APPENDIX D: DATA VALIDATION REPORTS

LABORATORY DATA CONSULTANTS, INC.
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LDC #13502/13517/13576
June 20, 2005

Windward Environmental, LLC
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Susie McGroddy

SUBJECT: Lower Duwamish Waterway Group Tissue Sample Data Validation

Dear Ms. McGroddy,

Enclosed is our EPA Level II data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Axys Analytical Services, Ltd. Samples were analyzed for HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A. Samples are referenced under the following Sample Delivery Groups: DPWG15710, DPWG15741, DPWQ15924, and DPWG15926. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed.

Please feel free to contact us if you have any questions.

Sincerely,

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

LDC #13502 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																													
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15710	05/17/05	06/07/05	7	0																												
Total	B/SC			7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 1

LDC #13517 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																															
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15741	05/18/05	06/08/05	15	0																														
Total	B/SC			15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 1

PDF

LDC #13576 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																													
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15924	06/01/05	06/22/05	11	0																												
B	DPWG15926	06/01/05	06/22/05	13	0																												
Total	B/SC			24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

CHEMICAL DATA QUALITY REVIEW FOR FISH AND CRAB TISSUE SAMPLES

Lower Duwamish Waterway Group
LDC# 13502, 13517 & 13576

This report details the findings of an EPA Level IV data validation review of Analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Axys Analytical Services, Ltd. Samples were analyzed for HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A. Samples are referenced under the following Sample Delivery Groups: DPWG15710, DPWG15741, DPWQ15924, and DPWG15926. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed and the Sample Validation Table (Attachment 2) for the sample identifications and analyses.

The QC guidelines used for data qualification are those specified in the EPA Region 10 SOP for the Validation of 1668 Toxic, Dioxin-like PCB Data (Revision 1.0, December 8, 1995). Specific QC criteria used follows the Fish and Crab Collection and Chemical Analyses Quality Assurance Project Plan (August 27, 2004). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The following items were evaluated during the review:

- Holding Times
- Sample Preservation
- Cooler Temperatures
- Instrument Calibration
- Blanks
- Matrix Spike/Matrix Spike Duplicates
- Internal Standards
- Laboratory Control Samples
- Target Compound Identifications
- Compound Quantitation and CRQLs
- System Performance
- Field Duplicates

Attachment 1

LDC #13502 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																																	
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15710	05/17/05	06/07/05	7	0																																
Total	B/SC			7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7

Shaded cells indicate Level IV validation (all other cells are Level II validation) These sample counts do not include MS/MSD, and DUPs

Attachment 1

LDC #13517 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																															
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15741	05/18/05	06/08/05	15	0																														
Total	B/SC			15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15

Shaded cells indicate Level IV validation (all other cells are Level II validation) These sample counts do not include MS/MSD, and DUPs

Attachment 1

PDF **LDC #13576 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	PCBs Cong. (1668)																															
Matrix: Tissue/Sediment				T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	DPWG15924	06/01/05	06/22/05	11	0																														
B	DPWG15926	06/01/05	06/22/05	13	0																														
Total	B/SC			24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 2

SDG#: DPWG15710 VALIDATION SAMPLE TABLE **LDC#:** 13502A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	PCB Cong. (1668)											
LDW-T1-A-SS-WB-comp-1	L7311-1	tissue	08/02/04	X											
LDW-T4-B-SS-WB-comp-1	L7311-20	tissue	08/04/04	X											
LDW-T1-D-PS-WB-comp-1	L7311-39	tissue	08/05/04	X											
LDW-T1-F-PS-WB-comp-1	L7311-41	tissue	08/03/04	X											
LDW-T2-F-PS-WB-comp-1	L7311-47	tissue	08/03/04	X											
LDW-T3-M-ES-FL-comp-1	L7311-76	tissue	08/03/04	X											
LDW-T4-M-ES-FL-comp-1	L7311-78	tissue	09/02/04	X											
LDW-T3-M-ES-FL-comp-1DUP	L7311-76DUP	tissue	08/03/04	X											

Note: X = Validation was performed.

Attachment 2

SDG#: DPWG15741 | VALIDATION SAMPLE TABLE | **LDC#:** 13517A

Project Name: Lower Duwamish Waterway Group | Parameters/Analytical Method | Project #04-08-06-21

Client ID #	Lab ID #	Matrix	Date Collected	PCB Cong. (1668)											
LDW-T4-SS-WB-comp-1	L7311-24	tissue	08/02/04	X											
LDW-M-M-PP-FL-comp-1	L7311-34	tissue	08/03/04	X											
LDW-M-M-SP-FL-comp-1	L7311-35	tissue	08/04/04	X											
LDW-T2-C-PS-WB-comp-1	L7311-44	tissue	08/04/04	X											
LDW-T4-C-PS-WB-comp-1	L7311-56	tissue	08/04/04	X											
LDW-T4-D-PS-WB-comp-2	L7311-58	tissue	08/30/04	X											
LDW-T4-M-SF-WB-comp-1	L7311-112	tissue	08/04/04	X											
LDW-T4-M-SF-FL-comp-1	L7311-115	tissue	08/30/04	X											
LDW-T1-M-SC-EB-comp-2	L7311-125	tissue	08/30/04	X											
LDW-T2-M-SC-EM-comp-5	L7311-133	tissue	08/31/04	X											
LDW-T2-M-SC-EM-comp-6	L7311-134	tissue	08/31/04	X											
LDW-T3-M-SC-EM-comp-2	L7311-137	tissue	09/30/04	X											
LDW-T1-M-DC-EM-comp-2	L7311-149	tissue	08/30/04	X											
LDW-T3-M-DC-EM-comp-1	L7311-152	tissue	08/30/04	X											
LDW-T4-M-DC-EM-comp-1	L7311-156	tissue	08/31/04	X											
LDW-M-M-PP-FL-comp-1DUP	L7311-34DUF	tissue	08/03/04	X											

Note: X = Validation was performed.

Attachment 2

SDG#: DPWG15924 — VALIDATION SAMPLE TABLE — **LDC#:** 13576A

Project Name: Lower Duwamish Waterway Group — Parameters/Analytical Method — Project #04-08-06-22

Client ID #	Lab ID #	Matrix	Date Collected	PCB Cong. (1668)											
LDW-T2-E-SS-WB-comp-1	L7311-11	tissue	08/03/04	X											
LDW-T3-E-SS-WB-comp-1	L7311-17	tissue	08/03/04	X											
LDW-T3-F-SS-WB-comp-1	L7311-18	tissue	08/04/04	X											
LDW-T3-D-PS-WB-comp-1	L7311-51	tissue	08/03/04	X											
LDW-T1-M-ES-WB-comp-2	L7311-92	tissue	08/05/04	X											
LDW-T1-M-ES-WB-comp-4	L7311-94	tissue	08/02/04	X											
LDW-T2-M-ES-WB-comp-3	L7311-99	tissue	08/03/04	X											
LDW-T2-M-ES-WB-comp-5	L7311-101	tissue	08/03/04	X											
LDW-T3-M-ES-WB-comp-3	L7311-105	tissue	08/03/04	X											
LDW-T3-M-DC-HP-comp-1	L7311-155	tissue	08/30/04	X											
LDW-T4-M-DC-HP-comp-1	L7311-157	tissue	08/31/04	X											
LDW-T3-D-PS-WB-comp-1DUP	L7311-51DUP	tissue	08/03/04	X											

Note: X = Validation was performed.

Attachment 2

SDG#: DPWG15926 | VALIDATION SAMPLE TABLE | **LDC#:** 13576B

Project Name: Lower Duwamish Waterway Group | Parameters/Analytical Method | Project #04-08-06-22

Client ID #	Lab ID #	Matrix	Date Collected	PCB Cong. (1668)											
LDW-T1-F-SS-WB-comp-1	L7311-6	tissue	08/03/04	X											
LDW-T2-B-SS-WB-comp-1	L7311-8	tissue	08/03/04	X											
LDW-T3-C-SS-WB-comp-1	L7311-15	tissue	08/03/04	X											
LDW-T3-E-PS-WB-comp-1	L7311-52	tissue	08/03/04	X											
LDW-T1-M-ES-FL-comp-1	L7311-72	tissue	08/02/04	X											
LDW-T1-M-ES-FL-comp-2	L7311-73	tissue	08/02/04	X											
LDW-T2-M-ES-FL-comp-1	L7311-74	tissue	08/03/04	X											
LDW-T2-M-ES-FL-comp-2	L7311-75	tissue	08/03/04	X											
LDW-T3-M-ES-FL-comp-2	L7311-77	tissue	08/03/04	X											
LDW-T3-M-ES-WB-comp-2	L7311-104	tissue	08/03/04	X											
LDW-T4-M-ES-WB-comp-1	L7311-109	tissue	08/02/04	X											
LDW-T1-M-SC-HP-comp-1	L7311-127	tissue	08/30/04	X											
LDW-T2-M-SC-HP-comp-2	L7311-135	tissue	08/31/04	X											
LDW-T1-M-ES-FL-comp-2DUP	L7311-73DUP	tissue	08/02/04	X											

Note: X = Validation was performed.

Only issues which require comment or action are discussed in this report. Data deficiencies are arranged by method. Potential effects of data anomalies have been described where possible.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

- J1 Blank Contamination: Indicates possible high bias and/or false positives.
- J2 Calibration Range exceeded: Indicates possible low bias.
- J3 Holding times not met: Indicates low bias for most analytes.
- J4 Other QC parameters outside control limits: bias not readily determined.
- J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.
- J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

Overall Data Assessment

I. Method Compliance

PCB-1 was not reported for sample LDW-T1-M-ES-FL-comp-1 in SDG DPWG15926 due to internal standard quantification problems.

II. Usability

Method blank contamination have warranted the qualification of several compounds as non-detected (U).

Internal standard recovery exceedances have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) in two samples for SDGs DPWG15924 and DPWG15926.

The frequency of matrix spike (MS) and matrix spike duplicate (MSD) was not met as required by the QAPP. MS/MSD analyses are not required for EPA Method 1668A. The laboratory consulted with the client on this discrepancy and was instructed to proceed with the extraction and analysis despite the absence of MS/MSDs.

The required frequency of SRM was not met in SDGs DPWG15710 and DPWG15741.

Field duplicates were not collected for this sampling event.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

HRGC/HRMS Polychlorinated Biphenyl Congeners by modified EPA Method 1668A

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all congeners. The chromatographic resolution was less than or equal to 40% for congeners PCB-23 and PCB-34 and congeners PCB-182 and PCB-187.

The static resolving power was at least 10,000 (10% valley definition).

