02:03	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335  
**Sample Matrix:** Sediment  
  
**Sample Name:** Method Blank  
**Lab Code:** KQ1810488-04

**Service Request:** K1805850  
**Date Collected:** NA  
**Date Received:** NA  
  
**Units:** ug/Kg  
**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
Oxychlordane	ND U	0.20	0.13	1	08/11/18 18:17	8/2/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_Oxychlordane-13C10	33	5 - 144	08/11/18 18:17	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

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

**Service Request:** K1805850

**SURROGATE RECOVERY SUMMARY**  
**Organochlorine Pesticides by GC/MS/MS**

**Analysis Method:** ALS SOP  
**Extraction Method:** EPA 3541

S_Oxychlordane-13C10		
Sample Name	Lab Code	5-144
Batch QC	K1805746-008	36
PDI-SG-B191-BL1	K1805850-001	30
PDI-SG-B114-BL1	K1805850-002	33
PDI-SG-B425-BL1	K1805850-003	29
Method Blank	KQ1810488-04	33
Lab Control Sample	KQ1810488-03	34
Batch QC	KQ1810488-01	35
Batch QC	KQ1810488-02	35

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

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

**Service Request:** K1805850  
**Date Analyzed:** 08/11/18 17:50

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

**File ID:** J:\MS21\Data\081118a\081118aF028.D\  
**Instrument ID:** K-MSMS-01  
**Analysis Method:** ALS SOP

**Lab Code:** KQ1811804-01  
**Analysis Lot:** 602187  
**Signal ID:** 1

	Pyrene-d10	
	Area	RT
<b>Result ==&gt;</b>	89,656	14.366
<b>Upper Limit ==&gt;</b>	179,311	14.87
<b>Lower Limit ==&gt;</b>	44,828	13.87

**Associated Analyses**

Method Blank	KQ1810488-04	66021.4	14.366
Lab Control Sample	KQ1810488-03	70871.6	14.366
Batch QCMS	KQ1810488-01	68849.2	14.366
Batch QCDMS	KQ1810488-02	68210.8	14.3661
Batch QC	K1805746-008	69817.6	14.366
PDI-SG-B191-BL1	K1805850-001	63056.1	14.366
PDI-SG-B114-BL1	K1805850-002	52097.9	14.366
PDI-SG-B425-BL1	K1805850-003	57577.2	14.366

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

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

**Service Request:** K1805850  
**Date Collected:** N/A  
**Date Received:** N/A  
**Date Analyzed:** 08/11/18  
**Date Extracted:** 08/2/18

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

**Sample Name:** Batch QC  
**Lab Code:** K1805746-008  
**Analysis Method:** ALS SOP  
**Prep Method:** EPA 3541

**Units:** ug/Kg  
**Basis:** Dry

Analyte Name	Sample Result	Matrix Spike KQ1810488-01			Duplicate Matrix Spike KQ1810488-02			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Oxychlordan	ND U	11.8	10.6	112	11.8	10.4	114	53-144	<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.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

<b>Client:</b>	AECOM	<b>Service Request:</b>	K1805850
<b>Project:</b>	Portland Harbor Pre-Remedial Design Investigation/60566335	<b>Date Analyzed:</b>	08/11/18
<b>Sample Matrix:</b>	Sediment	<b>Date Extracted:</b>	08/02/18

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

<b>Analysis Method:</b>	ALS SOP	<b>Units:</b>	ug/Kg
<b>Prep Method:</b>	EPA 3541	<b>Basis:</b>	Dry
		<b>Analysis Lot:</b>	602187

Lab Control Sample  
KQ1810488-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Oxychlordan	1.86	2.00	93	59-141

**ALS Group USA, Corp.**

dba ALS Environmental

QA/QC Report

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

**Service Request:** K1805850  
**Date Analyzed:** 08/11/18 18:17  
**Date Extracted:** 08/02/18

**Method Blank Summary**  
**Organochlorine Pesticides by GC/MS/MS**

<b>Sample Name:</b>	Method Blank	<b>Instrument ID:</b>	K-MSMS-01
<b>Lab Code:</b>	KQ1810488-04	<b>File ID:</b>	J:\MS21\Data\081118a\081118aF029.D\
<b>Analysis Method:</b>	ALS SOP	<b>Analysis Lot:</b>	602187
<b>Prep Method:</b>	EPA 3541	<b>Extraction Lot:</b>	319012

This Method Blank applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
Lab Control Sample	KQ1810488-03	J:\MS21\Data\081118a\081118aF030.D\	08/11/18 18:44
Batch QCMS	KQ1810488-01	J:\MS21\Data\081118a\081118aF031.D\	08/11/18 19:11
Batch QCDMS	KQ1810488-02	J:\MS21\Data\081118a\081118aF032.D\	08/11/18 19:39
Batch QC	K1805746-008	J:\MS21\Data\081118a\081118aF042.D\	08/12/18 00:13
PDI-SG-B191-BL1	K1805850-001	J:\MS21\Data\081118a\081118aF044.D\	08/12/18 01:07
PDI-SG-B114-BL1	K1805850-002	J:\MS21\Data\081118a\081118aF045.D\	08/12/18 01:35
PDI-SG-B425-BL1	K1805850-003	J:\MS21\Data\081118a\081118aF046.D\	08/12/18 02:03

