

## Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling

Laboratory: Test America, Knoxville, Tennessee

Service Request: 580-77301-3

Analyses/Method: Chlorinated Biphenyls by HRGC/HRMS / E1668A

Validation Level: Stage 2A

AECOM Project Number: 60566335.2.12

Prepared by: Ann Marie Kropovitch/AECOM Completed on: 08/17/2018

Reviewed by: George Kisluk/AECOM File Name: 580-77301-3 DVR

### SUMMARY

The samples listed below were collected by AECOM in Portland Harbor in Portland, OR on May 14, 2018.

Sample ID	Matrix/Sample Type
PDI-RB-VV-180514	Equipment Blank
PDI-SG-S158	Sediment
PDI-SG-S161	Sediment
PDI-SG-S227	Sediment
PDI-SG-S244	Sediment
PDI-SG-S246	Sediment
PDI-SG-S247	Sediment
PDI-SG-S248	Sediment
PDI-SG-S249	Sediment
PDI-SG-S250	Sediment
PDI-SG-S252	Sediment

Data validation activities were conducted with reference to:

- EPA Method 1668A: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS (USEPA, August 2003),
- USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016),
- Quality Assurance Project Plan, Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling, Portland Harbor Superfund Site (March 2018), and the
- laboratory quality control (QC) limits.

The National Functional Guidelines were modified to accommodate the non-CLP methodologies. In the absence of method-specific information, laboratory QC limits, project-specific requirements and/or AECOM professional judgment were used as appropriate.

## REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

- ✓ Data completeness (chain-of-custody (COC)/sample integrity)
- ✓ Holding times and sample preservation
- X Laboratory blanks/equipment blanks
- NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results
- ✓ Ongoing precision and recovery results
- NA Field duplicate results
- X Labeled compounds and labeled clean-up standard recoveries
- X Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. An NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (X) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as qualified and may be used for decision making purposes. Select data points were qualified as estimated or negated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

## RESULTS

### Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

### Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with method criteria. All method QC acceptance criteria were met.

### Laboratory Blanks/Equipment Blanks

Method and equipment rinsate blank results are evaluated as to whether there are contaminants detected above the estimated detection limit (EDL).

Target compounds were detected in the laboratory method blanks and the equipment blank associated with the samples in this data set. The equipment blank contamination, after

laboratory method blank actions were applied, is summarized below for informational purposes only. Equipment blank contamination was not used qualify field samples.

Blank ID	Compound	Result	EDL	Units
PDI-RB-VV-180514	PCB-28	0.0057	0.00080	ng/L
	PCB-76	0.0052	0.00087	ng/L
	PCB-115	0.0048	0.00038	ng/L
	PCB-31	0.0045	0.00078	ng/L
	PCB-11	0.048	0.0078	ng/L
	PCB-3	0.0031	0.00066	ng/L
	PCB-47	0.010	0.0011	ng/L
	PCB-118	0.0023	0.0011	ng/L
	PCB-70	0.0052	0.00087	ng/L
	PCB-74	0.0052	0.00087	ng/L
	PCB-61	0.0052	0.00087	ng/L
	PCB-65	0.010	0.0011	ng/L
	PCB-30	0.0076	0.0011	ng/L
	PCB-18	0.0076	0.0011	ng/L
	PCB-95	0.0058	0.00058	ng/L
	PCB-110	0.0048	0.00038	ng/L
	PCB-32	0.0038	0.00086	ng/L
	PCB-20	0.0057	0.00080	ng/L
	PCB-22	0.0017	0.00082	ng/L
	PCB-44	0.010	0.0011	ng/L
PCB-64	0.0025	0.00084	ng/L	

Target compounds detected in the method blanks associated with the samples in this data set are summarized in Attachment A in Table A-1.

The NFG guidance stipulates that a conservative approach should be taken with regards to qualification of PCB congeners due to the toxicity of these compounds 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 method blank result:

- When the sample results were < the method blank result, the sample result was qualified as nondetect (U) at the sample result.
- When the sample result was  $\geq$  the method 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.

Qualified sample results are summarized in Table 1.

**MS/MSD Results**

A MS/MSD was not requested on this sample delivery group (SDG).

**Ongoing Precision and Recovery**

The OPR %Rs and/or RPDs were reviewed for conformance with the method QC acceptance criteria. All method QC acceptance criteria were met.

**Field Duplicate Results**

A Field duplicate was not submitted for this SDG.

**Labeled Compounds and Labeled Clean-up Standard Recoveries**

The labeled compounds and labeled clean-up standard %Rs were reviewed for conformance with the QC acceptance criteria.

The ion abundance ratio fell outside of the QC acceptance limits for the labeled compound listed for the following samples:

PDI-RB-VV-180514 and PDI-SG-S158

Nonconformances are summarized in Attachment A in Table A-1. Samples were qualified as follows:

**Actions:** (Based on NFG 2016)

Criteria	Actions	
	Detected	Nondetected
%R > Upper Acceptance Limit	J	UJ

Qualified sample results are summarized in Table 1.