III. Initial Calibration

A five point initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The minimum S/N ratio for each target compound was greater than or equal to 2.5 and greater than or equal to 10 for each recovery and internal standard compound.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 25.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks with the following exceptions:

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DFWC15710	WC15208 101	3/2/05	PCB-1	0.082 ng/Kg	LDW-T1-A-SS-WB-comp-1
			PCB-2	0.095 ng/Kg	LDW-T4-B-SS-WB-comp-1
			PCB-3	0.136 ng/Kg	LDW-T1-D-PS-WB-comp-1
			PCB-4	0.134 ng/Kg	LDW-T1-F-PS-WB-comp-1
			PCB-7	0.114 ng/Kg	LDW-T2-F-PS-WB-comp-1
			PCB-8	0.181 ng/Kg	LDW-T3-M-ES-FL-comp-1
			PCB-11	0.598 ng/Kg	LDW-T4-M-ES-FL-comp-1
			PCB-12	0.082 ng/Kg	
			PCB-15	0.181 ng/Kg	
			PCB-16	0.133 ng/Kg	
			PCB-17	0.161 ng/Kg	
			PCB-18	0.317 ng/Kg	
			PCB-19	0.067 ng/Kg	
			PCB-20	0.485 ng/Kg	
			PCB-21	0.197 ng/Kg	
			PCB-22	0.139 ng/Kg	
			PCB-26	0.089 ng/Kg	
			PCB-31	0.356 ng/Kg	
			PCB-32	0.101 ng/Kg	
			PCB 37	0.140 ng/Kg	
			PCB-40	0.186 ng/Kg	
			PCB-42	0.078 ng/Kg	
			PCB-44	0.412 ng/Kg	
			PCB-45	0.113 ng/Kg	
			PCB-48	0.095 ng/Kg	
			PCB-49	0.229 ng/Kg	
			PCB-50	0.084 ng/Kg	
			PCB-52	0.576 ng/Kg	
			PCB-56	0.130 ng/Kg	
			PCB-59	0.071 ng/Kg	
			PCB-60	0.107 ng/Kg	
			PCB-61	0.553 ng/Kg	
			PCB-64	0.149 ng/Kg	
			PCB-66	0.304 ng/Kg	
			PCB-77	0.062 ng/Kg	
			PCB-82	0.077 ng/Kg	
			PCB-83	0.286 ng/Kg	
			PCB-84	0.117 ng/Kg	
			PCB-85	0.139 ng/Kg	
			PCB-86	0.358 ng/Kg	
			PCB-88	0.070 ng/Kg	
			PCB-90	0.474 ng/Kg	
			PCB-92	0.091 ng/Kg	
			PCB-93	0.382 ng/Kg	
			PCB-105	0.416 ng/Kg	
			PCB-107	0.067 ng/Kg	
			PCB-109	0.065 ng/Kg	
			PCB-110	0.435 ng/Kg	
			PCB-114	0.081 ng/Kg	
			PCB-118	0.694 ng/Kg	
			PCB-123	0.063 ng/Kg	
			PCB-126	0.062 ng/Kg	
			PCB-128	0.263 ng/Kg	
			PCB-129	1.18 ng/Kg	
			PCB-130	0.083 ng/Kg	
			PCB-132	0.166 ng/Kg	
			PCB-135	0.199 ng/Kg	
			PCB-136	0.063 ng/Kg	
			PCB-137	0.086 ng/Kg	
			PCB-141	0.183 ng/Kg	
			PCB-146	0.166 ng/Kg	
			PCB-147	0.417 ng/Kg	
			PCB-153	0.012 ng/Kg	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15710	WG15208-101	3/2/05	PCB-156	0.378 ng/Kg	LDW-T1-A-SS-WB-comp-1
			PCB-158	0.157 ng/Kg	LDW-T4-B-SS-WB-comp-1
			PCB-164	0.062 ng/Kg	LDW-T1-D-PS-WB-comp-1
			PCB-167	0.115 ng/Kg	LDW-T1-F-PS-WB-comp-1
			PCB-170	0.327 ng/Kg	LDW-T2-F-PS-WB-comp-1
			PCB-171	0.115 ng/Kg	LDW-T3-M-ES-FL-comp-1
			PCB-172	0.055 ng/Kg	LDW-T4-M-ES-FL-comp-1
			PCB-174	0.141 ng/Kg	
			PCB-177	0.142 ng/Kg	
			PCB-179	0.058 ng/Kg	
			PCB-180	0.561 ng/Kg	
			PCB-183	0.161 ng/Kg	
			PCB-187	0.231 ng/Kg	
			PCB-189	0.058 ng/Kg	
			PCB-190	0.079 ng/Kg	
			PCB-194	0.089 ng/Kg	
			PCB-198	0.141 ng/Kg	
			PCB-202	0.053 ng/Kg	
			PCB-203	0.083 ng/Kg	
			PCB-206	0.077 ng/Kg	
			PCB-208	0.067 ng/Kg	
			PCB-209	0.090 ng/Kg	
			Total Monochloro Biphenyls	0.313 ng/Kg	
			Total Dichloro Biphenyls	1.29 ng/Kg	
			Total Trichloro Biphenyls	2.03 ng/Kg	
			Total Tetrachloro Biphenyls	2.67 ng/Kg	
			Total Pentachloro Biphenyls	3.38 ng/Kg	
			Total Hexachloro Biphenyls	3.54 ng/Kg	
			Total Heptachloro Biphenyls	1.93 ng/Kg	
			Total Octachloro Biphenyls	0.089 ng/Kg	
			Total Nonachloro Biphenyls	0.144 ng/Kg	
			Decachloro Biphenyls	0.090 ng/Kg	
			Total PCBs	15.5 ng/Kg	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15741	WG15204-101	3/2/05	PCB-1	0.158 ng/Kg	LDW-T4-D-SS-WB-comp-1
			PCB-8	0.305 ng/Kg	LDW-M-M-PP-FL-comp-1
			PCB-11	0.709 ng/Kg	LDW-M-M-SP-FL-comp-1
			PCB-15	0.385 ng/Kg	LDW-T2-C-PS-WB-comp-1
			PCB-16	0.239 ng/Kg	LDW-T4-C-PS-WB-comp-1
			PCB-17	0.261 ng/Kg	LDW-T4-D-PS-WB-comp-2
			PCB-18	0.536 ng/Kg	LDW-T4-M-SF-WB-comp-1
			PCB-20	1.41 ng/Kg	LDW-T4-M-SF-FL-comp-1
			PCB-21	0.351 ng/Kg	LDW-T1-M-SC-EB-comp-2
			PCB-22	0.340 ng/Kg	LDW-T2-M-SC-EM-comp-5
			PCB-28	0.294 ng/Kg	LDW-T2-M-SC-EM-comp-6
			PCB-31	0.905 ng/Kg	LDW-T3-M-SC-EM-comp-2
			PCB-32	0.214 ng/Kg	LDW-T1-M-DC-EM-comp-2
			PCB-37	0.439 ng/Kg	LDW-T3-M-DC-EM-comp-1
			PCB-40	0.380 ng/Kg	LDW-T4-M-DC-EM-comp-1
			PCB-42	0.204 ng/Kg	
			PCB-44	1.07 ng/Kg	
			PCB-48	0.136 ng/Kg	
			PCB-49	0.790 ng/Kg	
			PCB-50	0.122 ng/Kg	
			PCB-52	1.70 ng/Kg	
			PCB-56	0.353 ng/Kg	
			PCB-60	0.422 ng/Kg	
			PCB-61	2.09 ng/Kg	
			PCB-64	0.430 ng/Kg	
			PCB-66	1.35 ng/Kg	
			PCB-83	1.56 ng/Kg	
			PCB-84	0.245 ng/Kg	
			PCB-85	0.281 ng/Kg	
			PCB-86	1.13 ng/Kg	
			PCB-88	0.274 ng/Kg	
			PCB-90	2.25 ng/Kg	
			PCB-92	0.510 ng/Kg	
			PCB-93	1.19 ng/Kg	
			PCB-105	1.15 ng/Kg	
			PCB-110	1.49 ng/Kg	
			PCB-118	3.39 ng/Kg	
			PCB-128	0.538 ng/Kg	
			PCB-129	3.67 ng/Kg	
			PCB-132	0.468 ng/Kg	
			PCB-135	0.949 ng/Kg	
			PCB-136	0.180 ng/Kg	
			PCB-141	0.491 ng/Kg	
			PCB-146	0.618 ng/Kg	
			PCB-147	1.32 ng/Kg	
			PCB-153	3.30 ng/Kg	
			PCB-156	0.883 ng/Kg	
			PCB-158	0.389 ng/Kg	
			PCB-167	0.282 ng/Kg	
			PCB-170	0.735 ng/Kg	
			PCB-171	0.174 ng/Kg	
			PCB-174	0.186 ng/Kg	
			PCB-177	0.377 ng/Kg	
			PCB-178	0.202 ng/Kg	
			PCB-179	0.188 ng/Kg	
			PCB-180	1.68 ng/Kg	
			PCB-183	0.478 ng/Kg	
			PCB-187	0.859 ng/Kg	
			PCB-190	0.213 ng/Kg	
			PCB-194	0.274 ng/Kg	
			PCB-195	0.072 ng/Kg	
			PCB-196	0.141 ng/g	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15741	WG15204-101	3/2/05	PCB-197	0.083 ng/Kg	LDW-T4-D-SS-WB-comp-1
			PCB-198	0.305 ng/Kg	LDW-M-M-PP-FL-comp-1
			PCB-201	0.056 ng/Kg	LDW-M-M-SP-FL-comp-1
			PCB-202	0.089 ng/Kg	LDW-T2-C-PS-WB-comp-1
			PCB-203	0.185 ng/Kg	LDW-T4-C-PS-WB-comp-1
			PCB-204	0.015 ng/Kg	LDW-T4-D-PS-WB-comp-2
			PCB-205	0.069 ng/Kg	LDW-T4-M-SF-WB-comp-1
			PCB-206	0.240 ng/Kg	LDW-T4-M-SF-FL-comp-1
			PCB-209	0.127 ng/Kg	LDW-T1-M-SC-EB-comp-2
			Total Monochloro Biphenyls	0.158 ng/Kg	LDW-T2-M-SC-EM-comp-5
			Total Dichloro Biphenyls	1.40 ng/Kg	LDW-T2-M-SC-EM-comp-6
			Total Trichloro Biphenyls	4.75 ng/Kg	LDW-T3-M-SC-EM-comp-2
			Total Tetrachloro Biphenyls	7.84 ng/Kg	LDW-T1-M-DC-EM-comp-2
			Total Pentachloro Biphenyls	13.2 ng/Kg	LDW-T3-M-DC-EM-comp-1
			Total Hexachloro Biphenyls	10.9 ng/Kg	LDW-T4-M-DC-EM-comp-1
			Total Heptachloro Biphenyls	3.62 ng/Kg	
			Total Octachloro Biphenyls	0.515 ng/Kg	
			Total PCBs	42.4 ng/Kg	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15021	WG15449-101	4/6/05	PCB-1	5.43 ng/Kg	LDW-T2-E-SS-WB-comp-1
			PCB-3	8.04 ng/Kg	LDW-T3-E-SS-WB-comp-1
			PCB-4	11.4 ng/Kg	LDW-T3-F-SS-WB-comp-1
			PCB-8	10.8 ng/Kg	LDW-T3-D-PS-WB-comp-1
			PCB-11	6.82 ng/Kg	LDW-T1-M-ES-WB-comp-2
			PCB-12	6.41 ng/Kg	LDW-T1-M-ES-WB-comp-4
			PCB-15	22.3 ng/Kg	LDW-T2-M-ES-WB-comp-3
			PCB-17	4.31 ng/Kg	LDW-T2-M-ES-WB-comp-5
			PCB-18	4.22 ng/Kg	LDW-T3-M-ES-WB-comp-3
			PCB-20	6.56 ng/Kg	LDW-T3-M-DC-HP-comp-1
			PCB-26	7.69 ng/Kg	LDW-T4-M-DC-HP-comp-1
			PCB-27	2.26 ng/Kg	
			PCB-31	16.9 ng/Kg	
			PCB-32	4.07 ng/Kg	
			PCB-37	5.09 ng/Kg	
			PCB-40	4.82 ng/Kg	
			PCB-44	13.2 ng/Kg	
			PCB-49	13.5 ng/Kg	
			PCB-50	2.97 ng/Kg	
			PCB-52	16.7 ng/Kg	
			PCB-61	14.1 ng/Kg	
			PCB-64	2.85 ng/Kg	
			PCB-66	10.7 ng/Kg	
			PCB-83	10.9 ng/Kg	
			PCB-86	5.44 ng/Kg	
			PCB-90	15.9 ng/Kg	
			PCB-92	4.88 ng/Kg	
			PCB-93	9.79 ng/Kg	
			PCB-105	5.61 ng/Kg	
			PCB-110	12.2 ng/Kg	
			PCB-118	16.8 ng/Kg	
			PCB-129	15.9 ng/Kg	
			PCB-136	3.11 ng/Kg	
			PCB-147	9.53 ng/Kg	
			PCB-153	20.2 ng/Kg	
			PCB-156	5.35 ng/Kg	
			PCB-170	6.46 ng/Kg	
			PCB-171	2.67 ng/Kg	
			PCB-172	0.319 ng/Kg	
			PCB-174	1.85 ng/Kg	
			PCB-175	0.748 ng/Kg	
			PCB-176	0.797 ng/Kg	
			PCB-177	2.15 ng/Kg	
			PCB-179	1.00 ng/Kg	
			PCB-181	0.378 ng/Kg	
			PCB-182	1.43 ng/Kg	
			PCB-183	3.98 ng/Kg	
			PCB-184	0.689 ng/Kg	
			PCB-186	0.287 ng/Kg	
			PCB-187	10.1 ng/Kg	
			PCB-188	0.396 ng/Kg	
			PCB-189	0.364 ng/Kg	
			PCB-190	1.23 ng/Kg	
			PCB-191	1.48 ng/Kg	
			PCB-192	0.500 ng/Kg	
			PCB-194	2.79 ng/Kg	
			PCB-195	1.95 ng/Kg	
			PCB-198	0.718 ng/Kg	
			PCB-201	0.431 ng/Kg	
			PCB-203	2.28 ng/Kg	
			PCB-204	0.197 ng/Kg	
			PCB-205	0.568 ng/Kg	
			PCB-209	0.630 ng/Kg	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15924	WG15449-101	4/6/06	Total Monochloro Biphenyls	8.04 ng/Kg	LDW-T2-F-SS-WB-comp-1
			Total Dichloro Biphenyls	51.0 ng/Kg	LDW-T3-E-SS-WB-comp-1
			Total Trichloro Biphenyls	30.3 ng/Kg	LDW-T3-F-SS-WB-comp-1
			Total Tetrachloro Biphenyls	51.7 ng/Kg	LDW-T3-D-PS-WB-comp-1
			Total Pentachloro Biphenyls	75.9 ng/Kg	LDW-T1-M-ES-WB-comp-2
			Total Heptachloro Biphenyls	180 ng/Kg	LDW-T1-M-ES-WB-comp-4
			Total Octachloro Biphenyls	2.28 ng/Kg	LDW-T2-M-ES-WB-comp-3
			Total PCBs	221 ng/Kg	LDW-T2-M-ES-WB-comp-5
					LDW-T3-M-ES-WB-comp-3
					LDW-T3-M-DC-HP-comp-1
					LDW-T4-M-DC-HP-comp-1

