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Data Validation Report

Project:	Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Laboratory:	SGS-AXYS, Sydney, British Columbia, Canada
Service Request:	WG67275-PCB
Analyses/Method:	Chlorinated Biphenyls by HRGC/HRMS / E1668A
Validation Level:	Stage 2A
AECOM Project Number:	60566335.2.12
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SUMMARY

The samples listed below were collected by AECOM in Portland Harbor in Portland, OR on January 26-27, 2019 and February 17-18, 2019.

Sample ID	Matrix/Sample Type
PDI-RB-XF-190127	Equipment Blank
PDI-WS-T01-1902	Surface Water
PDI-WS-T02-1902	Surface Water
PDI-WS-T03-1902	Surface Water
PDI-WS-T04-1902	Surface Water
PDI-WS-T05-1902	Surface Water
PDI-WS-T06-1901	Surface Water
PDI-WS-T07-1901	Surface Water

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),
- *EPA Method 1668B: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS* (USEPA, November 2008),
- *EPA Method 1668C: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS* (USEPA, April 2010),
- *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
✗	Laboratory blanks/equipment blanks
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Ongoing precision and recovery results
NA	Field duplicate results
✗	Labeled compounds and labeled clean-up standard recoveries
✗	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 (✗) 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

Laboratory method blanks and equipment 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 blank and equipment blank associated with the samples in this data set.

Detected compounds are summarized in Attachment A in Table A-1 and Table A-2. The results for the equipment blank PDI-RB-XF-190127 are provided for informational purposes only.

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 on the basis of laboratory method blank contamination. As allowed in the NFG, a blank action limit (BAL) was determined as five times the blank result:

- When the sample results were < the blank result, the sample result was qualified as nondetect (U) at the sample result.
- 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, the sample result was not qualified.

Qualified sample results are summarized in Table 1.

MS/MSD Results

MS/MSD analyses were not performed on a sample in this data set. No data validation actions were taken on this basis. Ongoing Precision and Recovery

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

Field Duplicate Results

A field duplicate pair was not submitted with this data set. No data validation actions were taken on this basis.

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 laboratory noted in the case narrative that a mishap occurred when adding the recovery standard to sample PDI-WS-T01-1902. This apparent loss of some of the recovery standard resulted in higher recoveries of the extracted standards and clean-up standards. Since quantification of all sample results is performed using isotope dilution and the only compounds affected by this spiking error are the extraction standard and clean-up standard recoveries, the impact on the sample data is not significant.

Nonconformances are summarized in Attachment A in Table A-3. Samples were qualified as follows:

Actions: (Based on NFG 2016)

Criteria		Actions	
		Detected	Nondetected
%R > Upper Acceptance Limit		J	UJ
%R >10% but < Lower Acceptance Limit		J	UJ
%R <10%		See below	
<10% and S/N >10:1		J	R
<10% and S/N <10:1		R	R
Ion abundance ratio criteria not met	Calibration compliant	J	UJ
	Calibration non-compliant	J	R
Clean-up Standard Recovery < Lower Acceptance Limit		J	UJ
See Table 6 of method for method QC acceptance criteria[1] [2]The PCB congener method is performed using isotope dilution technique; therefore, professional judgment was applied and bias codes were not included in data qualification.			

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.

It should be noted that the sample reported detection limit is the sample specific estimated detection limit (EDL) with the following exceptions. In cases when the EDL is less than the nominal concentration of 0.5 pg/sample, the EDL is raised to the nominal concentration and adjusted to include the appropriate preparation factors.

Laboratory Duplicate Analysis

The laboratory was unable to extract the entire number of filters received for each sample due to limitations of their Dean Stark apparatus. Approximately 1/5th of each homogenized original filter sample was spiked with labeled standards and extracted rather than the entire amount that was collected. Consequently, a laboratory duplicate analysis was performed to ensure that the results achieved were representative of the entire sample.

Professional judgement was applied to use a relative percent difference criterion of <20% for results greater than five times the quantitation limit. Nonconformances are summarized in Attachment A in Table A-4.

