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Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland Harbor Superfund Site Subsurface Sediment – Nearshore Core Stations
Laboratory:	ALS Environmental, Burlington, Ontario, Canada
Laboratory Group:	L2136985
Analyses/Method:	Chlorinated Pesticides and Total Solids
Validation Level:	Stage 4
AECOM Project Number:	60566335 Task #2.12

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SUMMARY

The data quality review of 36 subsurface sediment samples, two field duplicates, and two rinsate blanks collected between July 23 and July 25, 2018, has been completed. Samples were analyzed for chlorinated pesticides by EPA Method 1699-modified (GC/HRMS) and/or total solids by American Society for Testing and Materials (ASTM) Method D-2974 at ALS Environmental (ALS) located in Burlington, Ontario, Canada. The analyses were performed in general accordance with the methods specified in *Method 1699: Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS*, December 2007 (modified by ALS SOP BU-TM-1103 v07 OCP), and Annual Book of ASTM Standards, American Society for Testing & Materials (ASTM), Philadelphia, Pennsylvania. The laboratory provided level 2 and level 4 data packages containing sample results and associated quality assurance (QA) and quality control (QC) data, preparation logs, and raw instrument outputs (where applicable). The following samples are associated with laboratory group L2136985:

Sample ID	Laboratory ID
PDI-SC-S045-0TO2	L2136985-1
PDI-SC-S045-2TO4	L2136985-2
PDI-SC-S045-4TO6	L2136985-3
PDI-SC-S042-0TO2	L2136985-4
PDI-SC-S042-2TO4	L2136985-5
PDI-SC-S042-4TO6	L2136985-6
PDI-SC-S061-0TO3	L2136985-7
PDI-SC-S061-3TO4.5	L2136985-8
PDI-SC-S061-4.5TO6	L2136985-9
PDI-SC-S066-0TO2	L2136985-10
PDI-SC-S066-2TO4	L2136985-11
PDI-SC-S066-4TO5.8	L2136985-12
PDI-SC-S066-5.8TO6.6	L2136985-13
PDI-SC-S082-0TO2	L2136985-14
PDI-SC-S082-2TO4	L2136985-15
PDI-SC-S082-4TO6	L2136985-16
PDI-SC-S095-0TO2	L2136985-17
PDI-SC-S095-2TO4	L2136985-18

Sample ID	Laboratory ID
PDI-SC-S095-4TO6	L2136985-19
PDI-SC-S064-0TO2	L2136985-20
PDI-SC-S064-2TO3.5	L2136985-21
PDI-SC-S064-3.5TO4.8	L2136985-22
PDI-SC-S154-0TO1	L2136985-23
PDI-SC-S154-1TO3	L2136985-24
PDI-SC-S154-3TO4	L2136985-25
PDI-SC-S095-0TO2D (Duplicate of PDI-SC-S095-0TO2)	L2136985-26
PDI-SC-S127-0TO2	L2136985-27
PDI-SC-S127-2TO4	L2136985-28
PDI-SC-S127-4TO5.6	L2136985-29
PDI-SC-S189-2TO4	L2136985-30
PDI-SC-S127-2TO4D (Duplicate of PDI-SC-S127-2TO4)	L2136985-31
PDI-SC-S189-0TO2	L2136985-32
PDI-SC-S189-4TO5.7	L2136985-33
PDI-SC-S245-0TO2	L2136985-34
PDI-SC-S245-2TO3.8	L2136985-35
PDI-SC-S140-4TO5.7	L2136985-36
PDI-SC-S140-2TO4	L2136985-37
PDI-SC-S140-0TO2	L2136985-38
PDI-RB-SS-180725 (rinsate blank)	L2136985-39
PDI-RB-SS-180724 (rinsate blank	L2136985-40

Data validation is based on method performance criteria and QC criteria documented in the *Quality Assurance Project Plan (QAPP),* dated March 23, 2018, as amended. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review,* April 2016, *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017, and *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review,* January 2017. Data qualifiers assigned to this sample set are included in Table 1.