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15926	WG15450-101	4/14/05	PCB-1	2.57 ng/Kg	LDW-T1-F-SS-WB-comp-1
			PCB-2	2.75 ng/Kg	LDW-T2-B-SS-WB-comp-1
			PCB-3	5.70 ng/Kg	LDW-T3-C-SS-WB-comp-1
			PCB-17	2.79 ng/Kg	LDW-T3-E-PS-WB-comp-1
			PCB-18	2.58 ng/Kg	LDW-T1-M-ES-FL-comp-1
			PCB-20	4.92 ng/Kg	LDW-T1-M-ES-FL-comp-2
			PCB-21	2.00 ng/Kg	LDW-T2-M-ES-FL-comp-1
			PCB-22	1.62 ng/Kg	LDW-T2-M-ES-FL-comp-2
			PCB-23	2.45 ng/Kg	LDW-T3-M-ES-FL-comp-2
			PCB-26	1.29 ng/Kg	LDW-T3-M-ES-WB-comp-2
			PCB-31	2.87 ng/Kg	LDW-T4-M-ES-WB-comp-1
			PCB-32	0.870 ng/Kg	LDW-T1-M-SC-HP-comp-1
			PCB-36	0.767 ng/Kg	LDW-T2-M-SC-HP-comp-2
			PCB-37	4.17 ng/Kg	
			PCB-44	7.50 ng/Kg	
			PCB-52	5.89 ng/Kg	
			PCB-61	9.59 ng/Kg	
			PCB-83	6.13 ng/Kg	
			PCB-85	2.76 ng/Kg	
			PCB-90	7.89 ng/Kg	
			PCB-90	10.2 ng/Kg	
			PCB-92	2.55 ng/Kg	
			PCB-96	0.326 ng/Kg	
			PCB-104	1.00 ng/Kg	
			PCB-105	5.51 ng/Kg	
			PCB-107	3.59 ng/Kg	
			PCB-110	7.89 ng/Kg	
			PCB-114	3.69 ng/Kg	
			PCB-118	9.84 ng/Kg	
			PCB-128	3.84 ng/Kg	
			PCB-129	12.6 ng/Kg	
			PCB-135	2.31 ng/Kg	
			PCB-145	0.356 ng/Kg	
			PCB-146	2.24 ng/Kg	
			PCB-147	8.02 ng/Kg	
			PCB-153	11.4 ng/Kg	
			PCB-156	8.30 ng/Kg	
			PCB-158	1.82 ng/Kg	
			PCB-167	4.22 ng/Kg	
			PCB-170	3.89 ng/Kg	
			PCB-171	1.06 ng/Kg	
			PCB-172	2.05 ng/Kg	
			PCB-177	2.36 ng/Kg	
			PCB-178	0.824 ng/Kg	
			PCB-179	1.33 ng/Kg	
			PCB-180	10.1 ng/Kg	
			PCB-182	1.80 ng/Kg	
			PCB-184	0.930 ng/Kg	
			PCB-186	0.491 ng/Kg	
			PCB-187	5.88 ng/Kg	
			PCB-188	2.04 ng/Kg	
			PCB-189	4.44 ng/Kg	
			PCB-190	2.22 ng/Kg	
			PCB-191	1.46 ng/Kg	
			PCB-192	0.704 ng/Kg	
			PCB-196	0.940 ng/Kg	
			PCB-197	0.563 ng/Kg	
			PCB-198	0.979 ng/Kg	
			PCB-201	1.08 ng/Kg	
			PCB-205	1.52 ng/Kg	
			PCB-209	3.60 ng/Kg	
			PCB-77	0.580 ng/Kg	
			PCB-123	0.294 ng/Kg	

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG15926	WG15450-101	4/14/05	PCB-126 Total Monochloro Biphenyls Total Trichloro Biphenyls Total Tetrachloro Biphenyls Total Pentachloro Biphenyls Total Hexachloro Biphenyls Total Heptachloro Biphenyls Decachloro Biphenyls Total PCBs	0.276 ng/Kg 5.31 ng/Kg 20.2 ng/Kg 10.2 ng/Kg 60.6 ng/Kg 41.4 ng/Kg 33.1 ng/Kg 3.60 ng/Kg 174 ng/Kg	LDW-T1-F-SS-WB-comp-1 LDW-T2-B-SS-WB-comp-1 LDW-T3-C-SS-WB-comp-1 LDW-T3-E-PS-WB-comp-1 LDW-T1-M-ES-FL-comp-1 LDW-T1-M-ES-FL-comp-2 LDW-T2-M-ES-FL-comp-1 LDW-T2-M-ES-FL-comp-2 LDW-T3-M-ES-FL-comp-2 LDW-T3-M-ES-WB-comp-2 LDW-T4-M-ES-WB-comp-1 LDW-T1-M-SC-HP-comp-1 LDW-T2-M-SC-HP-comp-2

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG15710	LDW-T1-D-PS-WB-comp-1	PCB-2	0.457 ng/Kg	0.457U ng/Kg
DPWG15710	LDW-T1-F-PS-WB-comp-1	PCB-2 PCB-11	0.334 ng/Kg 1.95 ng/Kg	0.334U ng/Kg 1.95U ng/Kg
DPWG15710	LDW-T2-F-PS-WB-comp-1	PCB-2 PCB-11 PCB-3	0.243 ng/Kg 1.79 ng/Kg 0.460 ng/Kg	0.243U ng/Kg 1.79U ng/Kg 0.460U ng/Kg
DPWG15710	LDW-T3-M-ES-FL-comp-1	PCB-2 PCB-11 PCB-3	0.338 ng/Kg 2.00 ng/Kg 0.580 ng/Kg	0.338U ng/Kg 2.00U ng/Kg 0.580U ng/Kg
DPWG15710	LDW-T4-M-ES-FL-comp-1	PCB-2 PCB-11 PCB-3	0.269 ng/Kg 2.05 ng/Kg 0.466 ng/Kg	0.269U ng/Kg 2.05U ng/Kg 0.466U ng/Kg
DPWQ15741	LDW-M-M-PP-FL-comp-1	PCB-11	3.15 ng/Kg	3.15U ng/Kg
DPWQ15741	LDW-T2-C-PS-WB-comp-1	PCB-11	2.15 ng/Kg	2.15U ng/Kg
DPWQ15741	LDW-T4-C-PS-WB-comp-1	PCB-11	1.28 ng/Kg	1.28U ng/Kg
DPWQ15741	LDW-T4-D-PS-WB-comp-2	PCB-11	3.38 ng/Kg	3.38U ng/Kg
DPWQ15741	LDW-T1-M-SC-EB-comp-2	PCB-11 PCB-1	2.48 ng/Kg 0.686 ng/Kg	2.48U ng/Kg 0.686U ng/Kg
DPWQ15741	LDW-T2-M-SC-EM-comp-5	PCB-11 PCB-1 Total Monochloro Biphenyls	2.55 ng/Kg 0.780 ng/Kg 0.357 ng/Kg	2.55U ng/Kg 0.780U ng/Kg 0.357U ng/Kg

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWQ15741	LDW T2 M SC EM comp 6	PCB-11	2.07 ng/Kg	2.07U ng/Kg
DPWQ15741	LDW-T3-M-SC-EM-comp-2	PCB-11 PCB-1 Total Monochloro Biphenyls	3.43 ng/Kg 0.695 ng/Kg 0.695 ng/Kg	3.43U ng/Kg 0.695U ng/Kg 0.695U ng/Kg
DPWG15924	LDW-T2-E-SS-WB-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls	23.7 ng/Kg 31.7 ng/Kg 23.7 ng/Kg	23.7U ng/Kg 31.7U ng/Kg 23.7U ng/Kg
DPWG15924	LDW-T3-E-SS-WB-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-3 PCB-12	6.58 ng/Kg 8.27 ng/Kg 12.8 ng/Kg 6.18 ng/Kg 12.4 ng/Kg	6.58U ng/Kg 8.27U ng/Kg 12.8U ng/Kg 6.18U ng/Kg 12.4U ng/Kg
DPWG15924	LDW-T3-F-SS-WB-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3	7.55 ng/Kg 12.7 ng/Kg 5.15 ng/Kg	7.55U ng/Kg 12.7U ng/Kg 5.15U ng/Kg
DPWG15924	LDW-T3-D-PS-WB-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-15	3.90 ng/Kg 7.42 ng/Kg 3.52 ng/Kg 25.7 ng/Kg	3.90U ng/Kg 7.42U ng/Kg 3.52U ng/Kg 25.7U ng/Kg
DPWG15924	LDW-T1-M-ES-WB-comp-2	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-12 PCB-15	12.5 ng/Kg 7.38 ng/Kg 12.5 ng/Kg 14.9 ng/Kg 88.5 ng/Kg	12.5U ng/Kg 7.38U ng/Kg 12.5U ng/Kg 14.9U ng/Kg 88.5U ng/Kg
DPWG15924	LDW-T1-M-ES-WB-comp-4	PCB-1 Total Monochloro Biphenyls PCB-12	22.5 ng/Kg 22.5 ng/Kg 28.8 ng/Kg	22.5U ng/Kg 22.5U ng/Kg 28.8U ng/Kg
DPWG15924	LDW-T2-M-ES-WB-comp-3	PCB-1 Total Monochloro Biphenyls PCB-12	15.5 ng/Kg 15.5 ng/Kg 14.0 ng/Kg	15.5U ng/Kg 15.5U ng/Kg 14.0U ng/Kg
DPWG15924	LDW-T2-M-ES-WB-comp-5	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-12	23.1 ng/Kg 29.1 ng/Kg 3.64 ng/Kg 26.2 ng/Kg	23.1U ng/Kg 29.1U ng/Kg 3.64U ng/Kg 26.2U ng/Kg
DPWG15924	LDW-T3-M-ES-WB-comp-3	PCB-1 Total Monochloro Biphenyls PCB-3 PCB-12 PCB-15	9.65 ng/Kg 13.4 ng/Kg 3.73 ng/Kg 14.4 ng/Kg 96.2 ng/Kg	9.65U ng/Kg 13.4U ng/Kg 3.73U ng/Kg 14.4U ng/Kg 96.2U ng/Kg
DPWG15924	LDW-T3-M-DC-HP-comp-1	PCB-1 PCB-11 Total Monochloro Biphenyls PCB-3	8.44 ng/Kg 34.0 ng/Kg 14.9 ng/Kg 6.51 ng/Kg	8.44U ng/Kg 34.0U ng/Kg 14.9U ng/Kg 6.51U ng/Kg
DPWG15924	LDW-T4-M-DC-HP-comp-1	PCB-1 Total Monochloro Biphenyls PCB-3	8.21 ng/Kg 23.1 ng/Kg 10.5 ng/Kg	8.21U ng/Kg 23.1U ng/Kg 10.5U ng/Kg