**Sample Results/Reporting Issues**

All sample results detected at concentrations less than the lowest calibration standard but greater than the EDL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

The laboratory qualified the sample results with a "q" to indicate that the ion abundance ratio was outside of the QC acceptance limits; the result should be considered as an Estimated Maximum Possible Concentration (EMPC). These results were qualified as estimated and tentatively identified (JN). Qualified sample results are summarized in Table 1.

It should be noted that the "JN" qualifier was retained rather than replacement with the conventional overall "J", "J+", and "J-" qualifiers in instances where sample results were qualified for multiple quality control nonconformances.

**Percent Solids Content**

The percent solids data were reviewed since the amount of moisture in a solid sample may have an impact on data representativeness. Due to the extremely low solubility of PCB congeners in water, these analytes should be contained in the solid phase. Consequently, the NFG guidance does not stipulate a percent solids criterion. If applicable, EPA Regional guidance is used when assessing percent solids content. In the absence of EPA Regional guidance, AECOM uses 30% solids (from the NFG semivolatile guidance) as a benchmark to evaluate the percent solids content and professional judgment is used to determine the necessity to qualify data. Data were not qualified on the basis of percent solids content.

**QUALIFICATION ACTIONS**

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

**ATTACHMENTS**

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-RB-VV-180514	WQ	PCB-11	0.048	0.0078	ng/L	J+	bl
PDI-RB-VV-180514	WQ	PCB-28	0.0057	0.00080	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-3	0.0031	0.00066	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-47	0.010	0.0011	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-65	0.010	0.0011	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-20	0.0057	0.00080	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-22	0.0017	0.00082	ng/L	JN	bl,k
PDI-RB-VV-180514	WQ	PCB-76	0.0052	0.00087	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-115	0.0048	0.00038	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-31	0.0045	0.00078	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-70	0.0052	0.00087	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-74	0.0052	0.00087	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-61	0.0052	0.00087	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-30	0.0076	0.0011	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-18	0.0076	0.0011	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-110	0.0048	0.00038	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-32	0.0038	0.00086	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-44	0.010	0.0011	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-64	0.0025	0.00084	ng/L	JN	k
PDI-RB-VV-180514	WQ	PCB-126		0.00033	ng/L	UJ	lc
PDI-SG-S158	SE	PCB-19	0.053	0.00060	ng/g	J	lc
PDI-SG-S158	SE	PCB-68	0.017	0.0028	ng/g	JN	k
PDI-SG-S158	SE	PCB-122	0.015	0.0026	ng/g	JN	k
PDI-SG-S158	SE	PCB-5	0.0033	0.0024	ng/g	JN	k
PDI-SG-S158	SE	PCB-3	0.012	0.00082	ng/g	JN	k
PDI-SG-S158	SE	PCB-10	0.0037	0.0023	ng/g	JN	k
PDI-SG-S158	SE	PCB-7	0.0092	0.0021	ng/g	JN	k
PDI-SG-S158	SE	PCB-100	0.030	0.00033	ng/g	JN	k
PDI-SG-S158	SE	PCB-167	0.051	0.0026	ng/g	JN	k
PDI-SG-S158	SE	PCB-126	0.0038	0.0026	ng/g	JN	k
PDI-SG-S158	SE	PCB-131	0.016	0.0056	ng/g	JN	k
PDI-SG-S158	SE	PCB-150	0.0073	0.00015	ng/g	JN	k
PDI-SG-S158	SE	PCB-120	0.013	0.00024	ng/g	JN	k
PDI-SG-S158	SE	PCB-57	0.0053	0.0032	ng/g	JN	k
PDI-SG-S158	SE	PCB-67	0.023	0.0028	ng/g	JN	k
PDI-SG-S158	SE	PCB-93	0.030	0.00033	ng/g	JN	k
PDI-SG-S158	SE	PCB-148	0.010	0.00021	ng/g	JN	k
PDI-SG-S158	SE	PCB-54	0.0017	0.000027	ng/g	JN	k,lc