SAMPLE RECEIPT

Upon receipt by ALS, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperature was recorded. The cooler was received at a temperature within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. Per AECOM request, the depths on PDI-SC-S095-0TO2D, PDI-SC-S127-4TO5.6, and PDI-SC-S140-4TO5.7 were changed and reported as shown.

ORGANIC ANALYSIS

Samples were analyzed for chlorinated pesticides by EPA Method 1699.

1. Holding Times – Acceptable

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

The percent recoveries for the following analytes and labeled compounds were outside the control limits of 75-125% and 70-130%, respectively.

Analysis Date and Time	Analyte	% Recovery
8/15/18 at 03:02	2,4'-DDD	128%
	4,4'-DDD-13C12	45%
	4,4'-DDT-13C12	39%
8/15/18 19:52	4,4'-DDT-13C12	135%
8/15/18 20:14	4,4'-DDT-13C13	135%
8/16/18 01:35	4,4'-DDD-13C12	167%
	4,4'-DDT-13C12	188%
8/17/18 04:33	4,4'-DDT-13C12	135%
8/20/18 09:53	2,4'-DDD	130%
	2,4'-DDT	133%
	4,4'-DDE-13C12	136%
	4,4'-DDT-13C12	65%
8/20/18 12:01	4,4'-DDT-13C12	61%

The results for 2,4'-DDD and 4,4'-DDD in PDI-SC-S061-0TO3, PDI-SC-S061-4.5TO6, PDI-SC-S066-0TO2, PDI-SC-S066-4TO5.8, PDI-SC-S066-5.8TO6.6, PDI-SC-S082-4TO6, PDI-SC-S127-2TO4, PDI-SC-S127-4TO5.6, PDI-SC-S189-2TO4, PDI-SC-S127-2TO4D, and PDI-SC-S189-4TO5.7 were qualified as estimated and flagged 'J' or 'UJ' based on the associated continuing calibration verification (CCV) results.

The results for 2,4'-DDT and 4,4'-DDT in PDI-SC-S061-0TO3, PDI-SC-S061-3TO4.5, PDI-SC-S061-4.5TO6, PDI-SC-S066-0TO2, PDI-SC-S066-2TO4, PDI-SC-S066-4TO5.8, PDI-SC-S066-5.8TO6.6, PDI-SC-S082-4TO6, PDI-SC-S127-2TO4, PDI-SC-S127-4TO5.6, PDI-SC-S189-2TO4, PDI-SC-S127-2TO4D, PDI-SC-S189-4TO5.7, PDI-RB-SS-180725, and PDI-RB-SS-180724 were qualified as estimated and flagged 'J' or 'UJ' based on the associated CCV results.

The results for 4,4'-DDT in PDI-SC-S154-1TO3 and PDI-SC-S140-0TO2 were qualified as estimated and flagged 'J' based on the associated CCV results.

3. Blanks – Acceptable except as noted below:

The following analytes were detected in the method blanks.

Extraction Date	Analyte	Result
July 30, 2018	2,4'-DDE	0.00426 ng/g
	4,4'-DDE	0.00568 ng/g
July 31, 2018	2,4'-DDE	0.0069 ng/g
	4,4'-DDE	0.0189 ng/g
	4,4'-DDD	0.011 ng/g

Extraction Date	Analyte	Result
August 1, 2018	2,4'-DDE	0.046 ng/L
	4,4'-DDE	0.0905 ng/L
	2,4'-DDD	0.039 ng/L
	4,4'-DDD	0.0877 ng/L
	2,4'-DDT	0.062 ng/L
	4,4'-DDT	0.381 ng/L
August 3, 2018	2,4'-DDE	0.0131 ng/g
	4,4'-DDE	0.0305 ng/g
	2,4'-DDD	0.017 ng/g
	4,4'-DDD	0.0398 ng/g
	2,4'-DDT	0.0524 ng/g
	4,4'-DDT	0.361 ng/g

The NFG guidance stipulates that a conservative approach should be taken with regard to qualification of analytes based on blank contamination and the reporting of false negative results should be avoided.