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG15926	LDW-T3-E-PS-WB-comp-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	7.38 ng/Kg 3.33 ng/Kg 7.31 ng/Kg 18.0 ng/Kg	7.38U ng/Kg 3.33U ng/Kg 7.31U ng/Kg 18.0U ng/Kg
DPWG15926	LDW-T1-M-ES-FL-comp-1	PCB-2 PCB-3 PCB-23	8.43 ng/Kg 20.5 ng/Kg 10.7 ng/Kg	8.43U ng/Kg 20.5U ng/Kg 10.7U ng/Kg
DPWG15926	LDW-T1-M-ES-FL-comp-2	PCB-1 PCB-2 PCB-3 PCB-23 Total Monochloro Biphenyls	8.80 ng/Kg 2.76 ng/Kg 5.03 ng/Kg 10.1 ng/Kg 16.6 ng/Kg	8.80U ng/Kg 2.76U ng/Kg 5.03U ng/Kg 10.1U ng/Kg 16.6U ng/Kg
DPWG15926	LDW-T2-M-ES-FL-comp-1	PCB-1 PCB-2 PCB-3 PCB-23 Total Monochloro Biphenyls	9.38 ng/Kg 2.74 ng/Kg 4.07 ng/Kg 9.58 ng/Kg 16.2 ng/Kg	9.38U ng/Kg 2.74U ng/Kg 4.07U ng/Kg 9.58U ng/Kg 16.2U ng/Kg
DPWG15926	LDW-T2-M-ES-FL-comp-2	PCB-2 PCB-3 Total Monochloro Biphenyls	3.70 ng/Kg 6.73 ng/Kg 24.0 ng/Kg	3.70U ng/Kg 6.73U ng/Kg 24.0U ng/Kg
DPWG15926	LDW-T3-M-ES-FL-comp-2	PCB-1 PCB-2 PCB-3 PCB-23 Total Monochloro Biphenyls	9.45 ng/Kg 2.46 ng/Kg 4.53 ng/Kg 6.84 ng/Kg 16.4 ng/Kg	9.45U ng/Kg 2.46U ng/Kg 4.53U ng/Kg 6.84U ng/Kg 16.4U ng/Kg
DPWG15926	LDW-T3-M-ES-WB-comp-2	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	10.5 ng/Kg 2.96 ng/Kg 5.63 ng/Kg 19.0 ng/Kg	10.5U ng/Kg 2.96U ng/Kg 5.63U ng/Kg 19.0U ng/Kg
DPWG15926	LDW-T4-M-ES-WB-comp-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	10.2 ng/Kg 2.42 ng/Kg 4.39 ng/Kg 17.0 ng/Kg	10.2U ng/Kg 2.42U ng/Kg 4.39U ng/Kg 17.0U ng/Kg
DPWG15926	LDW-T1-M-SC-HP-comp-1	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls	4.58 ng/Kg 3.24 ng/Kg 7.36 ng/Kg 15.2 ng/Kg	4.58U ng/Kg 3.24U ng/Kg 7.36U ng/Kg 15.2U ng/Kg

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG15926	LDW-T2-M-SC-HP-comp-2	PCB-1 PCB-2 PCB-3 Total Monochloro Biphenyls PCB-104	5.76 ng/Kg 4.29 ng/Kg 7.38 ng/Kg 17.4 ng/Kg 3.88 ng/Kg	5.76U ng/Kg 4.29U ng/Kg 7.38U ng/Kg 17.4U ng/Kg 3.88U ng/Kg

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

No standard reference material analysis data were associated with SDGs DPWG15710 and DPWG15741.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were reported for all sample extracts and blanks as required with the following exceptions:

Associated SDG	Sample	Internal Standards	Finding
DPWG15926	LDW-T1-M-ES-FL-comp-1	^{13}C-PCB-1	Internal standard recovery was not reported. The response was too low for quantification.

All internal standard recoveries were within QC limits with the following exceptions:

Associated SDG	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
DPWG15924	LDW-T2-E-SS-WB-comp-1	^{13}C-PCB-126	156 (25-150)	PCB-126	J (all detects) UJ (all non-detects)	P

Associated SDG	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
DPWG15926	LDW-T1-M-ES-FL-comp-1	^{13}C-PCB-3 ^{13}C-PCB-4	10.0 (25-150) 13.6 (25-150)	PCB-2 PCB-3 PCB-4 PCB-5 PCB-6 PCB-7 PCB-8 PCB-9 PCB-10 PCB-11 PCB-12 PCB-13 PCB-14	J (all detects) UJ (all non-detects)	P

X. Target Compound Identifications

All target compound identifications were within validation criteria.

XI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria with the following exceptions:

Associated SDG	Sample	Compound	Finding
DPWG15926	LDW-T1-M-ES-FL-comp-1	PCB-1	Sample result was not reported for this compound. The laboratory was unable to quantify this compound due to internal standard problems.

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment of Data

The overall assessment of data was acceptable.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

LDC #: 13502A3 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/31/05

SDG #: DPWG15710 Level IV Page: 1 of 1

Laboratory: AXYS Analytical Services, Ltd. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/2-5/04
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20.
IV.	Routine calibration	A	%D ≤ 25/35
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	NA	~~Ext~~ Not reqd
VII.	Laboratory control samples	A	LCS
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All Tissues

1	LDW-T1-A-SS-WB-comp-1	11	WG15208-10 /	21		31	
2	LDW-T4-B-SS-WB-comp-1	12		22		32	
3	LDW-T1-D-PS-WB comp 1	13		23		33	
4	LDW-T1-F-PS-WB-comp-1	14		24		34	
5	LDW-T2-F-PS-WB-comp-1	15		25		35	
6	LDW-T3-M-ES-FL-comp-1	16		26		36	
7	LDW-T4-M-ES-FL-comp-1	17		27		37	
8	LDW-T3-M-ES-FL-comp-1DUP	18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13502A3
SDG #: OPWG15710

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: A
2nd Reviewer: W

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ ~~25%~~ 20 for unlabeled standards and ≤ ~~30~~ 35% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard > 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning of each 12 hour period?	✓			
Were all percent differences (%D) < ~~40%~~ 25/35 for unlabeled and labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 13502A3
SDG #: 02PWG15710

VALIDATION FINDINGS CHECKLIST

Reviewer: 4
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks > 10?	✓			
X. Target compound identification				
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.		✓	✓	

LDC #: 13502A3
SDG #: DPNG15T1D

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 3/2/05 **Blank analysis date:** 3/13/05 **Associated samples:** M

Conc. units: pg/Kg

Compound	Blank ID	Sample Identification								
WG16208-101		3	4	5	6	7	8	9		
PCB 2	0.095	0.457/U	0.334/U	0.243/U	0.338/U	0.263/U	0.269/U	0.263/U		
PCB 11	~~0.95~~ 0.598		1.95/U	1.79/U	2.00/U	1.5/U	2.05/U	2.05/U		
PCB 3	0.136			0.460/U	0.580/U	0.503/U	0.466/U	0.466/U		
others see attachment	>	> 5 x								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

AXYS METHOD MLA-010 Rev 05
1668A-S1_209

Form 1A
PCB CONGENER ANALYSIS REPORT

CLIENT ID:
LAB BLANK

		Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES		Project No.:	N/A
Contract No.:	4033	Lab Sample ID:	WG15208-101
Matrix:	TISSUE	Sample Size:	10.0 g
Sample Receipt Date:	N/A	Initial Calibration Date:	01-Mar-2005
Extraction Date:	02-Mar-2005	Instrument ID:	HR GC/MS
Analysis Date:	13-Mar-2005 Time: 23:45:23	GC Column ID:	SPB-OCTYL
Extract Volume (µL):	20	Sample Data Filename:	PB5C_134 S:5
Injection Volume (µL):	1.0	Blank Data Filename:	PB5C_134 S:5
Dilution Factor:	N/A	Cal. Ver. Data Filename:	PB5C_134 S:1
Concentration Units :	ng/kg		

COMPOUND	IUPAC NO.	CO-ELUTIONS		LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB			5x					
2 - MoCB	1		0.41	JB	0.082	0.0500	3.16	1.000
3 - MoCB	2		0.475	JB	0.095	0.0500	3.17	0.988
4 - MoCB	3		0.68	JB	0.136	0.0501	3.55	1.000
2,2' - DiCB	4		0.67	JB	0.134	0.129	1.46	1.000
2,3 - DiCB	5			U		0.0852		
2,3' - DiCB	6			U		0.0796		
2,4 - DiCB	7		0.57	JB	0.114	0.0761	1.38	1.158
2,4' - DiCB	8		0.905	JB	0.181	0.0696	1.35	1.206
2,5 - DiCB	9			U		0.0791		
2,6 - DiCB	10			U		0.0820		
3,3' - DiCB	11		2.99	JB	0.598	0.0833	1.38	0.969
3,4 - DiCB	12	12 + 13	0.41	C JB	0.082	0.0817	1.43	0.984
3,4' - DiCB	13	12 + 13		C12				
3,5 - DiCB	14			U		0.0786		
4,4' - DiCB	15		0.905	JB	0.181	0.0969	1.71	1.001
2,2',3 - TriCB	16		0.665	JB	0.133	0.0500	1.10	1.165
2,2',4 - TriCB	17		0.805	JB	0.161	0.0500	0.92	1.138
2,2',5 - TriCB	18	18 + 30	1.585	C JB	0.317	0.0500	0.98	1.113
2,2',6 - TriCB	19		0.335	KJB	0.067	0.0500	0.65	1.001
2,3,3' - TriCB	20	20 + 28	2.425	C JB	0.485	0.0500	1.14	0.848