Samples were qualified as follows:

Actions: (Based on AECOM professional judgment)

Criteria	RPD	Action	
		Detect	Nondetect
Sample and duplicate are nondetect results	Not calculable (NC)	No qualification	No qualification
Sample and duplicate results <QL	Not applicable	No qualification	No qualification
Sample and duplicate results ≥5xQL	>20%	J	Not Applicable
Sample and duplicate results are >QL and <5xQL	>40%	J	Not Applicable
If sample or duplicate result is >5xQL and the other is not detected	NC	J	UJ
If sample or duplicate result is <QL and the other is not detected	NC	No qualification	No qualification

Qualified sample results are summarized in Table 1.

Lock Mass Interferences

The laboratory identified the presence of interferences of the mass ion as indicated by the monitored lock mass by qualifying the affected sample result with a "G" laboratory qualifier. These interferences may impact compound quantitation; therefore, the positive and nondetect results for affected samples were qualified as estimated (J/UJ).

Estimated Maximum Possible Concentrations (EMPCs)

The data were reviewed to identify sample results that were indicated by the laboratory to be estimated maximum possible concentrations (EMPCs) because of identification criteria not being met.

The laboratory identified the presence of EMPCs for the samples in this data set by qualifying affected results with a "K" laboratory qualifier. Samples were qualified as follows:

Actions: (Based on AECOM professional judgment)

Criteria	Actions
A native target compound was reported by the laboratory as an EMPC.	Report result as an EMPC and qualify as estimated and presumptively present (JN).
A labeled compound was flagged by the laboratory indicating all identification criteria were not met.	Qualify associated positive and nondetect results as estimated (J/UJ).

It should be noted that in instances of multiple nonconformances, the bias is considered indeterminate where there is a conflicting low and high bias or when a result does not exhibit a consistent bias. These results have an overall qualification of estimated (J) with the exception noted below.

When applicable, the "JN" qualifier was retained rather than replacement with the conventional overall "J" qualifier in instances where EMPC results were qualified for multiple quality control nonconformances.

Qualified sample results are summarized in Table 1.

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-XF-190127	WQ	PCB-1	114	23.8	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-105	18.5	4.92	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-110/115	38.0	4.36	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-118	43.8	5.42	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-132	16.6	8.30	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-147/149	25.1	7.36	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-153/168	40.3	6.08	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-156/157	8.55	7.27	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-158	6.89	5.38	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-16		46.3	pg/sample	U	bl
PDI-RB-XF-190127	WQ	PCB-17	53.8	23.6	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-18/30	96.1	20.4	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-180/193	24.4	9.45	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-2	37.7	25.4	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-20/28	133	8.97	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-209 (decachlorobiphenyl)	19.4	6.52	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-21/33	74.6	9.07	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-22	39.8	9.84	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-25	13.8	7.98	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-26/29	27.3	9.12	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-3	129	27.1	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-31	111	8.45	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-32	30.4	8.57	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-37	32.5	11.2	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-40/41/71		32.7	pg/sample	U	bl
PDI-RB-XF-190127	WQ	PCB-42	14.4	11.5	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-44/47/65	111	9.97	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-45/51	88.9	10.7	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-48	12.1	11.1	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-49/69	40.6	9.41	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-52		56.4	pg/sample	U	bl
PDI-RB-XF-190127	WQ	PCB-56	9.35	6.99	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-61/70/74/76	49.4	6.36	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-64	24.7	8.11	pg/sample	J+	bl
PDI-RB-XF-190127	WQ	PCB-66		15.3	pg/sample	U	bl

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-RB-XF-190127	WQ	PCB-83/99	22.7	5.90	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-85/116/117	5.69	4.76	pg/sample	JN	k
PDI-RB-XF-190127	WQ	PCB-86/87/97/108/119/125	36.5	5.04	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-90/101/113	30.0	5.08	pg/sample	JN	bl,k
PDI-RB-XF-190127	WQ	PCB-93/95/98/100/102	30.9	5.51	pg/sample	J+	bl
PDI-WS-T01-1902	WS	PCB-1		49.8	pg/sample	UJ	bl,cl
PDI-WS-T01-1902	WS	PCB-10		21.8	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-103	14.7	5.08	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-104		4.16	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-105	365	5.08	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-106		5.39	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-107/124	42.3	5.82	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-109	72.1	5.47	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-11	591	23.4	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-110/115	997	4.27	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-111		4.33	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-112		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-114	21.6	5.25	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-118	860	5.69	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-12/13	26.5	23.8	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-120	4.94	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-121		4.47	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-122	10.8	5.95	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-123	19.9	6.24	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-126	6.74	6.45	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-127		5.03	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-128/166	183	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-129/138/160/163	1320	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-130	88.0	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-131	12.9	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-132	386	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-133	23.5	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-134/143	57.6	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-135/151/154	412	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-136	149	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-137	46.2	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-139/140	23.9	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-14		23.0	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-141	210	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-142		4.16	pg/sample	UJ	cl,lc