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S161	SE	PCB-68	0.0037	0.0020	ng/g	JN	bl,k
PDI-SG-S161	SE	PCB-2	0.0093	0.00057	ng/g	JN	k
PDI-SG-S161	SE	PCB-3	0.0043	0.00061	ng/g	JN	k
PDI-SG-S161	SE	PCB-13	0.0058	0.0038	ng/g	JN	k
PDI-SG-S161	SE	PCB-12	0.0058	0.0038	ng/g	JN	k
PDI-SG-S161	SE	PCB-75	0.0098	0.0021	ng/g	JN	k
PDI-SG-S161	SE	PCB-42	0.032	0.0030	ng/g	JN	k
PDI-SG-S161	SE	PCB-19	0.017	0.00068	ng/g	JN	k
PDI-SG-S161	SE	PCB-27	0.0072	0.00040	ng/g	JN	k
PDI-SG-S161	SE	PCB-100	0.010	0.00044	ng/g	JN	k
PDI-SG-S161	SE	PCB-175	0.0081	0.0011	ng/g	JN	k
PDI-SG-S161	SE	PCB-46	0.0061	0.0038	ng/g	JN	k
PDI-SG-S161	SE	PCB-79	0.0042	0.0019	ng/g	JN	k
PDI-SG-S161	SE	PCB-82	0.039	0.00051	ng/g	JN	k
PDI-SG-S161	SE	PCB-130	0.031	0.0047	ng/g	JN	k
PDI-SG-S161	SE	PCB-62	0.0098	0.0021	ng/g	JN	k
PDI-SG-S161	SE	PCB-139	0.0094	0.0040	ng/g	JN	k
PDI-SG-S161	SE	PCB-126	0.0025	0.0020	ng/g	JN	k
PDI-SG-S161	SE	PCB-140	0.0094	0.0040	ng/g	JN	k
PDI-SG-S161	SE	PCB-103	0.0075	0.00044	ng/g	JN	k
PDI-SG-S161	SE	PCB-154	0.014	0.00054	ng/g	JN	k
PDI-SG-S161	SE	PCB-98	0.012	0.00043	ng/g	JN	k
PDI-SG-S161	SE	PCB-123	0.0049	0.0018	ng/g	JN	k
PDI-SG-S161	SE	PCB-102	0.012	0.00043	ng/g	JN	k
PDI-SG-S161	SE	PCB-150	0.0017	0.00046	ng/g	JN	k
PDI-SG-S161	SE	PCB-120	0.0032	0.00031	ng/g	JN	k
PDI-SG-S161	SE	PCB-108	0.010	0.0019	ng/g	JN	k
PDI-SG-S161	SE	PCB-124	0.010	0.0019	ng/g	JN	k
PDI-SG-S161	SE	PCB-67	0.0027	0.0019	ng/g	JN	k
PDI-SG-S161	SE	PCB-93	0.010	0.00044	ng/g	JN	k
PDI-SG-S161	SE	PCB-59	0.0098	0.0021	ng/g	JN	k
PDI-SG-S161	SE	PCB-114	0.0062	0.0018	ng/g	JN	k
PDI-SG-S161	SE	PCB-122	0.0038	0.0021	ng/g	JN	k
PDI-SG-S227	SE	PCB-4	0.030	0.0075	ng/g	JN	k
PDI-SG-S227	SE	PCB-54	0.0013	0.000063	ng/g	JN	k
PDI-SG-S227	SE	PCB-15	0.036	0.0053	ng/g	JN	k
PDI-SG-S227	SE	PCB-1	0.0030	0.00046	ng/g	JN	k
PDI-SG-S227	SE	PCB-2	0.0053	0.00048	ng/g	JN	k
PDI-SG-S227	SE	PCB-6	0.012	0.0051	ng/g	JN	k
PDI-SG-S227	SE	PCB-13	0.010	0.0052	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S227	SE	PCB-12	0.010	0.0052	ng/g	JN	k
PDI-SG-S227	SE	PCB-60	0.037	0.0024	ng/g	JN	k
PDI-SG-S227	SE	PCB-197	0.0054	0.00044	ng/g	JN	k
PDI-SG-S227	SE	PCB-134	0.042	0.0038	ng/g	JN	k
PDI-SG-S227	SE	PCB-35	0.0022	0.0014	ng/g	JN	k
PDI-SG-S227	SE	PCB-27	0.0082	0.00068	ng/g	JN	k
PDI-SG-S227	SE	PCB-22	0.059	0.0014	ng/g	JN	k
PDI-SG-S227	SE	PCB-36	0.0027	0.0014	ng/g	JN	k
PDI-SG-S227	SE	PCB-100	0.011	0.00050	ng/g	JN	k
PDI-SG-S227	SE	PCB-72	0.0036	0.0023	ng/g	JN	k
PDI-SG-S227	SE	PCB-46	0.011	0.0040	ng/g	JN	k
PDI-SG-S227	SE	PCB-79	0.0032	0.0021	ng/g	JN	k
PDI-SG-S227	SE	PCB-64	0.083	0.0021	ng/g	JN	k
PDI-SG-S227	SE	PCB-84	0.12	0.00058	ng/g	JN	k
PDI-SG-S227	SE	PCB-92	0.088	0.00050	ng/g	JN	k
PDI-SG-S227	SE	PCB-176	0.027	0.00076	ng/g	JN	k
PDI-SG-S227	SE	PCB-171	0.066	0.0011	ng/g	JN	k
PDI-SG-S227	SE	PCB-203	0.093	0.00053	ng/g	JN	k
PDI-SG-S227	SE	PCB-139	0.013	0.0033	ng/g	JN	k
PDI-SG-S227	SE	PCB-140	0.013	0.0033	ng/g	JN	k
PDI-SG-S227	SE	PCB-103	0.0084	0.00050	ng/g	JN	k
PDI-SG-S227	SE	PCB-154	0.010	0.00028	ng/g	JN	k
PDI-SG-S227	SE	PCB-182	0.0038	0.00097	ng/g	JN	k
PDI-SG-S227	SE	PCB-98	0.014	0.00049	ng/g	JN	k
PDI-SG-S227	SE	PCB-102	0.014	0.00049	ng/g	JN	k
PDI-SG-S227	SE	PCB-150	0.0015	0.00024	ng/g	JN	k
PDI-SG-S227	SE	PCB-152	0.00091	0.00025	ng/g	JN	k
PDI-SG-S227	SE	PCB-120	0.0040	0.00036	ng/g	JN	k
PDI-SG-S227	SE	PCB-143	0.042	0.0038	ng/g	JN	k
PDI-SG-S227	SE	PCB-173	0.066	0.0011	ng/g	JN	k
PDI-SG-S227	SE	PCB-43	0.0080	0.0030	ng/g	JN	k
PDI-SG-S227	SE	PCB-68	0.0028	0.0021	ng/g	JN	k
PDI-SG-S227	SE	PCB-93	0.011	0.00050	ng/g	JN	k
PDI-SG-S227	SE	PCB-73	0.0080	0.0030	ng/g	JN	k
PDI-SG-S227	SE	PCB-114	0.0060	0.0019	ng/g	JN	k
PDI-SG-S227	SE	PCB-148	0.0030	0.00035	ng/g	JN	k
PDI-SG-S227	SE	PCB-205	0.0057	0.0016	ng/g	JN	k
PDI-SG-S227	SE	PCB-122	0.0075	0.0023	ng/g	JN	k
PDI-SG-S244	SE	PCB-145	0.0015	0.00030	ng/g	JN	bl,k
PDI-SG-S244	SE	PCB-54	0.00078	0.000044	ng/g	JN	k



Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S244	SE	PCB-43	0.0076	0.0037	ng/g	JN	k
PDI-SG-S244	SE	PCB-48	0.024	0.0039	ng/g	JN	k
PDI-SG-S244	SE	PCB-93	0.018	0.00024	ng/g	JN	k
PDI-SG-S244	SE	PCB-73	0.0076	0.0037	ng/g	JN	k
PDI-SG-S244	SE	PCB-59	0.015	0.0028	ng/g	JN	k
PDI-SG-S244	SE	PCB-181	0.0053	0.00088	ng/g	JN	k
PDI-SG-S244	SE	PCB-205	0.0084	0.0014	ng/g	JN	k
PDI-SG-S244	SE	PCB-2	0.0055	0.00043	ng/g	JN	k
PDI-SG-S244	SE	PCB-3	0.0086	0.00046	ng/g	JN	k
PDI-SG-S244	SE	PCB-13	0.0080	0.0052	ng/g	JN	k
PDI-SG-S244	SE	PCB-12	0.0080	0.0052	ng/g	JN	k
PDI-SG-S244	SE	PCB-75	0.015	0.0028	ng/g	JN	k
PDI-SG-S244	SE	PCB-77	0.017	0.0029	ng/g	JN	k
PDI-SG-S244	SE	PCB-197	0.0055	0.00048	ng/g	JN	k
PDI-SG-S244	SE	PCB-7	0.0054	0.0052	ng/g	JN	k
PDI-SG-S244	SE	PCB-133	0.017	0.0038	ng/g	JN	k
PDI-SG-S244	SE	PCB-27	0.0073	0.00069	ng/g	JN	k
PDI-SG-S244	SE	PCB-32	0.032	0.00066	ng/g	JN	k
PDI-SG-S244	SE	PCB-16	0.021	0.0010	ng/g	JN	k
PDI-SG-S244	SE	PCB-100	0.018	0.00024	ng/g	JN	k
PDI-SG-S244	SE	PCB-162	0.0052	0.0025	ng/g	JN	k
PDI-SG-S244	SE	PCB-159	0.0084	0.0025	ng/g	JN	k
PDI-SG-S244	SE	PCB-196	0.062	0.00063	ng/g	JN	k
PDI-SG-S244	SE	PCB-92	0.20	0.00023	ng/g	JN	k
PDI-SG-S244	SE	PCB-200	0.015	0.00043	ng/g	JN	k
PDI-SG-S244	SE	PCB-208	0.028	0.0020	ng/g	JN	k
PDI-SG-S244	SE	PCB-195	0.058	0.0018	ng/g	JN	k
PDI-SG-S244	SE	PCB-62	0.015	0.0028	ng/g	JN	k
PDI-SG-S244	SE	PCB-103	0.010	0.00024	ng/g	JN	k
PDI-SG-S244	SE	PCB-131	0.015	0.0042	ng/g	JN	k
PDI-SG-S244	SE	PCB-123	0.017	0.0022	ng/g	JN	k
PDI-SG-S244	SE	PCB-152	0.0016	0.00031	ng/g	JN	k
PDI-SG-S246	SE	PCB-68	0.0030	0.0016	ng/g	JN	bl,k
PDI-SG-S246	SE	PCB-100	0.012	0.00050	ng/g	JN	k
PDI-SG-S246	SE	PCB-159	0.0058	0.0024	ng/g	JN	k
PDI-SG-S246	SE	PCB-175	0.0072	0.0011	ng/g	JN	k
PDI-SG-S246	SE	PCB-201	0.016	0.00057	ng/g	JN	k
PDI-SG-S246	SE	PCB-190	0.034	0.00078	ng/g	JN	k
PDI-SG-S246	SE	PCB-72	0.0047	0.0017	ng/g	JN	k
PDI-SG-S246	SE	PCB-196	0.048	0.00082	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S246	SE	PCB-178	0.047	0.0012	ng/g	JN	k
PDI-SG-S246	SE	PCB-167	0.018	0.0018	ng/g	JN	k
PDI-SG-S246	SE	PCB-200	0.014	0.00056	ng/g	JN	k
PDI-SG-S246	SE	PCB-139	0.0092	0.0032	ng/g	JN	k
PDI-SG-S246	SE	PCB-140	0.0092	0.0032	ng/g	JN	k
PDI-SG-S246	SE	PCB-103	0.0080	0.00050	ng/g	JN	k
PDI-SG-S246	SE	PCB-98	0.017	0.00048	ng/g	JN	k
PDI-SG-S246	SE	PCB-131	0.0059	0.0040	ng/g	JN	k