15208AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

22-04-2005
dd-mm-yyyy

0534

AXYS METHOD MLA-010 Rev 05
Form 1A
Page 2 of 6
Lab Sample ID: WG15208-101

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_134 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	5X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB								
2,3,4 - TriCB	21	21 + 33	0.985	C JB	0.197	0.0500	1.14	0.857
2,3,4' - TriCB	22		0.695	JB	0.139	0.0500	1.08	0.872
2,3,5 - TriCB	23			U		0.0500		
2,3,6 - TriCB	24			U		0.0500		
2,3',4 - TriCB	25			U		0.0500		
2,3',5 - TriCB	26	26 + 29	0.445	C KJD	0.089	0.0500	1.33	1.301
2,3',6 - TriCB	27			U		0.0500		
2,4,4' - TriCB	28	20 + 28		C20				
2,4,5 - TriCB	29	26 + 29		C26				
2,4,6 - TriCB	30	18 + 30		C18				
2,4',5 - TriCB	31		1.78	JB	0.356	0.0500	0.94	0.837
2,4',6 - TriCB	32		0.505	JB	0.101	0.0500	1.04	1.197
2',3,4 - TriCB	33	21 + 33		C21				
2',3,5 - TriCB	34			U		0.0500		
3,3',4 - TriCB	35			U		0.0500		
3,3',5 - TriCB	36			U		0.0500		
3,4,4' - TriCB	37		0.7	JB	0.140	0.0500	1.14	1.001
3,4,5 - TriCB	38			U		0.0500		
3,4',5 - TriCB	39			U		0.0500		
2,2',3,3' - TeCB	40	40 + 41 + 71	0.93	C JB	0.186	0.0500	0.76	1.336
2,2',3,4 - TeCB	41	40 + 41 + 71		C40				
2,2',3,4' - TeCB	42		0.39	JB	0.078	0.0500	0.70	1.312
2,2',3,5 - TeCB	43			U		0.0500		
2,2',3,5' - TeCB	44	44 + 47 + 65	2.06	C JB	0.412	0.0500	0.74	1.286
2,2',3,6 - TeCB	45	45 + 51	0.565	C JB	0.113	0.0500	0.87	1.147
2,2',3,6' - TeCB	46			U		0.0500		
2,2',4,4' - TeCB	47	44 + 47 + 65		C44				
2,2',4,5 - TeCB	48		0.475	KJB	0.095	0.0500	0.89	1.274
2,2',4,5' - TeCB	49	49 + 69	1.145	C JB	0.229	0.0500	0.81	1.260
2,2',4,6 - TeCB	50	50 + 53	0.42	C KJB	0.084	0.0500	0.63	1.112
2,2',4,6' - TeCB	51	45 + 51		C45				
2,2',5,5' - TeCB	52		2.88	JB	0.576	0.0500	0.86	1.236
2,2',5,6' - TeCB	53	50 + 53		C50				
2,2',6,6' - TeCB	54			U		0.0500		
2,3,3',4 - TeCB	55			U		0.0500		
2,3,3',4' - TeCB	56		0.65	KJB	0.130	0.0500	1.04	0.905
2,3,3',5 - TeCB	57			U		0.0500		
2.3.3'.5' - TeCB	58			U		0.0500		
2,3,3',6 - TeCB	59	59 + 62 + 75	0.355	C JB	0.071	0.0500	0.74	1.303
2,3,4,4' - TeCB	60		0.535	KJB	0.107	0.0500	0.98	0.911
2,3,4,5 - TeCB	61	61 + 70 + 74 + 76	2.765	C JB	0.553	0.0500	0.82	0.875
2,3,4,6 - TeCB	62	59 + 62 + 75		C59				
2,3,4',5 - TeCB	63			U		0.0500		

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Approved by: _____ QA/QC Chemist

22-04-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05 | CLIENT ID: | LAB BLANK

Form 1A

Lab Sample ID: WG15208-101 | Project No.. | N/A

Sample Data Filename: | PB5C_134 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB			5X				
2,3,4',6 - TeCB	64		0.745 JB	0.149	0.0500	0.71	1.349
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66		1.52 JB	0.304	0.0500	0.81	0.885
2,3',4,5 - TeCB	67		U		0.0500		
2,3',4,5' - TeCB	68		U		0.0500		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		U		0.0500		
2,3',5',6 - TeCB	73		U		0.0500		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	60 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		0.31 KJB	0.062	0.0500	3.36	1.001
3,3',4,5 - TeCB	78		U		0.0500		
3,3',4,5' - TeCB	79		U		0.0500		
3,3',5,5' - TeCB	80		U		0.0500		
3,4,4',5 - TeCB	81		U		0.0500		
2,2',3,3',4 - PeCB	82		0.385 KJB	0.077	0.0500	2.11	0.933
2,2',3,3',5 - PeCB	83	83 + 99	1.43 C JB	0.286	0.0500	1.57	0.886
2,2',3,3',6 - PeCB	84		0.585 KJB	0.117	0.0500	1.93	1.162
2,2',3,4,4' - PeCB	85	85 + 116 + 117	0.695 C JB	0.139	0.0500	1.49	0.919
2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 + 125	1.19 C JB	0.358	0.0500	1.68	0.901
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3,4,6 - PeCB	88	88 + 91	0.375 C KJB	0.070	0.0500	1.21	1.154
2,2',3,4,6' - PeCB	89		U		0.0500		
2,2',3,4',5 - PeCB	90	90 + 101 + 113	2.37 C JB	0.474	0.0500	1.34	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB	92		0.455 KJB	0.091	0.0500	2.15	0.853
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	1.91 C JB	0.382	0.0500	1.43	1.123
2,2',3,5,6' - PeCB	94		U		0.0500		
2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102	C93				
2,2',3,6,6' - PeCB	96		U		0.0500		
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5',6 - PeCB	103		U		0.0500		
2,2',4,6,6' - PeCB	104		U		0.0500		
2,3,3',4,4' - PeCB	105		2.08 JB	0.416	0.0500	1.63	1.001
2,3,3',4,5 - PeCB	106		U		0.0500		

15208AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

22-04-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05
Form 1A

Lab Sample ID: WG15208-101

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_134 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB			5X				
2,3,3',4',5 - PeCB	107	107 + 124	0.335 C JB	0.067	0.0500	1.51	0.991
2,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3,3',4,6 - PeCB	109		0.325 JB	0.065	0.0500	1.75	0.997
2,3,3',4',6 - PeCB	110	110 + 115	2.175 C JB	0.435	0.0500	1.52	0.925
2,3,3',5,5' - PeCB	111		U		0.0500		
2,3,3',5,6 - PeCB	112		U		0.0500		
2,3,3',5',6 - PeCB	113	90 + 101 + 113	C90				
2,3,4,4',5 - PeCB	114		0.405 KJB	0.081	0.0500	1.28	1.001
2,3,4,4',6 - PeCB	115	110 + 115	C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117	C85				
2,3,4',5,6 - PeCB	117	85 + 116 + 117	C85				
2,3',4,4',5 - PeCB	118		3.47 JB	0.694	0.0500	1.53	1.001
2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3',4,5,5' - PeCB	120		U		0.0500		
2,3',4,5',6 - PeCB	121		U		0.0500		
2',3,3',4,5 - PeCB	122		U		0.0500		
2',3,4,4',5 - PeCB	123		0.315 KJB	0.063	0.0500	4.92	1.001
2',3,4,5,5' - PeCB	124	107 + 124	C107				
2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125	C86				
3,3',4,4',5 - PeCB	126		0.31 JB	0.062	0.0500	1.34	1.000
3,3',4,5,5' - PeCB	127		U		0.0500		
2,2',3,3',4,4' - HxCB	128	128 + 166	1.315 C KJB	0.263	0.0500	1.43	0.958
2,2',3,3',4,5 - HxCB	129	129 + 138 + 160 + 163	5.9 C JB	1.18	0.0500	1.38	0.929
2,2',3,3',4,5' - HxCB	130		0.415 KJB	0.083	0.0500	1.54	0.913
2,2',3,3',4,6 - HxCB	131		U		0.0500		
2,2',3,3',4,6' - HxCB	132		0.83 JB	0.166	0.0500	1.36	1.174
2,2',3,3',5,5' - HxCB	133		U		0.0500		
2,2',3,3',5,6 - HxCB	134	134 + 143	C U		0.0500		
2,2',3,3',5,6' - HxCB	135	135 + 151 + 154	0.995 C KJB	0.199	0.0500	1.05	1.104
2,2',3,3',6,6' - HxCB	136		0.315 JB	0.063	0.0500	1.06	1.023
2,2',3,4,4',5 - HxCB	137		0.43 JB	0.086	0.0500	1.23	0.918
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
2,2',3,4,4',6 - HxCB	139	139 + 140	C U		0.0500		
2,2',3,4,4',6' - HxCB	140	139 + 140	C139				
2,2',3,4,5,5' - HxCB	141		0.915 KJB	0.183	0.0500	0.98	0.903
2,2',3,4,5,6 - HxCB	142		U		0.0500		
2,2',3,4,5,6' - HxCB	143	134 + 143	C134				
2,2',3,4,5',6 - HxCB	144		U		0.0500		
2,2',3,4,6,6' - HxCB	145		U		0.0500		
2,2',3,4',5,5' - HxCB	146		0.83 JB	0.166	0.0500	1.21	0.884
2,2',3,4',5,6 - HxCB	147	147 + 149	2.085 C JB	0.417	0.0500	1.38	1.133
2,2',3,4',5,6' - HxCB	148		U		0.0500		
2,2',3,4',5',6 - HxCB	149	147 + 149	C147				

15208AD1_1.xls. S2

Approved by: _____ QA/QC Chemist

22-04-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST. SIDNEY. B.C.. CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05
Form 1A

Lab Sample ID: WG15208-101

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_134 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB			5X				
2,2',3,4',6,6' - HxCB	150		U		0.0500		
2,2',3,5,5',6 - HxCB	151	135 + 151 + 154	C135				
2,2',3,5,6,6' - HxCB	152		U		0.0500		
2,2',4,4',5,5' - HxCB	153	153 + 168	4.06 C JB	0.812	0.0500	1.28	0.899
2,2',4,4',5,6' - HxCB	154	135 + 151 + 154	C135				
2,2',4,4',6,6' - HxCB	155		U		0.0500		
2,3,3',4,4',5 - HxCB	156	156 + 157	1.89 C JB	0.378	0.0500	1.29	1.000
2,3,3',4,4',5' - HxCB	157	156 + 157	C156				
2,3,3',4,4',6 - HxCB	158		0.T85 JB	0.157	0.0500	1.30	0.938
2,3,3',4,5,5' - HxCB	159		U		0.0500		
2,3,3',4,5,6 - HxCB	160	129 + 138 + 160 + 163	C129				
2,3,3',4,5',6 - HxCB	161		U		0.0500		
2,3,3',4',5,5' - HxCB	162		U		0.0500		
2,3,3',4',5,6 - HxCB	163	129 + 138 + 160 + 163	C129				
2,3,3',4',5',6 - HxCB	164		0.31 KJB	0.062	0.0500	1.94	0.921
2,3,3',5,5',6 - HxCB	165		U		0.0500		
2,3,4,4',5,6 - HxCB	166	128 + 166	C128				
2,3',4,4',5,5' - HxCB	167		0.575 JB	0.115	0.0500	1.09	1.001
2,3',4,4',5',6 - HxCB	168	153 + 168	C153				
3,3',4,4',5,5' - HxCB	169		U		0.0500		
2,2',3,3',4,4',5 - HpCB	170		1.635 JB	0.327	0.0500	0.90	0.936
2,2',3,3',4,4',6 - HpCB	171	171 + 173	0.575 C JB	0.115	0.0500	1.16	1.163
2,2',3,3',4,5,5' - HpCB	172		0.275 JB	0.055	0.0500	0.89	0.897
2,2',3,3',4,5,6 - HpCB	173	171 + 173	C171				
2,2',3,3',4,5,6' - HpCB	174		0.705 JB	0.141	0.0500	0.98	1.133
2,2',3,3',4,5',6 - HpCB	175		U		0.0500		
2,2',3,3',4,6,6' - HpCB	176		U		0.0500		
2,2',3,3',4',5,6 - HpCB	177		0.71 JB	0.142	0.0500	1.20	1.145
2,2',3,3',5,5',6 - HpCB	178		U		0.0500		
2,2',3,3',5,6,6' - HpCB	179		0.29 JB	0.058	0.0500	1.07	1.010
2,2',3,4,4',5,5' HpCB	180	180 + 193	2.805 C JB	0.561	0.0500	0.95	0.910
2,2',3,4,4',5,6 - HpCB	181		U		0.0500		
2,2',3,4,4',5,6' - HpCB	182		U		0.0500		
2,2',3,4,4',5',6 - HpCB	183	183 + 185	0.805 C JB	0.161	0.0500	0.90	1.127
2,2',3,4,4',6,6' - HpCB	184		U		0.0500		
2,2',3,4,5,5',6 - HpCB	185	183 + 185	C183				
2,2',3,4,5,6,6' - HpCB	186		U		0.0500		
2,2',3,4',5,5',6 - HpCB	187		1.155 JB	0.231	0.0500	1.13	1.110
2,2',3,4',5,6,6' - HpCB	188		U		0.0500		
2,3,3',4,4',5,5' - HpCB	189		0.29 JB	0.058	0.0500	1.04	1.001
2,3,3',4,4',5,6 - HpCB	190		0.395 JB	0.079	0.0500	1.01	0.947
2,3,3',4,4',5',6 - HpCB	191		U		0.0500		
2,3,3',4,5,5',6 - HpCB	192		U		0.0500		