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T01-1902	WS	PCB-144	45.6	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-145		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-146	228	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-147/149	1090	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-148	4.88	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-15	181	26.3	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-150		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-152		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-153/168	1110	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-155	4.59	4.16	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-156/157	150	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-158	114	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-159	17.7	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-16	80.2	8.84	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-161		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-162	5.60	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-164	95.3	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-165		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-167	64.0	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-169		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-17	250	7.65	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-170	344	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-171/173	93.0	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-172	61.2	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-174	308	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-175	11.8	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-176	37.2	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-177	201	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-178	75.6	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-179	144	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-18/30	209	6.46	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-180/193	903	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-181		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-182	4.39	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-183/185	196	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-184	5.15	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-186		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-187	425	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-188		4.16	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-189	11.0	4.16	pg/sample	J	cl,lc

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T01-1902	WS	PCB-19	39.0	8.60	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-190	70.7	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-191	12.0	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-192		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-194	199	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-195	97.8	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-196	83.6	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-197/200	37.5	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-198/199	233	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-2	30.4	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-20/28	438	4.42	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-201	29.6	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-202	76.9	4.16	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-203	145	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-204		4.16	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-205	14.2	4.16	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-206	176	5.22	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-207	20.7	4.39	pg/sample	JN	cl,k,lc
PDI-WS-T01-1902	WS	PCB-208	70.1	4.80	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-209 (decachlorobiphenyl)	332	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-21/33	193	4.48	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-22	146	5.08	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-23		4.85	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-24		5.83	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-25	95.0	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-26/29	76.7	4.62	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-27	20.9	5.24	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-3		48.5	pg/sample	UJ	bl,cl
PDI-WS-T01-1902	WS	PCB-31	339	4.19	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-32	69.9	4.41	pg/sample	J	bl,cl
PDI-WS-T01-1902	WS	PCB-34		4.73	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-35	19.2	5.47	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-36	12.0	4.97	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-37	160	5.35	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-38		4.88	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-39		4.94	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-4	90.7	34.6	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-40/41/71	263	4.17	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-42	142	4.47	pg/sample	JN	cl,k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T01-1902	WS	PCB-43	18.0	4.86	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-44/47/65	1420	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-45/51	730	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-46	26.7	4.40	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-48	89.0	4.27	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-49/69	401	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-5		24.3	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-50/53	73.3	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-52	702	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-54		6.07	pg/sample	UJ	bl,cl
PDI-WS-T01-1902	WS	PCB-55		7.46	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-56	226	7.41	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-57		6.80	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-58		7.14	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-59/62/75	50.5	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-6	41.6	21.9	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-60	85.0	7.22	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-61/70/74/76	841	6.71	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-63	19.1	6.65	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-64	233	4.16	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-66	549	6.81	pg/sample	J	cl,q
PDI-WS-T01-1902	WS	PCB-67	9.97	6.00	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-68	399	6.44	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-7		22.2	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-72	6.81	6.41	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-73	4.83	4.16	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-77	77.5	7.42	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-78		7.21	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-79	10.5	5.82	pg/sample	JN	cl,k
PDI-WS-T01-1902	WS	PCB-8	157	20.0	pg/sample	J	cl
PDI-WS-T01-1902	WS	PCB-80		6.50	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-81		7.55	pg/sample	UJ	cl
PDI-WS-T01-1902	WS	PCB-82	108	6.55	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-83/99	582	6.20	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-84	185	6.56	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-85/116/117	178	4.92	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-86/87/97/108/119/125	591	5.01	pg/sample	J	cl,lc,q
PDI-WS-T01-1902	WS	PCB-88/91	139	5.80	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-89	10.7	6.25	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-9		20.6	pg/sample	UJ	cl