PDI-SG-S246	SE	PCB-123	0.0040	0.0020	ng/g	JN	k
PDI-SG-S246	SE	PCB-102	0.017	0.00048	ng/g	JN	k
PDI-SG-S246	SE	PCB-150	0.0011	0.00026	ng/g	JN	k
PDI-SG-S246	SE	PCB-120	0.0039	0.00036	ng/g	JN	k
PDI-SG-S246	SE	PCB-144	0.021	0.00037	ng/g	JN	k
PDI-SG-S246	SE	PCB-108	0.011	0.0020	ng/g	JN	k
PDI-SG-S246	SE	PCB-43	0.011	0.0023	ng/g	JN	k
PDI-SG-S246	SE	PCB-57	0.0025	0.0018	ng/g	JN	k
PDI-SG-S246	SE	PCB-107	0.028	0.0021	ng/g	JN	k
PDI-SG-S246	SE	PCB-124	0.011	0.0020	ng/g	JN	k
PDI-SG-S246	SE	PCB-67	0.011	0.0015	ng/g	JN	k
PDI-SG-S246	SE	PCB-93	0.012	0.00050	ng/g	JN	k
PDI-SG-S246	SE	PCB-73	0.011	0.0023	ng/g	JN	k
PDI-SG-S246	SE	PCB-148	0.0033	0.00039	ng/g	JN	k
PDI-SG-S246	SE	PCB-164	0.040	0.0025	ng/g	JN	k
PDI-SG-S246	SE	PCB-122	0.0039	0.0023	ng/g	JN	k
PDI-SG-S246	SE	PCB-54	0.0029	0.000097	ng/g	JN	k
PDI-SG-S246	SE	PCB-5	0.0076	0.0033	ng/g	JN	k
PDI-SG-S246	SE	PCB-209 (decachlorobiphenyl)	0.069	0.00060	ng/g	JN	k
PDI-SG-S246	SE	PCB-2	0.0073	0.00064	ng/g	JN	k
PDI-SG-S246	SE	PCB-3	0.027	0.00065	ng/g	JN	k
PDI-SG-S246	SE	PCB-10	0.023	0.0033	ng/g	JN	k
PDI-SG-S246	SE	PCB-7	0.014	0.0030	ng/g	JN	k
PDI-SG-S246	SE	PCB-9	0.025	0.0031	ng/g	JN	k
PDI-SG-S247	SE	PCB-68	0.0046	0.0018	ng/g	JN	bl,k
PDI-SG-S247	SE	PCB-46	0.0078	0.0036	ng/g	JN	k
PDI-SG-S247	SE	PCB-82	0.046	0.00035	ng/g	JN	k
PDI-SG-S247	SE	PCB-24	0.0030	0.00043	ng/g	JN	k
PDI-SG-S247	SE	PCB-126	0.0021	0.0019	ng/g	JN	k
PDI-SG-S247	SE	PCB-98	0.014	0.00030	ng/g	JN	k
PDI-SG-S247	SE	PCB-123	0.0057	0.0017	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S247	SE	PCB-85	0.072	0.00026	ng/g	JN	k
PDI-SG-S247	SE	PCB-102	0.014	0.00030	ng/g	JN	k
PDI-SG-S247	SE	PCB-150	0.0049	0.00027	ng/g	JN	k
PDI-SG-S247	SE	PCB-117	0.072	0.00026	ng/g	JN	k
PDI-SG-S247	SE	PCB-108	0.011	0.0018	ng/g	JN	k
PDI-SG-S247	SE	PCB-43	0.0051	0.0026	ng/g	JN	k
PDI-SG-S247	SE	PCB-107	0.043	0.0019	ng/g	JN	k
PDI-SG-S247	SE	PCB-124	0.011	0.0018	ng/g	JN	k
PDI-SG-S247	SE	PCB-73	0.0051	0.0026	ng/g	JN	k
PDI-SG-S247	SE	PCB-55	0.0049	0.0020	ng/g	JN	k
PDI-SG-S247	SE	PCB-114	0.0055	0.0017	ng/g	JN	k
PDI-SG-S247	SE	PCB-148	0.0070	0.00039	ng/g	JN	k
PDI-SG-S247	SE	PCB-122	0.0040	0.0021	ng/g	JN	k
PDI-SG-S247	SE	PCB-54	0.00082	0.000059	ng/g	JN	k
PDI-SG-S247	SE	PCB-116	0.072	0.00026	ng/g	JN	k
PDI-SG-S247	SE	PCB-2	0.0071	0.00054	ng/g	JN	k
PDI-SG-S247	SE	PCB-3	0.010	0.00053	ng/g	JN	k