15208AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

22-04-2005
dd-mm-yyyy

0338

AXYS METHOD MLA-010 Rev 05 | CLIENT ID: LAB BLANK
Form 1A
Page 6 of 6 | Project No.. N/A
Lab Sample ID: WG15208-101 | Sample Data Filename: PB5C_134 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	5X LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
PCB							
2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194		0.445 JB	0.089	0.0500	0.81	0.991
2,2',3,3',4,4',5,6 - OcCB	195		U		0.0500		
2,2',3,3',4,4',5,6' - OcCB	196		U		0.0500		
2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	C U		0.0500		
2,2',3,3',4,5,5',6 - OcCB	198	198 + 199	0.705 C KJB	0.141	0.0500	0.75	1.115
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200	197 + 200	C197				
2,2',3,3',4,5',6,6' - OcCB	201		U		0.0500		
2,2',3,3',5,5',6,6' - OcCB	202		0.265 KJB	0.053	0.0500	0.69	1.000
2,2',3,4,4',5,5',6 - OcCB	203		0.415 KJB	0.083	0.0500	1.05	0.920
2,2',3,4,4',5,6,6' - OcCB	204		U		0.0500		
2,3,3',4,4',5,5',6 - OcCB	205		U		0.0500		
2,2',3,3',4,4',5,5',6 - NoCB	206		0.385 JB	0.077	0.0559	0.67	1.000
2,2',3,3',4,4',5,6,6' - NoCB	207		U		0.0500		
2,2',3,3',4,5,5',6,6' - NoCB	208		0.375 JB	0.067	0.0500	0.87	1.001
2,2',3,3',4,4',5,5',6,6' - DeCB	209		0.45 JB	0.090	0.0500	0.66	1.000

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

15208AD1_1.xls, S2 | Approved by: _____ QA/QC Chemist | 22-04-2005 dd-mm-yyyy

0339

CLIENT ID:
LAB BLANK

Form 1A
HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES			Project No.:	N/A
Contract No.:	4033		Lab Sample ID:	WG15208-101
Matrix:	TISSUE		Sample Size:	10.0 g
Sample Receipt Date:	N/A		Initial Calibration Date:	01-Mar-2005
Extraction Date:	02-Mar-2005		Instrument ID:	HR GC/MS
Analysis Date:	13-Mar-2005	Time: 23:45:23	GC Column ID:	SPB-OCTYL
Extract Volume (µL):	20		Blank Data Filename:	PB5C_134 S:5
Injection Volume (µL):	1.0		Cal. Ver. Data Filename:	PB5C_134 S:1
Dilution Factor:	N/A		Sample Datafile(s):	PB5C_134 S:5
Concentration Units :	ng/kg			

PCB HOMOLOGUE GROUP	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT
Total Monochloro Biphenyls		0.313	0.0501
Total Dichloro Biphenyls		1.29	0.129
Total Trichloro Biphenyls		2.03	0.0500
Total Tetrachloro Biphenyls		2.67	0.0500
Total Pentachloro Biphenyls		3.38	0.0500
Total Hexachloro Biphenyls		3.54	0.0500
Total Heptachloro Biphenyls		1.93	0.0500
Total Octachloro Biphenyls		0.089	0.0500
Total Nonachloro Biphenyls		0.144	0.0559
Decachloro Biphenyl		0.090	0.0500
TOTAL PCBs		15.5	

(1) U = Not detected
(2) All header information pertains to the initial instrumental analysis of the sample extract.
Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15208PCBTOTALS_1.xls, S3

Approved by: _____ QA/QC Chemist

26-04-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

LDC #: 13502A3
SDG #: DPW515710

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: AC

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	ICAL	3/1/05	PCB-77 (^{13}C-PCB-77)	0.97	0.97	1.00	1.00	5.93	5.65
			PCB-105 (^{13}C-PCB-105)	0.92	0.92	0.96	0.96	4.95	4.81
			PCB-156 (^{13}C-PCB-156)	0.97	0.97	0.99	0.99	4.98	5.01
			PCB-180 (^{13}C-PCB-180)	0.89	0.89	0.93	0.93	4.59	4.42
2			PCB-77 (^{13}C-PCB-77)						
			PCB-105 (^{13}C-PCB-105)						
			PCB-156 (^{13}C-PCB-156)						
			PCB-180 (^{13}C-PCB-180)						
3			PCB-77 (^{13}C-PC3-77)						
			PCB-105 (^{13}C-PC3-105)						
			PCB-156 (^{13}C-PC3-156)						
			PCB-180 (^{13}C-PC3-180)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13502A3
SDG #: DPW515710

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 2

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF~~Amt~~ (CC)	Recalculated RRF~~Amt~~ (CC)	Reported %D	Recalculated %D
1	PBSC-1365:1	3/13/05	PCB-77 (^{13}C-PCB-77)	0.97	52.0	51.8		
			PCB-105 (^{13}C-PCB-105)	0.92	52.1	52.3		
			PCB-156 (^{13}C-PCB-156)	0.97	102	102		
			PCB-180 (^{13}C-PCB-180)	0.89	51.6	51.3		
2	PBSC-1465:1	3/20/05	PCB-77 (^{13}C-PCB-77)	0.97	50.9	51.0		
			PCB-105 (^{13}C-PCB-105)	0.92	52.8	52.9		
			PCB-156 (^{13}C-PCB-156)	0.97	102	102		
			PCB-180 (^{13}C-PCB-180)	0.89	52.2	52.2		
3	PBSC-1355:1	3/14/05	PCB-77 (^{13}C-PCB-77)	0.97	52.2	52.1		
			PCB-105 (^{13}C-PCB-105)	0.92	52.6	52.7		
			PCB-156 (^{13}C-PCB-156)	0.97	101	101		
			PCB-180 (^{13}C-PCB-180)	0.89	52.1	52.2		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13502A3
SDG #: OPNG15710

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: 0

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: WG15208-10

Compound	Spike Added (ng/ml)		Spiked Sample Concentration (ng/ml)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PCB-77	50	NA	53.3	NA	107	107				
PCB-81			52.8		106	106				
PCB-105			53.6		107	107				
PCB-114			53.8		108	108				
PCB-118			53.6		107	107				
PCB-123			54.0		108	108				
PCB-126			53.2		106	106				
PCB-156 / 157	100		105		105	105				
~~PCB-157~~	~~X~~									
PCB-167	50		52.4		105	105				
PCB-169	V		51.7		103	103				
~~PCB-170~~										
~~PCB-180~~										
PCB-189	50		53.6		107	107				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

Ions Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls

Descriptor	Accurate mass[a]	Ion ID	Analyte	Substance
1	289.9224	M	C12 H6 35Cl4	TCB
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	M	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	[292.9825]	Lock	C7 F11	PFK
2	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB
	359.8415	M+2	C12 H4 35Cl5 37Cl	HxCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HxCB
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HxCB
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB
	393.8025	M+2	C12 H3 35Cl6 37Cl	HpCB
	395.7996	M+4	C12 H3 35Cl5 37Cl2	HpCB
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB
	407.8398	M+4	13C12 H3 35Cl5 37Cl2	HpCB
	[354.9892[	Lock	C9F13	PFK
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCB
	511.7199	M+6	13C12 35Cl9 37Cl3	
	513.7170	M+8	13C12 35Cl8 37Cl4	
	[442.9728]	Lock	C10 F17	PFK

S = internal/recovery standard

H = 1.007825
C = 12.000000
^{13}C = 13.003355
F = 18.9984

^{35}Cl = 34.968853
^{37}Cl = 36.965903

LDC #: 13503A3
SDG #: DPWG15T10

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: R

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1 , PQB77

Conc. = $\frac{(9.37e+08)(2000)(1)}{(1.72e+08)(0.97)(10.06)(\quad)}$

= 1116.5 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13517A3 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/1/05

SDG #: DPWG15741 Level IV Page: 1 of 1

Laboratory: AXYS Analytical Services, Ltd. Reviewer: 9

2nd Reviewer: 1

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/2 - 9/30/04
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20
IV.	Routine calibration	A	%D ≤ 25/35
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	N/A	
VII.	Laboratory control samples	A	LCS
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

MI TISSUES

1	LDW-T4-SS-WB-comp-1 D-R	11	LDW-T2-M-SC-EM-comp-6	21	WG15204-101	31	
2	LDW-M-M-PP-FL-comp-1	12	LDW-T3-M-SC-EM-comp-2	22		32	
3	LDW-M-M-SP-FL-comp-1	13	LDW-T1-M-DC-EM-comp-2	23		33	
4	LDW-T2-C-PS-WB-comp-1	14	LDW-T3-M-DC-EM-comp-1	24		34	
5	LDW-T4-C-PS-WB-comp-1	15	LDW-T4-M-DC-EM-comp-1	25		35	
6	LDW-T4-D-PS-WB-comp-2	16	LDW-M-M-PP-FL-comp-1DUP	26		36	
7	LDW-T4-M-SF-WB-comp-1	17		27		37	
8	LDW-T4-M-SF-FL-comp-1	18		28		38	
9	LDW-T1-M-SC-EB-comp-2	19		29		39	
10	LDW-T2-M-SC-EM-comp-5	20		30		40	

LDC #: 13773
SDG #: DPWG1574

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: M

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ ~~25%~~ 20% for unlabeled standards and < 30% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard > 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning of each 12 hour period?	✓			
Were all percent differences (%D) < ~~40%~~ 35/35 for unlabeled and labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 13577A3
SDG #: JDPNG1524Y

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the ~~25-150%~~ QCD criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks > 10?	✓			
X. Target compound identification				
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13517A3
SDG #: DPW41771

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: A
2nd Reviewer: AC

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 3/2/05 **Blank analysis date:** 3/14/05 **Associated samples:** ALL

Conc. units: pg/L

Compound	Blank ID	Sample Identification								
WF1C	304-101	2	4	5	6	9	10	11	12	
PCB 11	0.709	3.15 U	2.15 U	1.28 U	3.38 U	2.48 U	2.55 U	2.07 U	3.43 U	
PCB 1	0.158					0.686 U	0.780 U		0.695 U	
Total Monochloro Biphenyls	0.158						0.357 U		0.695 U	
others see										
attachment		> 5 X								

CIRCLED RESULTS WERE NOT QUALIFIED ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Form 1A
PCB CONGENER ANALYSIS REPORT

CLIENT ID:
LAB BLANK

Lab Name: AXYS ANALYTICAL SERVICES		**Sample Collection:**	N/A
Contract No.:	4033	**Project No.:**	N/A
Matrix:	TISSUE	**Lab Sample ID:**	WG15204-101
Sample Receipt Date:	N/A	**Sample Size:**	10.0 g
Extraction Date:	02-Mar-2005	**Initial Calibration Date:**	01-Mar-2005
Analysis Date:	14-Mar-2005 **Time:** 13:51:07	**Instrument ID:**	HR GC/MS
Extract Volume (µL):	50	**GC Column ID:**	SPB-OCTYL
Injection Volume (µL):	1.0	**Sample Data Filename:**	PB5C_135 S:7
Dilution Factor:	N/A	**Blank Data Filename:**	PB5C_135 S:7
Concentration Units :	ng/kg	**Cal. Ver. Data Filename:**	PB5C_135 S:1

COMPOUND	IUPAC NO.	CO-ELUTIONS	5X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2 - MoCB	1		0.79	JB	0.158	0.110	2.74	1.001
3 - MoCB	2			U		0.118		
4 - MoCB	3			U		0.131		
2,2' - DiCB	4			U		0.315		
2,3 - DiCB	5			U		0.254		
2,3' - DiCB	6			U		0.221		
2,4 - DiCB	7			U		0.217		
2,4' - DiCB	8		1.525	JB	0.305	0.194	1.78	1.207
2,5 - DiCB	9			U		0.231		
2,6 - DiCB	10			U		0.232		
3,3' - DiCB	11		3.545	JB	0.709	0.262	1.67	0.969
3,4 - DiCB	12	12 + 13		C U		0.237		
3,4' - DiCB	13	12 + 13		C12				
3,5 - DiCB	14			U		0.238		
4,4' - DiCB	15		1.925	JB	0.385	0.314	1.35	1.000
2,2',3 - TriCB	16		1.195	KJB	0.239	0.102	1.25	1.166
2,2',4 - TriCB	17		1.305	JB	0.261	0.103	0.96	1.139
2,2',5 - TriCB	18	18 + 30	2.68	C JB	0.536	0.0843	1.00	1.113
2,2',6 - TriCB	19			U		0.120		
2,3,3' - TriCB	20	20 + 28	7.05	C JB	1.41	0.115	1.11	0.848