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T01-1902	WS	PCB-90/101/113	830	5.07	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-92	169	5.96	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-93/95/98/100/102	610	5.58	pg/sample	J	cl,lc
PDI-WS-T01-1902	WS	PCB-94		6.26	pg/sample	UJ	cl,lc
PDI-WS-T01-1902	WS	PCB-96	4.32	4.16	pg/sample	JN	cl,k,lc
PDI-WS-T02-1902	WS	PCB-1		113	pg/sample	U	bl
PDI-WS-T02-1902	WS	PCB-103	22.2	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-114	23.9	7.92	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-126	10.6	8.59	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-128/166	266	5.45	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-131	16.1	7.42	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-133	19.7	7.06	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-137	87.5	6.81	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-139/140	25.8	6.50	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-148		4.24	pg/sample	UJ	q
PDI-WS-T02-1902	WS	PCB-155	7.17	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-158	162	4.21	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-16	87.0	8.88	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-17	139	7.69	pg/sample	JN	bl,k
PDI-WS-T02-1902	WS	PCB-175	18.9	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-18/30	251	6.49	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-181	6.90	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-184	12.2	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-191	14.9	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-196	126	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-197/200	64.0	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-20/28	457	4.25	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-201	45.1	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-207	31.3	7.09	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-21/33	173	4.31	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-22	149	4.88	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-26/29	88.4	4.44	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-27	24.3	5.26	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-3	136	32.2	pg/sample	JN	bl,k
PDI-WS-T02-1902	WS	PCB-31	351	4.16	pg/sample	J+	bl
PDI-WS-T02-1902	WS	PCB-32	68.0	4.24	pg/sample	J	bl,q
PDI-WS-T02-1902	WS	PCB-4	86.5	71.4	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-40/41/71	280	4.37	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-54		5.44	pg/sample	U	bl
PDI-WS-T02-1902	WS	PCB-55	11.8	6.47	pg/sample	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T02-1902	WS	PCB-59/62/75	43.4	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-66	763	5.91	pg/sample	J	q
PDI-WS-T02-1902	WS	PCB-72	10.2	5.56	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-73	4.40	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-82	89.4	4.18	pg/sample	J	q
PDI-WS-T02-1902	WS	PCB-86/87/97/108/119/125	789	4.16	pg/sample	J	q
PDI-WS-T02-1902	WS	PCB-92	207	4.16	pg/sample	JN	k
PDI-WS-T02-1902	WS	PCB-96	4.98	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-1	121	6.34	pg/sample	J+	bl
PDI-WS-T03-1902	WS	PCB-103	17.5	4.86	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-120	6.97	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-123	22.2	6.48	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-126	7.66	6.38	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-130	106	9.57	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-131	13.6	10.1	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-137	77.2	9.26	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-148	5.78	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-155	5.58	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-159	22.7	6.12	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-16	97.8	10.0	pg/sample	JN	bl,k
PDI-WS-T03-1902	WS	PCB-164	125	6.01	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-17	169	8.69	pg/sample	J	bl,q
PDI-WS-T03-1902	WS	PCB-171/173	141	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-177	272	4.16	pg/sample	J	q
PDI-WS-T03-1902	WS	PCB-178	124	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-18/30	258	7.33	pg/sample	J+	bl
PDI-WS-T03-1902	WS	PCB-182	4.79	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-184	6.15	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-19	65.5	9.73	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-195	118	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-202	106	4.16	pg/sample	JN	k,q
PDI-WS-T03-1902	WS	PCB-205	15.4	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-206	230	7.04	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-21/33	216	4.98	pg/sample	J+	bl
PDI-WS-T03-1902	WS	PCB-22	175	5.64	pg/sample	J+	bl
PDI-WS-T03-1902	WS	PCB-3		99.8	pg/sample	U	bl
PDI-WS-T03-1902	WS	PCB-31	417	4.65	pg/sample	J+	bl
PDI-WS-T03-1902	WS	PCB-32	62.1	4.89	pg/sample	J	bl,q
PDI-WS-T03-1902	WS	PCB-36	18.3	5.52	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-39	6.68	5.49	pg/sample	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T03-1902	WS	PCB-40/41/71	322	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-43	21.3	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-54		7.03	pg/sample	U	bl
PDI-WS-T03-1902	WS	PCB-66	737	5.53	pg/sample	J	q
PDI-WS-T03-1902	WS	PCB-67	17.8	4.87	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-72	9.89	5.21	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-73	7.65	4.16	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-86/87/97/108/119/125	812	4.79	pg/sample	J	q
PDI-WS-T03-1902	WS	PCB-89	10.8	5.98	pg/sample	JN	k
PDI-WS-T03-1902	WS	PCB-94	6.84	5.99	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-1		70.4	pg/sample	U	bl
PDI-WS-T04-1902	WS	PCB-103	16.8	5.88	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-120	7.62	4.86	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-122	19.2	13.4	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-131	27.2	12.2	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-139/140	28.5	10.4	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-144	115	6.99	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-159	35.3	8.46	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-16	102	24.5	pg/sample	JN	bl,k
PDI-WS-T04-1902	WS	PCB-17	197	19.1	pg/sample	J+	bl