PDI-SG-S247	SE	PCB-6	0.018	0.0028	ng/g	JN	k
PDI-SG-S247	SE	PCB-13	0.0078	0.0028	ng/g	JN	k
PDI-SG-S247	SE	PCB-12	0.0078	0.0028	ng/g	JN	k
PDI-SG-S247	SE	PCB-77	0.016	0.0020	ng/g	JN	k
PDI-SG-S247	SE	PCB-197	0.021	0.00061	ng/g	JN	k
PDI-SG-S247	SE	PCB-7	0.0049	0.0029	ng/g	JN	k
PDI-SG-S247	SE	PCB-9	0.0068	0.0029	ng/g	JN	k
PDI-SG-S247	SE	PCB-35	0.0023	0.0011	ng/g	JN	k
PDI-SG-S247	SE	PCB-27	0.0087	0.00038	ng/g	JN	k
PDI-SG-S247	SE	PCB-36	0.0010	0.0010	ng/g	JN	k
PDI-SG-S248	SE	PCB-68	0.0047	0.0018	ng/g	J+	bl
PDI-SG-S248	SE	PCB-4	0.018	0.0050	ng/g	JN	k
PDI-SG-S248	SE	PCB-54	0.0012	0.000042	ng/g	JN	k
PDI-SG-S248	SE	PCB-3	0.0058	0.00051	ng/g	JN	k
PDI-SG-S248	SE	PCB-6	0.012	0.0031	ng/g	JN	k
PDI-SG-S248	SE	PCB-13	0.011	0.0031	ng/g	JN	k
PDI-SG-S248	SE	PCB-12	0.011	0.0031	ng/g	JN	k
PDI-SG-S248	SE	PCB-133	0.016	0.0034	ng/g	JN	k
PDI-SG-S248	SE	PCB-137	0.019	0.0030	ng/g	JN	k
PDI-SG-S248	SE	PCB-42	0.027	0.0028	ng/g	JN	k
PDI-SG-S248	SE	PCB-32	0.024	0.00037	ng/g	JN	k
PDI-SG-S248	SE	PCB-16	0.019	0.00059	ng/g	JN	k
PDI-SG-S248	SE	PCB-39	0.0014	0.00097	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S248	SE	PCB-189	0.0064	0.0021	ng/g	JN	k
PDI-SG-S248	SE	PCB-79	0.0030	0.0018	ng/g	JN	k
PDI-SG-S248	SE	PCB-196	0.062	0.00082	ng/g	JN	k
PDI-SG-S248	SE	PCB-84	0.070	0.00044	ng/g	JN	k
PDI-SG-S248	SE	PCB-82	0.036	0.00044	ng/g	JN	k
PDI-SG-S248	SE	PCB-172	0.044	0.00074	ng/g	JN	k
PDI-SG-S248	SE	PCB-139	0.011	0.0030	ng/g	JN	k
PDI-SG-S248	SE	PCB-140	0.011	0.0030	ng/g	JN	k
PDI-SG-S248	SE	PCB-103	0.014	0.00038	ng/g	JN	k
PDI-SG-S248	SE	PCB-51	0.023	0.0029	ng/g	JN	k
PDI-SG-S248	SE	PCB-45	0.023	0.0029	ng/g	JN	k
PDI-SG-S248	SE	PCB-48	0.017	0.0028	ng/g	JN	k
PDI-SG-S248	SE	PCB-55	0.0033	0.0020	ng/g	JN	k
PDI-SG-S248	SE	PCB-63	0.0043	0.0019	ng/g	JN	k
PDI-SG-S248	SE	PCB-114	0.0059	0.0017	ng/g	JN	k
PDI-SG-S248	SE	PCB-205	0.0059	0.0022	ng/g	JN	k
PDI-SG-S249	SE	PCB-68	0.0089	0.0014	ng/g	J+	bl
PDI-SG-S249	SE	PCB-2	0.012	0.00054	ng/g	JN	k
PDI-SG-S249	SE	PCB-3	0.017	0.00062	ng/g	JN	k
PDI-SG-S249	SE	PCB-202	0.079	0.00061	ng/g	JN	k
PDI-SG-S249	SE	PCB-13	0.014	0.0024	ng/g	JN	k
PDI-SG-S249	SE	PCB-12	0.014	0.0024	ng/g	JN	k
PDI-SG-S249	SE	PCB-77	0.030	0.0015	ng/g	JN	k
PDI-SG-S249	SE	PCB-10	0.0031	0.0027	ng/g	JN	k
PDI-SG-S249	SE	PCB-7	0.0083	0.0024	ng/g	JN	k
PDI-SG-S249	SE	PCB-16	0.10	0.00053	ng/g	JN	k