Therefore, in order to avoid the reporting of false negative results, professional judgment was used to qualify the data in the following manner. As allowed in the NFG, a blank action limit (BAL) was determined as 5 times the blank result:

- When the sample results were < the blank result, the sample result was qualified as not detected (U) at the sample result or reported detection limit (RDL).
- When the sample result was $\geq$ the blank result and $\leq$ the BAL, the sample result was qualified as estimated and potentially biased high (J).
- When the sample result was > the BAL, sample result was not qualified.

The following results were reported at concentrations less than the blank concentration; therefore, these results were qualified as not detected and flagged 'U' at the sample results.

- 2,4'-DDE in PDI-SC-S045-4TO6 and PDI-RB-SS-180724.
- 4,4'-DDE in PDI-RB-SS-180724.
- 2,4'-DDD in PDI-RB-SS-180725 and PDI-RB-SS-180724.
- 4,4'-DDD in PDI-SC-S140-4TO5.7, PDI-RB-SS-180725, and PDI-RB-SS-180724.
- 2,4'-DDT in PDI-RB-SS-180724.
- 4,4'-DDT in PDI-SC-S245-0TO2, PDI-SC-S245-2TO3.8, PDI-RB-SS-180725, and PDI-RB-SS-180724.

The following results were reported at concentrations greater than the blank concentration but less than the BAL; therefore, these results were qualified as estimated and flagged 'J' at the sample results.

- 2,4'-DDE in PDI-SC-S045-2TO4, PDI-SC-S061-4.5TO6, PDI-SC-S066-0TO2, PDI-SC-S066-4TO5.8, PDI-SC-S066-5.8TO6.6, PDI-SC-S082-4TO6, PDI-SC-S095-4TO6, PDI-SC-S154-3TO4, and PDI-RB-SS-180725.
- 4,4'-DDE in PDI-SC-S045-4TO6, PDI-SC-S095-4TO6, PDI-SC-S154-3TO4, PDI-SC-S140-4TO5.7, and PDI-RB-SS-180725.
- 2,4'-DDD in PDI-SC-S140-4TO5.7.
- 4,4'-DDD in PDI-SC-S154-3TO4.
- 2,4'-DDT in PDI-SC-S245-0TO2, PDI-SC-S245-2TO3.8, PDI-SC-S140-4TO5.7, and PDI-RB-SS-180725.
- 4,4'-DDT in PDI-SC-S140-4TO5.7.

The result for 2,4'-DDT in PDI-RB-SS-180725 was qualified as estimated based on CCV results as described in Section 2; therefore, no further qualification was necessary.

Two rinsate blanks were submitted with this laboratory group. The following analytes were detected in the rinsate blanks, after laboratory method blank actions were applied.

Blank Identification	Analyte	Result (ng/L)
PDI-RB-SS-180725	2,4'-DDE	0.047
	4,4'-DDE	0.10
	2,4'-DDT	0.065

Sediment data were not qualified based on rinsate blank detections.

4. Labeled compounds – Acceptable except as noted below:

The percent recoveries for the following labeled compounds exceeded the control limits.

Sample	Labeled Compound	Percent Recovery	Control Limit
PDI-SC-S082-4TO6	13C12-4,4'-DDD	151%	5-150%
	13C12-4,4'-DDT	164%	5-120%
PDI-SC-S127-2TO4	13C12-4,4'-DDT	168%	5-120%
PDI-SC-S127-4TO5.6	13C12-4,4'-DDD	154%	5-150%
	13C12-4,4'-DDT	178%	5-120%
PDI-SC-S189-2TO4	13C12-4,4'-DDT	155%	5-120%
PDI-SC-S127-2TO4D	13C12-4,4'-DDT	161%	5-120%
PDI-SC-S189-4TO5.7	13C12-4,4'-DDT	148%	5-120%
Method Blank (Batch WG2837045)	13C12-4,4'-DDT	152%	5-120%

Data were not qualified based on labeled compound exceedances in the QC (method blank) sample. The results for the samples noted in the table above were qualified as estimated

based on the associated CCV results as described in Section 2; therefore, no further qualifications based on the labeled compound recoveries were necessary.