PDI-WS-T04-1902	WS	PCB-175	41.6	8.57	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-18/30	218	16.4	pg/sample	J+	bl
PDI-WS-T04-1902	WS	PCB-184	6.44	6.08	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-189	38.2	4.18	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-19	42.5	24.1	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-191	42.3	7.40	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-195	157	6.02	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-196	211	11.4	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-197/200	73.5	7.85	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-202	101	9.30	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-205	18.6	4.43	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-208	74.9	10.5	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-21/33	209	9.25	pg/sample	J+	bl
PDI-WS-T04-1902	WS	PCB-22	166	10.0	pg/sample	J+	bl
PDI-WS-T04-1902	WS	PCB-27	23.0	13.9	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-3		75.0	pg/sample	U	bl
PDI-WS-T04-1902	WS	PCB-35	22.7	10.2	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-36	9.54	9.30	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-42	193	10.7	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-59/62/75	52.2	7.50	pg/sample	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T04-1902	WS	PCB-67	16.7	12.3	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-79	17.0	12.5	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-84	267	7.54	pg/sample	JN	k
PDI-WS-T04-1902	WS	PCB-86/87/97/108/119/125	857	5.94	pg/sample	J	q
PDI-WS-T04-1902	WS	PCB-89	12.5	7.01	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-1		55.9	pg/sample	U	bl
PDI-WS-T05-1902	WS	PCB-103	12.4	5.79	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-104	5.76	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-109	81.0	9.13	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-133	21.4	15.2	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-136	128	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-137	72.4	14.7	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-139/140	14.6	14.0	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-148	7.16	5.49	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-155	7.58	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-159	16.9	9.70	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-16	90.0	16.9	pg/sample	JN	bl,k
PDI-WS-T05-1902	WS	PCB-17	152	14.6	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-178	89.7	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-18/30	242	12.3	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-184	7.94	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-190	67.4	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-191	13.1	4.15	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-195	86.4	5.53	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-20/28	445	8.08	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-201	28.1	4.44	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-202	68.2	4.86	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-203	179	5.43	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-206	168	9.41	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-209 (decachlorobiphenyl)	456	4.49	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-21/33	187	8.20	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-22	150	9.29	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-26/29	86.0	8.45	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-27	19.9	10.0	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-3		70.5	pg/sample	U	bl
PDI-WS-T05-1902	WS	PCB-31	354	7.66	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-32	78.3	8.06	pg/sample	J+	bl
PDI-WS-T05-1902	WS	PCB-35	22.0	9.99	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-36	11.8	9.09	pg/sample	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T05-1902	WS	PCB-46	32.4	8.30	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-72	10.1	9.22	pg/sample	JN	k
PDI-WS-T05-1902	WS	PCB-86/87/97/108/119/125	622	5.71	pg/sample	J	q
PDI-WS-T05-1902	WS	PCB-96	10.8	4.15	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-1	733	10.8	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-10		76.8	pg/sample	UJ	lc
PDI-WS-T06-1901	WS	PCB-11	832	82.4	pg/sample	J	ld,lc
PDI-WS-T06-1901	WS	PCB-114	27.6	9.87	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-12/13	123	83.7	pg/sample	J	ld,lc
PDI-WS-T06-1901	WS	PCB-122	11.5	10.4	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-123	22.9	9.83	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-134/143	51.9	4.34	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-135/151/154	339	4.19	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-137	68.5	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-14		80.9	pg/sample	UJ	lc
PDI-WS-T06-1901	WS	PCB-144	52.5	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-147/149	925	4.19	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-15	614	82.3	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-16	102	17.6	pg/sample	J	bl,ld
PDI-WS-T06-1901	WS	PCB-162	5.93	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-167	62.2	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-17	265	15.2	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-175	4.85	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-177	138	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-18/30	352	12.8	pg/sample	J	bl,ld
PDI-WS-T06-1901	WS	PCB-189	8.95	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-19	111	19.9	pg/sample	JN	ld,k
PDI-WS-T06-1901	WS	PCB-191	9.12	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-194	195	5.34	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-195	72.6	6.41	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-197/200	25.2	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-198/199	205	4.56	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-2	65.0	10.4	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-20/28	531	7.42	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-201	17.3	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-203	116	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-21/33	166	7.53	pg/sample	J	bl,ld
PDI-WS-T06-1901	WS	PCB-22	142	8.53	pg/sample	J	bl,ld
PDI-WS-T06-1901	WS	PCB-25	91.4	6.80	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-26/29	150	7.76	pg/sample	J	ld