15204AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

25-04-2005
dd-mm-yyyy

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AXYS METHOD MLA-010 Rev 05
Form 1A

CLIENT ID: LAB BLANK

Lab Sample ID: WG15204-101

Project No.. N/A

Sample Data Filename: PB5C_135 S:7

COMPOUND	IUPAC NO.	CO-ELUTIONS	5X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4 - TriCB	21	21 + 33	1.755	C JB	0.351	0.107	1.00	0.857
2,3,4' - TriCB	22		1.7	JB	0.340	0.121	0.96	0.872
2,3,5 - TriCB	23			U		0.116		
2,3,6 - TriCB	24			U		0.0713		
2,3',4 - TriCB	25			U		0.0945		
2,3',5 - TriCB	26	26 + 29	1.47	C JB	0.294	0.114	0.94	1.302
2,3',6 - TriCB	27			U		0.0726		
2,4,4' - TriCB	28	20 + 28		C20				
2,4,5 - TriCB	29	26 + 29		C26				
2,4,6 - TriCB	30	18 + 30		C18				
2,4',5 - TriCB	31		4.525	JB	0.905	0.107	0.94	0.836
2,4',6 - TriCB	32		1.07	JB	0.214	0.115	1.19	1.196
2',3,4 - TriCB	33	21 + 33		C21				
2',3,5 - TriCB	34			U		0.122		
3,3',4 - TriCB	35			U		0.133		
3,3',5 - TriCB	36			U		0.120		
3,4,4' - TriCB	37		2.195	JB	0.439	0.128	1.07	1.001
3,4,5 - TriCB	38			U		0.118		
3,4',5 - TriCB	39			U		0.119		
2,2',3,3' - TeCB	40	40 + 41 + 71	1.9	C KJB	0.380	0.117	1.01	1.338
2,2',3,4 - TeCB	41	40 + 41 + 71		C40				
2,2',3,4' - TeCB	42		1.02	KJB	0.204	0.108	0.65	1.313
2,2',3,5 - TeCB	43			U		0.116		
2,2',3,5' - TeCB	44	44 + 47 + 65	5.35	C JB	1.07	0.107	0.75	1.287
2,2',3,6 - TeCB	45	45 + 51		C U		0.118		
2,2',3,6' - TeCB	46			U		0.132		
2,2',4,4' - TeCB	47	44 + 47 + 65		C44				
2,2',4,5 - TeCB	48		0.68	KJB	0.136	0.112	1.15	1.275
2,2',4,5' - TeCB	49	49 + 69	3.95	C JB	0.790	0.0998	0.82	1.261
2,2',4,6 - TeCB	50	50 + 53	0.61	C KJB	0.122	0.116	0.97	1.111
2,2',4,6' - TeCB	51	45 + 51		C45				
2,2',5,5' - TeCB	52		8.5	JB	1.70	0.117	0.85	1.236
2,2',5,6' - TeCB	53	50 + 53		C50				
2,2',6,6' - TeCB	54			U		0.102		
2,3,3',4 - TeCB	55			U		0.216		
2,3,3',4' - TeCB	56		1.765	KJB	0.353	0.219	1.09	0.905
2,3,3',5 - TeCB	57			U		0.211		
2,3,3',5' - TeCB	58			U		0.211		
2,3,3',6 - TeCB	59	59 + 62 + 75		C U		0.0902		
2,3,4,4' - TeCB	60		2.11	JB	0.422	0.212	0.82	0.911
2,3,4,5 - TeCB	61	61 + 70 + 74 + 76	10.45	C JB	2.09	0.201	0.84	0.875
2,3,4,6 - TeCB	62	59 + 62 + 75		C59				
2,3,4',5 - TeCB	63			U		0.208		

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Approved by: _____ QA/QC Chemist

25-04-2005
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AXYS METHOD MLA-010 Rev 05
Form 1A
Page 3 of 6
Lab Sample ID: WG15204-101

CLIENT ID: LAB BLANK
Project No. N/A
Sample Data Filename: PB5C_135 S:7

COMPOUND	IUPAC NO.	CO-ELUTIONS 5X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64	2.15	JB	0.430	0.0849	0.88	1.350
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66	6.75	JB	1.35	0.210	0.67	0.885
2,3',4,5 - TeCB	67		U		0.184		
2,3',4,5' - TeCB	68		U		0.196		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		U		0.198		
2,3',5',6 - TeCB	73		U		0.0935		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		U		0.244		
3,3',4,5 - TeCB	78		U		0.223		
3,3',4,5' - TeCB	79		U		0.178		
3,3',5,5' - TeCB	80		U		0.204		
3,4,4',5 - TeCB	81		U		0.229		
2,2',3,3',4 - PeCB	82		U		0.238		
2,2',3,3',5 - PeCB	83	83 + 99 7.8	C JB	1.56	0.223	1.64	0.886
2,2',3,3',6 - PeCB	84	1.225	JB	0.245	0.239	1.55	1.163
2,2',3,4,4' - PeCB	85	85 + 116 + 117 1.405	C JB	0.281	0.188	1.58	0.919
2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 + 125 5.65	C JB	1.13	0.190	1.52	0.901
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3,4,6 - PeCB	88	88 + 91 1.37	C KJB	0.274	0.210	1.29	1.155
2,2',3,4,6' - PeCB	89		U		0.240		
2,2',3,4',5 - PeCB	90	90 + 101 + 113 11.25	C JB	2.25	0.195	1.78	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB	92	2.55	JB	0.510	0.228	1.61	0.853
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102 5.95	C JB	1.19	0.208	1.54	1.120
2,2',3,5,6' - PeCB	94		U		0.222		
2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102	C93				
2,2',3,6,6' - PeCB	96		U		0.119		
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5',6 - PeCB	103		U		0.197		
2,2',4,6,6' - PeCB	104		U		0.122		
2,3,3',4,4' - PeCB	105	5.75	JB	1.15	0.306	1.77	1.000
2,3,3',4,5 - PeCB	106		U		0.276		

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Approved by: _____ QA/QC Chemist

25-04-2005
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AXYS METHOD MLA-010 Rev 05
Form 1A
Page 4 of 6
Lab Sample ID: WG15204-101

CLIENT ID: LAB BLANK
Project No.: N/A
Sample Data Filename: PB5C_135 S:7

COMPOUND	IUPAC NO.	CO ELUTIONS	5X	LAB FLAG[1]	CONC FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5 - PeCB	107	107 + 124		C U		0.290		
2,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 + 125		C86				
2,3,3',4,6 - PeCB	109			U		0.277		
2,3,3',4',6 - PeCB	110	110 + 115	7.45	C JB	1.49	0.161	1.58	0.925
2,3,3',5,5' - PeCB	111			U		0.170		
2,3,3',5,6 - PeCB	112			U		0.164		
2,3,3',5',6 - PeCB	113	90 + 101 + 113		C90				
2,3,4,4',5 - PeCB	114			U		0.287		
2,3,4,4',6 - PeCB	115	110 + 115		C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117		C85				
2,3,4',5,6 - PeCB	117	85 + 116 + 117		C85				
2,3',4,4',5 - PeCB	118		16.95	JB	3.39	0.286	1.56	1.000
2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 + 125		C86				
2,3',4,5,5' - PeCB	120			U		0.165		
2,3',4,5',6 - PeCB	121			U		0.166		
2',3,3',4,5 - PeCB	122			U		0.303		
2',3,4,4',5 - PeCB	123			U		0.305		
2',3,4,5,5' - PeCB	124	107 + 124		C107				
2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125		C86				
3,3',4,4',5 - PeCB	126			X				
3,3',4,5,5' - PeCB	127			U		0.304		
2,2',3,3',4,4' - HxCB	128	128 + 166	2.69	C KJB	0.538	0.296	1.78	0.958
2,2',3,3',4,5 - HxCB	129	129 + 138 + 160 + 163	18.35	C JB	3.67	0.297	1.20	0.928
2,2',3,3',4,5' - HxCB	130			U		0.391		
2,2',3,3',4,6 - HxCB	131			U		0.344		
2,2',3,3',4,6' - HxCB	132		2.34	KJB	0.468	0.355	0.97	1.174
2,2',3,3',5,5' - HxCB	133			U		0.340		
2,2',3,3',5,6 - HxCB	134	134 + 143		C U		0.347		
2,2',3,3',5,6' - HxCB	135	135 + 151 + 154	4.745	C JB	0.949	0.157	1.18	1.104
2,2',3,3',6,6' - HxCB	136		0.9	JB	0.180	0.125	1.18	1.024
2,2',3,4,4',5 - HxCB	137			U		0.366		
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163		C129				
2,2',3,4,4',6 - HxCB	139	139 + 140		C U		0.317		
2,2',3,4,4',6' - HxCB	140	139 + 140		C139				
2,2',3,4,5,5' - HxCB	141		2.455	KJB	0.491	0.342	0.95	0.903
2,2',3,4,5,6 - HxCB	142			U		0.346		
2,2',3,4,5,6' - HxCB	143	134 + 143		C134				
2,2',3,4,5',6 - HxCB	144			U		0.163		
2,2',3,4,6,6' - HxCB	145			U		0.126		
2,2',3,4',5,5' - HxCB	146		3.09	JB	0.618	0.306	1.11	0.884
2,2',3,4',5,6 - HxCB	147	147 + 149	6.6	C JB	1.32	0.312	1.13	1.133
2,2',3,4',5,6' - HxCB	148			U		0.166		
2,2',3,4',5',6 - HxCB	149	147 + 149		C147				

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Approved by: _____ QA/QC Chemist

25-04-2005
dd-mm-yyyy

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AXYS METHOD MLA-010 Rev 05
Form 1A
Page 5 of 6
Lab Sample ID: WG15204-101