5. Internal Standards – Acceptable

6. Laboratory Control Sample (LCS) – Acceptable except as noted below:

   The percent recovery for 2,4'-DDE (131%) exceeded the control limits of 50-120% in the LCS extracted on August 3, 2018. The results for 2,4'-DDE in PDI-SC-S245-0TO2, PDI-SC-S245-2TO3.8, PDI-SC-S140-4TO5.7, PDI-SC-S140-2TO4, and PDI-SC-S140-0TO2 were qualified as estimated and flagged 'J' based on the elevated LCS recoveries.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable except as noted below:

   An MS/MSD was not performed in association with the rinsate blanks. Accuracy was assessed using the LCS results. Precision was not assessed.

   An MS/MSD was performed using PDI-SC-S045-2TO4 and a sample from an unrelated project. Results were acceptable for PDI-SC-S045-2TO4. Data reported in this laboratory group were not qualified based on MS/MSD results from unrelated projects.

8. Laboratory Duplicate – Acceptable except as noted below:

   A laboratory duplicate was performed using PDI-SC-S045-0TO2. Results greater than five times the reporting limits (RLs) were evaluated. The relative percent difference (RPD) for 4,4'-DDD (165%) exceeded the control limit of $\pm$25%. The result for 4,4'-DDD in PDI-SC-S045-0TO2 was qualified as estimated and flagged 'J' based on the elevated duplicate result.

9. Field Duplicate – Acceptable except as noted below:

   Field duplicates were submitted for PDI-SC-S095-0TO2 and PDI-SC-S127-2TO4 and identified as PDI-SC-S095-0TO2D and PDI-SC-S127-2TO4D, respectively. Results greater than five times the RLs were evaluated. Results were comparable with the following exceptions.

   The RPD for 2,4-DDT was greater than 50% for the PDI-SC-S095-0TO2/PDI-SC-S095-0TO2-D field duplicate pair. The result for 2,4-DDT in PDI-SC-S095-0TO2 and PDI-SC-S095-0TO2-D were qualified as estimated and flagged 'J' based on this RPD result.

10. Calculation Checks – Acceptable

    A calculation check was performed for sample results on one sample per calibration per method. The review confirmed the final results were correct as reported.

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

    Chromatograms/spectra were reviewed to confirm target analytes were properly identified. In some chromatograms, the ion peaks for 2,4'-DDT were minimal and in some cases were not visible due to the presence of high level ion peaks coeluting with lower level peaks. Per the laboratory, "the chromatograms from TargetLynx (the instrument quantification software) show multiple peaks in the same chromatogram if the masses and time ranges are the same.

The chromatograms are scaled to the height of the largest peak. Since 2,4'-DDT is at a much lower level than 4,4'-DDD, its scaling is diminished. Additional graphic resolution is captured in the PDF, which can be zoomed-in to view (sometimes limited) peak detail. The peak areas are tabulated in the quantification report". In chromatograms for which the scaling resulted in no visual ion peaks for 2,4'-DDT, the ion chromatograms were rescaled and resubmitted by the laboratory. Detections were also confirmed during the data review based on peak responses, signal to noise ratio, retention times, and ion ratios, provided in the quantification report. No data validation actions were taken on this issue.

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

The reporting limits for one or more pesticides reported as not detected in multiple samples were elevated due to the moisture content and/or dilution due to matrix interference. AECOM uses 30% solids (from the NFG pesticide guidance) as a benchmark to evaluate the percent solids content and professional judgment is used to determine the necessity to qualify data. Qualification on this basis was not required. The reporting limits do not exceeded the cleanup level.

Analytes with an ion abundance ratio outside the control limits of 1.56 +/- 25% were flagged 'R' by the laboratory indicating an 'EMPC' (estimated maximum possible concentration). These results were qualified as tentatively identified and flagged 'JN' based on this laboratory flag as identified in Table 1.