**ALS Group USA, Corp.**

dba ALS Environmental

QA/QC Report

**Client:** AECOM**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335**Sample Matrix:** Sediment**Service Request:** K1805850**Date Analyzed:** 08/11/18 18:44**Date Extracted:** 08/02/18**Lab Control Sample Summary  
Organochlorine Pesticides by GC/MS/MS****Sample Name:** Lab Control Sample**Instrument ID:**K-MSMS-01**Lab Code:** KQ1810488-03**File ID:**J:\MS21\Data\081118a\081118aF030.D\**Analysis Method:** ALS SOP**Analysis Lot:**602187**Prep Method:** EPA 3541**Extraction Lot:**319012

This Lab Control Sample applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
Method Blank	KQ1810488-04	J:\MS21\Data\081118a\081118aF029.D\	08/11/18 18:17
Batch QCMS	KQ1810488-01	J:\MS21\Data\081118a\081118aF031.D\	08/11/18 19:11
Batch QCDMS	KQ1810488-02	J:\MS21\Data\081118a\081118aF032.D\	08/11/18 19:39
Batch QC	K1805746-008	J:\MS21\Data\081118a\081118aF042.D\	08/12/18 00:13
PDI-SG-B191-BL1	K1805850-001	J:\MS21\Data\081118a\081118aF044.D\	08/12/18 01:07
PDI-SG-B114-BL1	K1805850-002	J:\MS21\Data\081118a\081118aF045.D\	08/12/18 01:35
PDI-SG-B425-BL1	K1805850-003	J:\MS21\Data\081118a\081118aF046.D\	08/12/18 02:03

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QC/QC Report

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

**Service Request:** K1805850  
**Date Analyzed:** 08/11/18 17:50

**Tune Summary**  
**Organochlorine Pesticides by GC/MS/MS**

**File ID:** J:\MS21\Data\081118a\081118aF028.D\  
**Instrument ID:** K-MSMS-01

**Analytical Method:** ALS SOP  
**Analysis Lot:** 602187

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1811804-01	J:\MS21\Data\081118a\081118aF028.D\	08/11/18 17:50	
Method Blank	KQ1810488-04	J:\MS21\Data\081118a\081118aF029.D\	08/11/18 18:17	
Lab Control Sample	KQ1810488-03	J:\MS21\Data\081118a\081118aF030.D\	08/11/18 18:44	
Batch QC	KQ1810488-01	J:\MS21\Data\081118a\081118aF031.D\	08/11/18 19:11	
Batch QC	KQ1810488-02	J:\MS21\Data\081118a\081118aF032.D\	08/11/18 19:39	
Batch QC	K1805746-008	J:\MS21\Data\081118a\081118aF042.D\	08/12/18 00:13	
PDI-SG-B191-BL1	K1805850-001	J:\MS21\Data\081118a\081118aF044.D\	08/12/18 01:07	
PDI-SG-B114-BL1	K1805850-002	J:\MS21\Data\081118a\081118aF045.D\	08/12/18 01:35	
PDI-SG-B425-BL1	K1805850-003	J:\MS21\Data\081118a\081118aF046.D\	08/12/18 02:03	

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QA/QC Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation

**Service Request:** K1805850  
**Calibration Date:** 8/8/2018

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

**Calibration ID:** KC1800383  
**Instrument ID:** K-MSMS-01

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800383-01		J:\MS21\Data\080818\080818F007.D	08/08/2018 09:40
02	KC1800383-02		J:\MS21\Data\080818\080818F008.D	08/08/2018 10:07
03	KC1800383-03		J:\MS21\Data\080818\080818F009.D	08/08/2018 10:34
04	KC1800383-04		J:\MS21\Data\080818\080818F010.D	08/08/2018 11:01
05	KC1800383-05		J:\MS21\Data\080818\080818F011.D	08/08/2018 11:29
06	KC1800383-06		J:\MS21\Data\080818\080818F012.D	08/08/2018 11:56
07	KC1800383-07		J:\MS21\Data\080818\080818F013.D	08/08/2018 12:24
08	KC1800383-08		J:\MS21\Data\080818\080818F014.D	08/08/2018 12:51
09	KC1800383-09		J:\MS21\Data\080818\080818F015.D	08/08/2018 13:18
10	KC1800383-10		J:\MS21\Data\080818\080818F017.D	08/08/2018 13:55

**Analyte**

**Oxychlordan**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.431	02	1.0	1.162	03	2.0	1.033	04	5.0	1.006
05	10	1.061	06	20	1.018	07	40	0.8964	08	60	0.9452
09	80	0.9705	10	100	0.8801						

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QA/QC Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation

**Service Request:** K1805850  
**Calibration Date:** 8/8/2018

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

**Calibration ID:** KC1800383  
**Instrument ID:** K-MSMS-01

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Oxychlordane	TRG	Average RF	% RSD	15.4	20	1.04	0.01