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T06-1901	WS	PCB-27	56.9	10.4	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-3	258	9.61	pg/sample	J	bl,ld
PDI-WS-T06-1901	WS	PCB-31	470	7.04	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-32	149	7.41	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-4	760	155	pg/sample	J	ld,lc
PDI-WS-T06-1901	WS	PCB-40/41/71	157	4.99	pg/sample	JN	bl,k
PDI-WS-T06-1901	WS	PCB-45/51	284	4.51	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-46	23.9	5.27	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-5		85.4	pg/sample	UJ	lc
PDI-WS-T06-1901	WS	PCB-50/53	69.3	4.38	pg/sample	J	ld
PDI-WS-T06-1901	WS	PCB-54		4.68	pg/sample	U	bl
PDI-WS-T06-1901	WS	PCB-59/62/75	31.0	4.19	pg/sample	JN	k
PDI-WS-T06-1901	WS	PCB-6	230	77.0	pg/sample	J	ld,lc
PDI-WS-T06-1901	WS	PCB-7		78.0	pg/sample	UJ	lc
PDI-WS-T06-1901	WS	PCB-8	606	70.2	pg/sample	J	ld,lc
PDI-WS-T06-1901	WS	PCB-84	167	12.4	pg/sample	JN	ld,k
PDI-WS-T06-1901	WS	PCB-86/87/97/108/119/125	537	9.46	pg/sample	J	ld,q
PDI-WS-T06-1901	WS	PCB-9		72.3	pg/sample	UJ	lc
PDI-WS-T07-1901	WS	PCB-1		54.8	pg/sample	U	bl
PDI-WS-T07-1901	WS	PCB-103	7.17	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-120	4.43	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-122	14.9	8.30	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-123	24.2	8.08	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-131	13.4	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-133	22.9	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-139/140	22.9	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-144	36.9	4.46	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-159	15.0	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-16	80.2	16.5	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-17	135	14.2	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-170	307	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-175	9.03	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-178	78.6	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-18/30	209	12.0	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-182	6.64	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-184	6.11	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-189	13.0	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-19	29.7	15.5	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-190	65.2	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-191	17.6	4.16	pg/sample	JN	k