11. Other Items:

The laboratory noted the results for 4,4'-DDT in PDI-SC-S154-1TO3 and PDI-SC-S140-0TO2 were reported from the analysis of an extract that had been diluted and fortified with labeled extraction standard for quantification; therefore, the results for 4,4'-DDT are not recovery-corrected. The results for 4,4'-DDT in PDI-SC-S154-1TO3 and PDI-SC-S140-0TO2 were qualified as estimated based on CCV results as described in Section 2; therefore, no further qualification was necessary.

CONVENTIONAL ANALYSIS

Sediment samples were analyzed for total solids by ASTM D-2974.

1. Holding Times – Acceptable except as noted below:

The sediment samples exceeded the 7-day holding time as indicated in the QAPP. No data qualifiers were assigned based on the holding time exceedance.

2. Laboratory Duplicate – Acceptable

Laboratory duplicates were performed using PDI-SC-S045-2TO4 and PDI-SC-S082-0TO2. Results were comparable.

3. Field Duplicate – Acceptable

Field duplicates were submitted for PDI-SC-S095-0TO2 and PDI-SC-S127-2TO4 and identified as PDI-SC-S095-0TO2D and PDI-SC-S127-2TO4D, respectively. Results were comparable.

4. Calculation Checks – Acceptable

   A calculation check was performed for sample results on one sample. The review confirmed the final results were correct as reported.

5. Reporting Limits – Acceptable

OVERALL ASSESSMENT OF DATA

The data reported in this laboratory group is considered usable for meeting project objectives. The completeness for laboratory group L2136985 is 100%.

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment
ALS Burlington Laboratory Group: L2136985