PDI-SG-S249	SE	PCB-39	0.0023	0.0011	ng/g	JN	k
PDI-SG-S249	SE	PCB-201	0.039	0.00054	ng/g	JN	k
PDI-SG-S249	SE	PCB-190	0.10	0.00040	ng/g	JN	k
PDI-SG-S249	SE	PCB-46	0.017	0.0028	ng/g	JN	k
PDI-SG-S249	SE	PCB-79	0.0073	0.0014	ng/g	JN	k
PDI-SG-S249	SE	PCB-54	0.0021	0.000039	ng/g	JN	k
PDI-SG-S249	SE	PCB-24	0.0036	0.00040	ng/g	JN	k
PDI-SG-S249	SE	PCB-25	0.027	0.0011	ng/g	JN	k
PDI-SG-S249	SE	PCB-123	0.0086	0.0018	ng/g	JN	k
PDI-SG-S249	SE	PCB-150	0.010	0.00019	ng/g	JN	k
PDI-SG-S249	SE	PCB-120	0.014	0.00027	ng/g	JN	k
PDI-SG-S249	SE	PCB-43	0.011	0.0021	ng/g	JN	k
PDI-SG-S249	SE	PCB-67	0.0076	0.0014	ng/g	JN	k
PDI-SG-S249	SE	PCB-73	0.011	0.0021	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S249	SE	PCB-55	0.0052	0.0016	ng/g	JN	k
PDI-SG-S249	SE	PCB-114	0.0091	0.0018	ng/g	JN	k
PDI-SG-S249	SE	PCB-148	0.016	0.00028	ng/g	JN	k
PDI-SG-S249	SE	PCB-191	0.020	0.00041	ng/g	JN	k
PDI-SG-S249	SE	PCB-205	0.015	0.0016	ng/g	JN	k
PDI-SG-S249	SE	PCB-122	0.0068	0.0021	ng/g	JN	k
PDI-SG-S250	SE	PCB-68	0.0027	0.0016	ng/g	JN	bl,k
PDI-SG-S250	SE	PCB-4	0.0089	0.0055	ng/g	JN	k
PDI-SG-S250	SE	PCB-15	0.020	0.0036	ng/g	JN	k
PDI-SG-S250	SE	PCB-2	0.0033	0.00046	ng/g	JN	k
PDI-SG-S250	SE	PCB-3	0.0037	0.00051	ng/g	JN	k
PDI-SG-S250	SE	PCB-75	0.0045	0.0017	ng/g	JN	k
PDI-SG-S250	SE	PCB-137	0.016	0.0030	ng/g	JN	k
PDI-SG-S250	SE	PCB-42	0.017	0.0025	ng/g	JN	k
PDI-SG-S250	SE	PCB-17	0.021	0.00053	ng/g	JN	k
PDI-SG-S250	SE	PCB-100	0.0079	0.00031	ng/g	JN	k
PDI-SG-S250	SE	PCB-189	0.0037	0.0021	ng/g	JN	k
PDI-SG-S250	SE	PCB-162	0.0022	0.0022	ng/g	JN	k
PDI-SG-S250	SE	PCB-159	0.0069	0.0022	ng/g	JN	k
PDI-SG-S250	SE	PCB-130	0.031	0.0035	ng/g	JN	k
PDI-SG-S250	SE	PCB-200	0.0097	0.00056	ng/g	JN	k
PDI-SG-S250	SE	PCB-134	0.026	0.0035	ng/g	JN	k
PDI-SG-S250	SE	PCB-62	0.0045	0.0017	ng/g	JN	k
PDI-SG-S250	SE	PCB-139	0.0088	0.0030	ng/g	JN	k
PDI-SG-S250	SE	PCB-140	0.0088	0.0030	ng/g	JN	k
PDI-SG-S250	SE	PCB-103	0.0077	0.00031	ng/g	JN	k
PDI-SG-S250	SE	PCB-154	0.013	0.00031	ng/g	JN	k
PDI-SG-S250	SE	PCB-123	0.0044	0.0018	ng/g	JN	k
PDI-SG-S250	SE	PCB-120	0.0027	0.00022	ng/g	JN	k
PDI-SG-S250	SE	PCB-143	0.026	0.0035	ng/g	JN	k
PDI-SG-S250	SE	PCB-108	0.0096	0.0019	ng/g	JN	k
PDI-SG-S250	SE	PCB-48	0.0097	0.0025	ng/g	JN	k
PDI-SG-S250	SE	PCB-124	0.0096	0.0019	ng/g	JN	k
PDI-SG-S250	SE	PCB-93	0.0079	0.00031	ng/g	JN	k
PDI-SG-S250	SE	PCB-59	0.0045	0.0017	ng/g	JN	k