Sample ID	Matrix	Compound	Result	EDL	Units	Validation Qualifiers	Validation Reason
PDI-WS-T07-1901	WS	PCB-196	87.2	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-20/28	398	7.34	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-207	24.8	6.39	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-21/33	163	7.44	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-22	126	8.44	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-26/29	75.7	7.68	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-27	16.3	9.74	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-3		69.2	pg/sample	U	bl
PDI-WS-T07-1901	WS	PCB-31	306	6.96	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-32	76.5	7.32	pg/sample	J+	bl
PDI-WS-T07-1901	WS	PCB-36	13.2	8.26	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-42	113	5.51	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-43	14.4	5.99	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-6	48.0	42.5	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-63	17.2	4.66	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-67	9.93	4.20	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-72	6.80	4.49	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-77	79.2	5.11	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-79	7.73	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-86/87/97/108/119/125	535	4.16	pg/sample	J	q
PDI-WS-T07-1901	WS	PCB-88/91	93.3	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-92	135	4.16	pg/sample	JN	k
PDI-WS-T07-1901	WS	PCB-94	5.30	4.32	pg/sample	JN	k

Attachment A

Nonconformance Summary Tables

Table A-1 - Laboratory Blanks

Blank ID	Compound	Result	EDL	BAL	Units	Associated samples
WG67275-101	PCB-54	7.8	6.37	39	pg/sample	PDI-RB-XD-190127 PDI-WS-T01-1902 PDI-WS-T02-1902 PDI-WS-T03-1902 PDI-WS-T04-1902 PDI-WS-T05-1902 PDI-WS-T06-1901 PDI-WS-T07-1901
	PCB-31	84.6	11.0	423	pg/sample	
	PCB-209 (decachlorobiphenyl)	11.7	6.87	58.5	pg/sample	
	PCB-118	23.3	7.54	116.5	pg/sample	
	PCB-66	17.4	6.47	87	pg/sample	
	PCB-105	11	7.38	55	pg/sample	
	PCB-52	60.8	9.18	304	pg/sample	
	PCB-17	41.7	35.0	208.5	pg/sample	
	PCB-132	12	7.22	60	pg/sample	
	PCB-32	19.5	11.2	97.5	pg/sample	
	PCB-16	50	44.9	250	pg/sample	
	PCB-22	36.6	12.8	183	pg/sample	
	PCB-37	28.6	14.6	143	pg/sample	
	PCB-64	19.6	7.55	98	pg/sample	
	PCB-187	9.32	8.04	46.6	pg/sample	
	PCB-48	11.6	10.3	58	pg/sample	
	PCB-110/115	27.7	8.37	138.5	pg/sample	
	PCB-147/149	23.5	6.41	117.5	pg/sample	
	PCB-153/168	23.1	5.29	115.5	pg/sample	
	PCB-18/30	76.1	30.2	380.5	pg/sample	
	PCB-180/193	15.7	8.94	78.5	pg/sample	
	PCB-20/28	95.3	11.7	476.5	pg/sample	
	PCB-21/33	56.6	11.8	283	pg/sample	
	PCB-26/29	20.8	11.9	104	pg/sample	
	PCB-40/41/71	34.2	10.5	171	pg/sample	
	PCB-44/47/65	72.7	9.28	363.5	pg/sample	
	PCB-45/51	21	10.0	105	pg/sample	
	PCB-49/69	33.5	8.76	167.5	pg/sample	
	PCB-61/70/74/76	36.1	6.63	180.5	pg/sample	
	PCB-83/99	16.7	11.3	83.5	pg/sample	
	PCB-86/87/97/108/119/125	31.8	9.69	159	pg/sample	
	PCB-90/101/113	23.1	9.76	115.5	pg/sample	
	PCB-93/95/98/100/102	29.9	10.6	149.5	pg/sample	
	PCB-1	114	31.7	570	pg/sample	
	PCB-3	119	22.0	595	pg/sample	