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result		Units	Final Result	Reason Code
PDI-SC-S045-0TO2	L2136985-1	E1699M	4,4'-DDD	2.51		ng/g	2.51 J	ld
PDI-SC-S045-2TO4	L2136985-2	E1699M	2,4-DDE	0.0139	M,J,B	ng/g	0.0139 J	bl
PDI-SC-S045-4TO6	L2136985-3	E1699M	2,4-DDE	0.0034	M,J,R	ng/g	0.0034 U	bl
PDI-SC-S045-4TO6	L2136985-3	E1699M	4,4'-DDD	0.0058	M,J,R	ng/g	0.0058 JN	k
PDI-SC-S045-4TO6	L2136985-3	E1699M	4,4'-DDE	0.0150	M,J,B	ng/g	0.0150 J	bl
PDI-SC-S061-0TO3	L2136985-7	E1699M	2,4-DDD	0.307		ng/g	0.307 J	c
PDI-SC-S061-0TO3	L2136985-7	E1699M	2,4-DDT	0.0623	J	ng/g	0.0623 J	c
PDI-SC-S061-0TO3	L2136985-7	E1699M	4,4'-DDD	1.30		ng/g	1.30 J	c
PDI-SC-S061-0TO3	L2136985-7	E1699M	4,4'-DDT	0.401		ng/g	0.401 J	c
PDI-SC-S061-3TO4.5	L2136985-8	E1699M	2,4-DDT	0.432	J	ng/g	0.432 J	c
PDI-SC-S061-3TO4.5	L2136985-8	E1699M	4,4'-DDT	1.57	J	ng/g	1.57 J	c
PDI-SC-S061-4.5TO6	L2136985-9	E1699M	2,4-DDD	0.0500	J	ng/g	0.0500 J	c
PDI-SC-S061-4.5TO6	L2136985-9	E1699M	2,4-DDE	0.0111	J,B	ng/g	0.0111 J	bl
PDI-SC-S061-4.5TO6	L2136985-9	E1699M	2,4-DDT	0.0065	M,U	ng/g	0.0065 UJ	c
PDI-SC-S061-4.5TO6	L2136985-9	E1699M	4,4'-DDD	0.117	M,J	ng/g	0.117 J	c
PDI-SC-S061-4.5TO6	L2136985-9	E1699M	4,4'-DDT	0.00972	M,J	ng/g	0.00972 J	c
PDI-SC-S066-0TO2	L2136985-10	E1699M	2,4-DDD	0.128	J	ng/g	0.128 J	c
PDI-SC-S066-0TO2	L2136985-10	E1699M	2,4-DDE	0.0193	J,B	ng/g	0.0193 J	bl
PDI-SC-S066-0TO2	L2136985-10	E1699M	2,4-DDT	0.0265	J	ng/g	0.0265 J	c
PDI-SC-S066-0TO2	L2136985-10	E1699M	4,4'-DDD	0.430		ng/g	0.430 J	c
PDI-SC-S066-0TO2	L2136985-10	E1699M	4,4'-DDT	0.0795	M,J	ng/g	0.0795 J	c
PDI-SC-S066-2TO4	L2136985-11	E1699M	2,4-DDT	0.028	U	ng/g	0.028 UJ	c
PDI-SC-S066-2TO4	L2136985-11	E1699M	4,4'-DDT	0.210	M,J	ng/g	0.210 J	c
PDI-SC-S066-4TO5.8	L2136985-12	E1699M	2,4-DDD	0.395		ng/g	0.395 J	c
PDI-SC-S066-4TO5.8	L2136985-12	E1699M	2,4-DDE	0.0109	J,B	ng/g	0.0109 J	bl
PDI-SC-S066-4TO5.8	L2136985-12	E1699M	2,4-DDT	0.007	U	ng/g	0.007 UJ	c
PDI-SC-S066-4TO5.8	L2136985-12	E1699M	4,4'-DDD	0.684	M	ng/g	0.684 J	c
PDI-SC-S066-4TO5.8	L2136985-12	E1699M	4,4'-DDT	0.0080	U	ng/g	0.0080 UJ	c
PDI-SC-S066-5.8TO6.6	L2136985-13	E1699M	2,4-DDD	0.198	J	ng/g	0.198 J	c