PDI-SG-S250	SE	PCB-114	0.0052	0.0017	ng/g	JN	k
PDI-SG-S250	SE	PCB-148	0.0016	0.00038	ng/g	JN	k
PDI-SG-S250	SE	PCB-191	0.0065	0.00090	ng/g	JN	k
PDI-SG-S252	SE	PCB-131	0.0064	0.0047	ng/g	JN	k
PDI-SG-S252	SE	PCB-123	0.0078	0.0015	ng/g	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-SG-S252	SE	PCB-43	0.012	0.0029	ng/g	JN	k
PDI-SG-S252	SE	PCB-96	0.011	0.00028	ng/g	JN	k
PDI-SG-S252	SE	PCB-93	0.051	0.00033	ng/g	JN	k
PDI-SG-S252	SE	PCB-73	0.012	0.0029	ng/g	JN	k
PDI-SG-S252	SE	PCB-55	0.0051	0.0022	ng/g	JN	k
PDI-SG-S252	SE	PCB-114	0.0042	0.0014	ng/g	JN	k
PDI-SG-S252	SE	PCB-148	0.011	0.00045	ng/g	JN	k
PDI-SG-S252	SE	PCB-205	0.0051	0.0017	ng/g	JN	k
PDI-SG-S252	SE	PCB-4	0.017	0.0071	ng/g	JN	k
PDI-SG-S252	SE	PCB-54	0.0062	0.000096	ng/g	JN	k
PDI-SG-S252	SE	PCB-15	0.023	0.0048	ng/g	JN	k
PDI-SG-S252	SE	PCB-3	0.0037	0.00055	ng/g	JN	k
PDI-SG-S252	SE	PCB-6	0.011	0.0047	ng/g	JN	k
PDI-SG-S252	SE	PCB-77	0.016	0.0022	ng/g	JN	k
PDI-SG-S252	SE	PCB-60	0.017	0.0023	ng/g	JN	k
PDI-SG-S252	SE	PCB-133	0.037	0.0043	ng/g	JN	k
PDI-SG-S252	SE	PCB-17	0.053	0.00087	ng/g	JN	k
PDI-SG-S252	SE	PCB-39	0.0035	0.0012	ng/g	JN	k
PDI-SG-S252	SE	PCB-100	0.051	0.00033	ng/g	JN	k
PDI-SG-S252	SE	PCB-79	0.0087	0.0020	ng/g	JN	k
PDI-SG-S252	SE	PCB-58	0.0029	0.0023	ng/g	JN	k
PDI-SG-S252	SE	PCB-167	0.015	0.0020	ng/g	JN	k
PDI-SG-S252	SE	PCB-195	0.051	0.0021	ng/g	JN	k
PDI-SG-S252	SE	PCB-207	0.0055	0.0025	ng/g	JN	k
PDI-SG-S252	SE	PCB-25	0.015	0.0011	ng/g	JN	k
PDI-SG-S252	SE	PCB-139	0.017	0.0038	ng/g	JN	k
PDI-SG-S252	SE	PCB-140	0.017	0.0038	ng/g	JN	k
PDI-SG-S252	SE	PCB-182	0.0048	0.00069	ng/g	JN	k
PDI-SG-S252	SE	PCB-156	0.044	0.0039	ng/g	JN	k
PDI-SG-S252	SE	PCB-157	0.044	0.0039	ng/g	JN	k

**Attachment A**  
**Nonconformance Summary Tables**

**Table A-1 - Labeled Compound and Labeled Clean-Up Standard Recoveries**

<b>Sample ID</b>	<b>Compound</b>	<b>% Recovery</b>	<b>Lower Limit</b>	<b>Upper Limit</b>
PDI-RB-VV-180514	PCB-126	699	30	140
PDI-SG-S158	PCB-19	186	30	140
PDI-SG-S158	PCB-54	213	30	140

**Attachment B**  
**Qualifier Codes and Explanations**

<b>Qualifier</b>	<b>Explanation</b>
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.



## Attachment C

## Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
cl	Clean-up standard recovery
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