Table A-2 - Field Blanks

Blank ID	Compound	Result	ML	Units	Associated Samples
PDI-RB-XF-190127	PCB-31	111	8.45	pg/sample	PDI-WS-T01-1902 PDI-WS-T02-1902 PDI-WS-T03-1902 PDI-WS-T04-1902 PDI-WS-T05-1902 PDI-WS-T06-1901 PDI-WS-T07-1901
	PCB-209 (decachlorobiphenyl)	19.4	6.52	pg/sample	
	PCB-118	43.8	5.42	pg/sample	
	PCB-105	18.5	4.92	pg/sample	
	PCB-42	14.4	11.5	pg/sample	
	PCB-17	53.8	23.6	pg/sample	
	PCB-132	16.6	8.30	pg/sample	
	PCB-32	30.4	8.57	pg/sample	
	PCB-22	39.8	9.84	pg/sample	
	PCB-37	32.5	11.2	pg/sample	
	PCB-56	9.35	6.99	pg/sample	
	PCB-64	24.7	8.11	pg/sample	
	PCB-84	12.8	6.40	pg/sample	
	PCB-48	12.1	11.1	pg/sample	
	PCB-68	83.7	6.22	pg/sample	
	PCB-158	6.89	5.38	pg/sample	
	PCB-110/115	38.0	4.36	pg/sample	
	PCB-129/138/160/163	49.5	7.01	pg/sample	
	PCB-135/151/154	10.5	6.06	pg/sample	
	PCB-147/149	25.1	7.36	pg/sample	
	PCB-153/168	40.3	6.08	pg/sample	
	PCB-156/157	8.55	7.27	pg/sample	
	PCB-18/30	96.1	20.4	pg/sample	
	PCB-180/193	24.4	9.45	pg/sample	
	PCB-20/28	133	8.97	pg/sample	
	PCB-21/33	74.6	9.07	pg/sample	
	PCB-26/29	27.3	9.12	pg/sample	
	PCB-44/47/65	111	9.97	pg/sample	
	PCB-45/51	88.9	10.7	pg/sample	
	PCB-49/69	40.6	9.41	pg/sample	
	PCB-61/70/74/76	49.4	6.36	pg/sample	
	PCB-83/99	22.7	5.90	pg/sample	
	PCB-85/116/117	5.69	4.76	pg/sample	
	PCB-86/87/97/108/119/125	36.5	5.04	pg/sample	
	PCB-90/101/113	30.0	5.08	pg/sample	
	PCB-93/95/98/100/102	30.9	5.51	pg/sample	

Blank ID	Compound	Result	ML	Units	Associated Samples
	PCB-1	114	23.8	pg/sample	
	PCB-2	37.7	25.4	pg/sample	
	PCB-3	129	27.1	pg/sample	
	PCB-25	13.8	7.98	pg/sample	

Table A-3 - Labeled Compound and Labeled Clean-Up Standard Recoveries

Sample ID	Labeled Toxics/LOC/window-defining and labeled clean-up recoveries	% Recovery	Lower Limit	Upper Limit
PDI-WS-T06-1901	PCB-4L	24.1	25	150
PDI-WS-T01-1902	PCB-105L	174	25	150
	PCB-111L	149	30	135
	PCB-114L	158	25	150
	PCB-156/157L	161	25	150
	PCB-167L	156	25	150
	PCB-169L	163	25	150
	PCB-170L	155	25	150
	PCB-178L	149	30	135
	PCB-180L	151	25	150
	PCB-189L	181	25	150
	PCB-205L	157	25	150
	PCB-206L	154	25	150
	PCB-28L	161	30	135

Table A-4 – Laboratory Duplicate Results

Compound	QL	5xQL	PDI-WS-T06-1901 (pg/sample)	Lab duplicate (pg/sample)	RPD
PCB-4	33.5	167.5	760	ND	NC
PCB-31	33.5	167.5	470	193	84
PCB-11	33.5	167.5	832	463	57
PCB-15	33.5	167.5	614	117	136
PCB-1	33.5	167.5	733	46.5	176
PCB-2	33.5	167.5	65.0	33.6	64
PCB-3	33.5	167.5	258	60.4	124
PCB-6	33.5	167.5	230	ND	NC
PCB-8	33.5	167.5	606	113	137
PCB-194	33.5	167.5	195	141	32
PCB-17	33.5	167.5	265	94.1	95
PCB-19	33.5	167.5	111	23.6	130

Compound	QL	5xQL	PDI-WS-T06-1901 (pg/sample)	Lab duplicate (pg/sample)	RPD
PCB-27	33.5	167.5	56.9	11.3	134
PCB-32	33.5	167.5	149	42.6	111
PCB-16	33.5	167.5	102	52.3	64
PCB-22	33.5	167.5	142	83	52
PCB-84	33.5	167.5	167	214	25
PCB-25	33.5	167.5	91.4	47.6	63
PCB-12/13	33.5	167.5	123	ND	NC
PCB-135/151/154	33.5	167.5	339	274	21
PCB-147/149	33.5	167.5	925	740	22
PCB-18/30	33.5	167.5	352	128	93
PCB-20/28	33.5	167.5	531	255	70
PCB-21/33	33.5	167.5	166	97.8	52
PCB-26/29	33.5	167.5	150	48.8	102
PCB-45/51	33.5	167.5	284	227	22
PCB-50/53	33.5	167.5	69.3	36	63
PCB-86/87/97/108/119/125	33.5	167.5	537	662	21
NC: Not calculable					

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
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