PDI-SC-S066-5.8TO6.6	L2136985-13	E1699M	2,4-DDE	0.00849	M,J,B	ng/g	0.00849 J	bl
PDI-SC-S066-5.8TO6.6	L2136985-13	E1699M	2,4-DDT	0.016	U	ng/g	0.016 UJ	c
PDI-SC-S066-5.8TO6.6	L2136985-13	E1699M	4,4'-DDD	0.245	J	ng/g	0.245 J	c
PDI-SC-S066-5.8TO6.6	L2136985-13	E1699M	4,4'-DDT	0.022	U	ng/g	0.022 UJ	c
PDI-SC-S082-4TO6	L2136985-16	E1699M	2,4-DDD	0.128	J	ng/g	0.128 J	c
PDI-SC-S082-4TO6	L2136985-16	E1699M	2,4-DDE	0.0237	J	ng/g	0.0237 J	bl
PDI-SC-S082-4TO6	L2136985-16	E1699M	2,4-DDT	0.0038	U	ng/g	0.0038 UJ	c
PDI-SC-S082-4TO6	L2136985-16	E1699M	4,4'-DDD	0.376	M	ng/g	0.376 J	c
PDI-SC-S082-4TO6	L2136985-16	E1699M	4,4'-DDT	0.011	U	ng/g	0.011 UJ	c
PDI-SC-S095-0TO2	L2136985-17	E1699M	2,4-DDT	2.94	M	ng/g	2.94 J	fd
PDI-SC-S095-4TO6	L2136985-19	E1699M	2,4-DDE	0.0122	J	ng/g	0.0122 J	bl
PDI-SC-S095-4TO6	L2136985-19	E1699M	4,4'-DDE	0.0277	J,B	ng/g	0.0277 J	bl
PDI-SC-S064-2TO3.5	L2136985-21	E1699M	2,4-DDT	0.670	M,J,R	ng/g	0.670 JN	k
PDI-SC-S154-1TO3	L2136985-24	E1699M	4,4'-DDT	8,000		ng/g	8,000 J	c
PDI-SC-S154-3TO4	L2136985-25	E1699M	2,4-DDE	0.0118	J	ng/g	0.0118 J	bl
PDI-SC-S154-3TO4	L2136985-25	E1699M	4,4'-DDD	0.0437	J	ng/g	0.0437 J	bl
PDI-SC-S154-3TO4	L2136985-25	E1699M	4,4'-DDE	0.0385	J,B	ng/g	0.0385 J	bl
PDI-SC-S095-0TO2D	L2136985-26	E1699M	2,4-DDT	1.17	M,J	ng/g	1.17 J	fd
PDI-SC-S127-2TO4	L2136985-28	E1699M	2,4-DDD	4.77		ng/g	4.77 J	c
PDI-SC-S127-2TO4	L2136985-28	E1699M	2,4-DDT	3.62		ng/g	3.62 J	c
PDI-SC-S127-2TO4	L2136985-28	E1699M	4,4'-DDD	15.6		ng/g	15.6 J	c
PDI-SC-S127-2TO4	L2136985-28	E1699M	4,4'-DDT	1.02		ng/g	1.02 J	c
PDI-SC-S127-4TO5.6	L2136985-29	E1699M	2,4-DDD	3.60		ng/g	3.60 J	c
PDI-SC-S127-4TO5.6	L2136985-29	E1699M	2,4-DDT	0.135	M,J	ng/g	0.135 J	c
PDI-SC-S127-4TO5.6	L2136985-29	E1699M	4,4'-DDD	14.1		ng/g	14.1 J	c
PDI-SC-S127-4TO5.6	L2136985-29	E1699M	4,4'-DDT	0.322	M	ng/g	0.322 J	c
PDI-SC-S189-2TO4	L2136985-30	E1699M	2,4-DDD	0.514	M	ng/g	0.514 J	c
PDI-SC-S189-2TO4	L2136985-30	E1699M	2,4-DDT	0.025	M,J,R	ng/g	0.025 JN	c,k
PDI-SC-S189-2TO4	L2136985-30	E1699M	4,4'-DDD	2.24		ng/g	2.24 J	c
PDI-SC-S189-2TO4	L2136985-30	E1699M	4,4'-DDT	0.0853	M,J	ng/g	0.0853 J	c