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QA/QC Report

**Client:** AECOM  
**Project:** Portland Harbor Pre-Remedial Design Investigation

**Service Request:** K1805850  
**Calibration Date:** 8/8/2018

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

**Calibration ID:** KC1800383  
**Instrument ID:** K-MSMS-01

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800383-11		J:\MS21\Data\080818\080818F018.D	08/08/2018 14:19

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Oxychlordane	20.0	23.5	1.04E0	1.22E0	17.32	±25	Average RF

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QA/QC Report

**Client:** AECOM

**Service Request:** K1805850

**Project:** Portland Harbor Pre-Remedial Design Investigation/60566335

**Date Analyzed:** 08/11/18 17:50

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

**Analysis Method:** ALS SOP

**Calibration Date:** 8/8/2018

**File ID:** J:\MS21\Data\081118a\081118aF028.D\

**Calibration ID:** KC1800383

**Signal ID:** 1

**Analysis Lot:** 602187

**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Oxychlordane	20.0	19.8	1.0403	1.0307	-0.9	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
S_Oxychlordane-13C10	20.0	15.9	NA	NA	79.4	NA	50-200	

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QA/QC Report

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

**Service Request:**K1805850

**Analysis Run Log**  
**Organochlorine Pesticides by GC/MS/MS**

**Analysis Method:** ALS SOP

**Analysis Lot:**602187  
**Instrument ID:**K-MSMS-01

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS21\Data\081118a\081118aF028.D\	Continuing Calibration Verification	KQ1811804-01	8/11/2018	17:50:02	
J:\MS21\Data\081118a\081118aF029.D\	Method Blank	KQ1810488-04	8/11/2018	18:17:18	
J:\MS21\Data\081118a\081118aF030.D\	Lab Control Sample	KQ1810488-03	8/11/2018	18:44:35	
J:\MS21\Data\081118a\081118aF031.D\	Batch QC MS	KQ1810488-01	8/11/2018	19:11:50	
J:\MS21\Data\081118a\081118aF032.D\	Batch QC DMS	KQ1810488-02	8/11/2018	19:39:06	
J:\MS21\Data\081118a\081118aF033.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	20:06:23	
J:\MS21\Data\081118a\081118aF034.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	20:34:36	
J:\MS21\Data\081118a\081118aF035.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	21:01:58	
J:\MS21\Data\081118a\081118aF036.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	21:29:24	
J:\MS21\Data\081118a\081118aF037.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	21:56:45	
J:\MS21\Data\081118a\081118aF038.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	22:23:59	
J:\MS21\Data\081118a\081118aF039.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	22:51:20	
J:\MS21\Data\081118a\081118aF040.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	23:18:39	
J:\MS21\Data\081118a\081118aF041.D\	ZZZZZZZ	ZZZZZZZ	8/11/2018	23:46:02	
J:\MS21\Data\081118a\081118aF042.D\	Batch QC	K1805746-008	8/12/2018	00:13:15	
J:\MS21\Data\081118a\081118aF043.D\	ZZZZZZZ	ZZZZZZZ	8/12/2018	00:40:33	
J:\MS21\Data\081118a\081118aF044.D\	PDI-SG-B191-BL1	K1805850-001	8/12/2018	01:07:52	
J:\MS21\Data\081118a\081118aF045.D\	PDI-SG-B114-BL1	K1805850-002	8/12/2018	01:35:26	
J:\MS21\Data\081118a\081118aF046.D\	PDI-SG-B425-BL1	K1805850-003	8/12/2018	02:03:14	
J:\MS21\Data\081118a\081118aF047.D\	ZZZZZZZ	ZZZZZZZ	8/12/2018	02:31:00	
J:\MS21\Data\081118a\081118aF048.D\	ZZZZZZZ	ZZZZZZZ	8/12/2018	02:58:48	
J:\MS21\Data\081118a\081118aF049.D\	ZZZZZZZ	ZZZZZZZ	8/12/2018	03:26:34	
J:\MS21\Data\081118a\081118aF050.D\	ZZZZZZZ	ZZZZZZZ	8/12/2018	03:54:21	

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Prep Summary Report

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

**Service Request:** K1805850

Organochlorine Pesticides by GC/MS/MS

**Prep Method:** EPA 3541  
**Analytical Method:** ALS SOP

**Extraction Lot:** 319012  
**Extraction Date:** 08/02/18 20:07

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1805746-008	NA	NA	5.191 g	1 mL	37.7
PDI-SG-B191-BL1	K1805850-001	6/18/18	6/20/18	5.135 g	1 mL	69.1
PDI-SG-B114-BL1	K1805850-002	6/18/18	6/20/18	5.292 g	1 mL	69.6
PDI-SG-B425-BL1	K1805850-003	6/19/18	6/20/18	5.068 g	1 mL	46.0
Matrix Spike	KQ1810488-01MS	NA	NA	5.020 g	1 mL	37.7
Duplicate Matrix Spike	KQ1810488-02DMS	NA	NA	5.098 g	1 mL	37.7
Lab Control Sample	KQ1810488-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1810488-04MB	NA	NA	10 g	1 mL	