Table 1
QA/QC Data Summary Review
Portland Harbor
Subsurface Sediment
ALS Burlington Laboratory Group: L2136985

Sample ID	Laboratory ID	Method	Analyte	Laboratory Result		Units	Final Result	Reason Code
PDI-SC-S127-2TO4D	L2136985-31	E1699M	2,4-DDD	7.37		ng/g	7.37 J	c
PDI-SC-S127-2TO4D	L2136985-31	E1699M	2,4-DDT	0.830		ng/g	0.830 J	c
PDI-SC-S127-2TO4D	L2136985-31	E1699M	4,4'-DDD	18.4		ng/g	18.4 J	c
PDI-SC-S127-2TO4D	L2136985-31	E1699M	4,4'-DDT	0.490		ng/g	0.490 J	c
PDI-SC-S189-0TO2	L2136985-32	E1699M	2,4-DDT	0.120	J,R	ng/g	0.120 JN	k
PDI-SC-S189-4TO5.7	L2136985-33	E1699M	2,4-DDD	0.474	M	ng/g	0.474 J	c
PDI-SC-S189-4TO5.7	L2136985-33	E1699M	2,4-DDT	0.0245	M,J	ng/g	0.0245 J	c
PDI-SC-S189-4TO5.7	L2136985-33	E1699M	4,4'-DDD	1.90	M	ng/g	1.90 J	c
PDI-SC-S189-4TO5.7	L2136985-33	E1699M	4,4'-DDT	0.0509	M,J	ng/g	0.0509 J	c
PDI-SC-S245-0TO2	L2136985-34	E1699M	2,4-DDE	0.114	J,B	ng/g	0.114 J	l
PDI-SC-S245-0TO2	L2136985-34	E1699M	2,4-DDT	0.121	J,B	ng/g	0.121 J	bl
PDI-SC-S245-0TO2	L2136985-34	E1699M	4,4'-DDT	0.338	J,B	ng/g	0.338 U	bl
PDI-SC-S245-2TO3.8	L2136985-35	E1699M	2,4-DDE	0.307	J	ng/g	0.307 J	l
PDI-SC-S245-2TO3.8	L2136985-35	E1699M	2,4-DDT	0.0760	J,R	ng/g	0.0760 JN	bl,k
PDI-SC-S245-2TO3.8	L2136985-35	E1699M	4,4'-DDT	0.233	J,B	ng/g	0.233 U	bl
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	2,4-DDD	0.0358	J	ng/g	0.0358 J	bl
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	2,4-DDE	0.207	J	ng/g	0.207 J	l
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	2,4-DDT	0.0859	J,B	ng/g	0.0859 J	bl
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	4,4'-DDD	0.0219	J,B	ng/g	0.0219 U	bl
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	4,4'-DDE	0.143	J,B	ng/g	0.143 J	bl
PDI-SC-S140-4TO5.7	L2136985-36	E1699M	4,4'-DDT	0.546	M,B	ng/g	0.546 J	bl
PDI-SC-S140-2TO4	L2136985-37	E1699M	2,4-DDE	0.275	J	ng/g	0.275 J	l
PDI-SC-S140-0TO2	L2136985-38	E1699M	2,4-DDE	12.0		ng/g	12.0 J	l
PDI-SC-S140-0TO2	L2136985-38	E1699M	4,4'-DDT	14,300		ng/g	14,300 J	c
PDI-RB-SS-180725	L2136985-39	E1699M	2,4-DDD	0.031	M,J,R	ng/L	0.031 U	bl
PDI-RB-SS-180725	L2136985-39	E1699M	2,4-DDE	0.047	M,J,R	ng/L	0.047 JN	bl,k
PDI-RB-SS-180725	L2136985-39	E1699M	2,4-DDT	0.065	M,J,R	ng/L	0.065 JN	c,k
PDI-RB-SS-180725	L2136985-39	E1699M	4,4'-DDD	0.0587	M,J,B	ng/L	0.0587 U	bl
PDI-RB-SS-180725	L2136985-39	E1699M	4,4'-DDE	0.100	M,J,R	ng/L	0.100 JN	bl,k
PDI-RB-SS-180725	L2136985-39	E1699M	4,4'-DDT	0.321	M,J,B	ng/L	0.321 UJ	bl,c
PDI-RB-SS-180724	L2136985-40	E1699M	2,4-DDD	0.0292	M,J	ng/L	0.0292 U	bl
PDI-RB-SS-180724	L2136985-40	E1699M	2,4-DDE	0.0150	M,J,R	ng/L	0.0150 U	bl
PDI-RB-SS-180724	L2136985-40	E1699M	2,4-DDT	0.049	M,J,R	ng/L	0.049 UJ	bl,c
PDI-RB-SS-180724	L2136985-40	E1699M	4,4'-DDD	0.0558	M,J,B	ng/L	0.0558 U	bl
PDI-RB-SS-180724	L2136985-40	E1699M	4,4'-DDE	0.0528	M,J,B	ng/L	0.0528 U	bl
PDI-RB-SS-180724	L2136985-40	E1699M	4,4'-DDT	0.230	M,J,B	ng/L	0.230 UJ	bl,c

B - detected in blank at >10% of sample concentration
bl - laboratory blank contamination
c - calibration issue
fd - field duplicate RPD
J - estimated value
JN - tentatively identified analyte
k - Estimated Maximum Possible Concentration (EMPC)
l - LCS recovery
ld - laboratory duplicate RPD
M - manual integration by laboratory
ng/g - nanogram per gram
ng/L - nanogram per liter
R - Ion abundance outside acceptance criterion
RPD - relative percent difference
U - Compound was analyzed for, but not detected above the value shown.

Note: Line items where the laboratory result contains a "J" and the final result contains a “U” with a data validation reason code "bl" indicate that the final result is reported as not detected (“U” flag) at the sample result.