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_135 S:7

COMPOUND	IUPAC NO.	CO ELUTIONS	5X	LAB FLAG[1]	CONC FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,2',3,4',6,6' - HxCB	~~150~~			U		0.118		
2,2',3,5,5',6 - HxCB	151	135 + 151 + 154		C135				
2,2',3,5,6,6' - HxCB	~~152~~			U		0.118		
2,2',4,4',5,5' - HxCB	153	153 + 168	16.5	C JB	3.30	0.259	1.16	0.899
2,2',4,4',5,6' - HxCB	154	135 + 151 + 154		C135				
2,2',4,4',6,6' - HxCB	~~155~~			U		0.114		
2,3,3',4,4',5 - HxCB	156	156 + 157	4.415	C JB	0.883	0.328	1.25	1.000
2,3,3',4,4',5' - HxCB	157	156 + 157		C156				
2,3,3',4,4',6 - HxCB	158		1.945	KJB	0.389	0.254	1.54	0.937
2,3,3',4,5,5' - HxCB	~~159~~			U		0.258		
2,3,3',4,5,6 - HxCB	160	129 + 138 + 160 + 163		C129				
2,3,3',4,5',6 - HxCB	~~161~~			U		0.258		
2,3,3',4',5,5' - HxCB	~~162~~			U		0.258		
2,3,3',4',5,6 - HxCB	163	129 + 138 + 160 + 163		C129				
2,3,3',4',5',6 - HxCB	~~164~~			U		0.263		
2,3,3',5,5',6 - HxCB	~~165~~			U		0.278		
2,3,4,4',5,6 - HxCB	166	128 + 166		C128				
2,3',4,4',5,5' - HxCB	167		1.41	KJB	0.282	0.247	1.73	1.000
2,3',4,4',5',6 - HxCB	168	153 + 168		C153				
3,3',4,4',5,5' - HxCB	169			X				
2,2',3,3',4,4',5 - HpCB	170		3.675	KJB	0.735	0.103	0.81	0.936
2,2',3,3',4,4',6 - HpCB	171	171 + 173	0.87	C KJB	0.174	0.100	0.72	1.164
2,2',3,3',4,5,5' - HpCB	~~172~~			U		0.102		
2,2',3,3',4,5,6 - HpCB	173	171 + 173		C171				
2,2',3,3',4,5,6' - HpCB	174		0.93	KJB	0.186	0.0906	2.20	1.133
2,2',3,3',4,5',6 - HpCB	~~175~~			U		0.0894		
2,2',3,3',4,6,6' - HpCB	~~176~~			U		0.0691		
2,2',3,3',4',5,6 - HpCB	177		1.885	KJB	0.377	0.0985	0.87	1.145
2,2',3,3',5,5',6 - HpCB	178		1.01	JB	0.202	0.0936	0.91	1.085
2,2',3,3',5,6,6' - HpCB	179		0.94	JB	0.188	0.0673	1.16	1.010
2,2',3,4,4',5,5' - HpCB	180	180 + 193	8.4	C JB	1.68	0.0823	0.97	0.910
2,2',3,4,4',5,6 - HpCB	181			U		0.0916		
2,2',3,4,4',5,6' - HpCB	182			U		0.0882		
2,2',3,4,4',5',6 - HpCB	183	183 + 185	2.39	C JB	0.478	0.0890	0.93	1.127
2,2',3,4,4',6,6' - HpCB	184			U		0.0645		
2,2',3,4,5,5',6 - HpCB	185	183 + 185		C183				
2,2',3,4,5,6,6' - HpCB	186			U		0.0695		
2,2',3,4',5,5',6 - HpCB	187		4.295	JB	0.659	0.0811	0.98	1.110
2,2',3,4',5,6,6' - HpCB	188			U		0.0651		
2,3,3',4,4',5,5' - HpCB	189			U		0.118		
2,3,3',4,4',5,6 - HpCB	190		1.065	JB	0.213	0.0815	1.08	0.947
2,3,3',4,4',5',6 - HpCB	191			U		0.0780		
2,3,3',4,5,5',6 - HpCB	192			U		0.0822		

15204AD1_1.xls. S2

Approved by: _____ QA/QC Chemist

25-04-2005
dd-mm-yyyy

0.37 u

Lab Sample ID: WG15204-101

CLIENT ID: LAB BLANK

Project No.: N/A

Sample Data Filename: PB5C_135 S:7

COMPOUND	IUPAC NO.	CO-ELUTIONS	5 X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5,5',6 - HpCB	193	180 + 193		C180				
2,2',3,3',4,4',5,5' - OcCB	194		1.37	KJB	0.274	0.0115	0.68	0.992
2,2',3,3',4,4',5,6 - OcCB	195		0.36	KJB	0.072	0.0125	2.19	0.946
2,2',3,3',4,4',5,6' - OcCB	196		0.705	JB	0.141	0.0116	0.98	0.916
2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	0.415	C KJB	0.083	0.0083	0.52	1.046
2,2',3,3',4,5,5',6 - OcCB	198	198 + 199	1.525	C JB	0.305	0.0116	1.01	1.115
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199		C198				
2,2',3,3',4,5,6,6' - OcCB	200	197 + 200		C197				
2,2',3,3',4,5',6,6' - OcCB	201		0.28	KJB	0.056	0.0084	0.73	1.023
2,2',3,3',5,5',6,6' - OcCB	202		0.445	KJB	0.089	0.0500	1.27	1.000
2,2',3,4,4',5,5',6 - OcCB	203		0.925	KJB	0.185	0.0105	0.60	0.920
2,2',3,4,4',5,6,6' - OcCB	204		0.075	KJB	0.015	0.0085	0.73	1.039
2,3,3',4,4',5,5',6 - OcCB	205		0.345	JB	0.069	0.0500	0.96	1.000
2,2',3,3',4,4',5,5',6 - NoCB	206		1.2	KJB	0.240	0.155	0.45	1.000
2,2',3,3',4,4',5,6,6' - NoCB	207			U		0.116		
2,2',3,3',4,5,5',6,6' - NoCB	208			U		0.124		
2,2',3,3',4,4',5,5',6,6' - DeCB	209		0.635	KJB	0.127	0.0500	0.43	1.001

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

15204AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

25-04-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

CLIENT ID:
LAB BLANK

Form 1A
HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Sample Collection:	N/A	
Lab Name: AXYS ANALYTICAL SERVICES			Project No.:	N/A	
Contract No.:	4033		Lab Sample ID:	WG15204-101	
Matrix:	TISSUE		Sample Size:	10.0	g
Sample Receipt Date:	N/A		Initial Calibration Date:	01-Mar-2005	
Extraction Date:	02-Mar-2005		Instrument ID:	HR GC/MS	
Analysis Date:	14-Mar-2005	Time: 13:51:07	GC Column ID:	SPB-OCTYL	
Extract Volume (µL):	50		Blank Data Filename:	PB5C_135 S:7	
Injection Volume (µL):	1.0		Cal. Ver. Data Filename:	PB5C_135 S:1	
Dilution Factor:	N/A		Sample Datafile(s):	PB5C_135 S:7 DT53_096 S: 5	
Concentration Units :	ng/kg				

PCB HOMOLOGUE GROUP	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT
Total Monochloro Biphenyls	0.79	0.158	0.131
Total Dichloro Biphenyls	7	1.40	0.315
Total Trichloro Biphenyls	23.75	4.75	0.133
Total Tetrachloro Biphenyls	39.2	7.84	0.244
Total Pentachloro Biphenyls	66	13.2	0.358
Total Hexachloro Biphenyls	54.5	10.9	0.391
Total Heptachloro Biphenyls	18.1	3.62	0.118
Total Octachloro Biphenyls	2.575	0.515	0.0500
Total Nonachloro Biphenyls	U		0.155
Decachloro Biphenyl	U		0.0500
TOTAL PCBs	212	42.4	

(1) U = Not detected
(2) All header information pertains to the initial instrumental analysis of the sample extract.
Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15204PCBTOTAL_1.xls, S3

Approved by: _____ QA/QC Chemist

26-04-2005
dd-mm-yyyy

037

LDC #: 13517A3
SDG #: DPW515741

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 2

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	ICAL	3/1/05	PCB-77 (^{13}C-PCB-77)	0.97	0.97	1.00	1.00	5.93	5.65
			PCB-105 (^{13}C-PCB-105)	0.92	0.92	0.96	0.96	4.95	4.81
			PCB-156 (^{13}C-PCB-156)	0.97	0.97	0.99	0.99	4.98	5.01
			PCB-180 (^{13}C-PCB-180)	0.89	0.89	0.93	0.93	4.59	4.42
2	ICAL	4/4/05	PCB-~~77~~ 126 (^{13}C-PCB-~~77~~ 126)	0.99	0.99	1.00	1.00	2.04	1.96
			PCB-~~105~~ 169 (^{13}C-PCB-~~105~~ 169)	1.11	1.11	1.09	1.09	3.12	3.07
			PCB-156 (^{13}C-PCB-156)						
			PCB-180 (^{13}C-PCB-180)						
3			PCB-77 (^{13}C-PCB-77)						
			PCB-105 (^{13}C-PCB-105)						
			PCB-156 (^{13}C-PCB-156)						
			PCB-180 (^{13}C-PCB-180)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13513A3
SDG #: DPW615A1

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = intial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	IDTS3.09T5:1	4/9/05	PCB-~~77~~ 126 (13C-PCB-~~77~~) (26)	0.99	49.5	49.5		
			PCB-~~105~~ 169 (13C-PCB-~~105~~) (169)	1.11	47.7	47.4		
			PCB-156 (13C-PCB-156)					
			PCB-180 (13C-PCB-180)					
2	DBSC1535:1	3/25/05	PCB-77 (13C-PCB-77)	0.97	51.7	51.5		
			PCB-105 (13C-PCB-105)	0.92	49.5	49.5		
			PCB-156 (13C-PCB-156)	0.97	103	103		
			PCB-180 (13C-PCB-180)	0.89	51.5	51.4		
3	DBSC1375:1	3/15/05	PCB-77 (13C-PCB-77)	0.97	52.3	50.4		
			PCB-105 (13C-PCB-105)	0.92	51.4	51.8		
			PCB-156 (13C-PCB-156)	0.97	102	102		
			PCB-180 (13C-PCB-180)	0.89	52.2	50.2		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13517A3
SDG #: DPWF157-1

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: SC

METHOD: HRGC/HRMS Polychlorinatec Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported ~~RRF~~ Ave RRF (CC)	Recalculated ~~RRF~~ Ave RRF (CC)	Reported %D	Recalculated %D
1	DT53_0965:1	4/9/05	PCB-~~77~~ 126 (¹³C-PCB-77) 126)	0.99	49.2	49.3		
			PCB-~~105~~ 169 (¹³C-PCB-~~105~~) 169)	1.11	46.6	46.6		
			PCB-156 (¹³C-PCB-156)					
			PCB-180 (¹³C-PCB-180)					
2	PBSC-152 5:1	3/25/05	PCB-77 (¹³C-PCB-77)	0.97	52.2	52.2		
			PCB-105 (¹³C-PCB-105)	0.92	52.1	52.4		
			PCB-156 (¹³C-PCB-156)	0.97	102	101		
			PCB-180 (¹³C-PCB-180)	0.89	52.4	52.3		
3	PBSC-136 5:1	3/14/05	PCB-77 (¹³C-PCB-77)	0.97	51.4	51.3		
			PCB-105 (¹³C-PCB-105)	0.92	54.0	54.3		
			PCB-156 (¹³C-PCB-156)	0.97	103	103		
			PCB-180 (¹³C-PCB-180)	0.89	52.4	52.3		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13517A3
SDG #: DPW61574 1

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported ~~RRF~~ Aut (CC)	Recalculated ~~RRF~~ Aut (CC)	Reported %D	Recalculated %D
1	D[5210885]1		PCB-~~77~~ 126 (13C-PCB-~~77~~) 126	0.99	47.5	47.6		
			PCB-~~105~~ 169 (13C-PCB-~~105~~) 169	1.11	44.8	44.6		
			PCB-156 (13C-PCB-156)					
			PCB-180 (13C-PCB-180)					
2	PBSC_1351	3/14/05	PCB-77 (13C-PCB-77)	0.97	52.2	52.1		
			PCB-105 (13C-PCB-105)	0.92	52.6	52.7		
			PCB-156 (13C-PCB-156)	0.97	101	101		
			PCB-180 (13C-PCB-180)	0.89	52.1	52.2		
3			PCB-77 (13C-PCB-77)					
			PCB-105 (13C-PCB-105)					
			PCB-156 (13C-PCB-156)					
			PCB-180 (13C-PCB-180)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 18517A3
SDG #: JDPWF1574/

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: AC

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry ccntrol sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: WG15204-102

Compound	Spike Added (ng/mL)		Spiked Sample Concentration (ng/mL)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reportec	Recalculated
PCB-77	50	NA	51.8	NA	104	104				
PCB-81	↓		51.4		103	103				
PCB-105			55.1		110	110				
PCB-114			53.1		106	106				
PCB-118			56.6		113	113				
PCB-123			53.8		108	108				
PCB-126	↓		52.7		105	105				
PCB-156 / 157	100		104		104	104				
~~PCB-157~~										
PCB-167	50		51.8		104	104				
PCB-169	↓		51.2		102	102				
~~PCB-170~~										
~~PCB-180~~										
PCB-189	50		52.6		105	105				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

Ions Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls

Descriptor	Accurate mass[a]	Ion ID	Analyte	Substance
1	289.9224	M	C12 H6 35Cl4	TCB
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	M	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	[292.9825]	Lock	C7 F11	PFK
2	325.8804	M+2	C12 H5 35Cl4 37C	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB
	359.8415	M+2	C12 H4 35Cl5 37Cl	HxCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HxCB
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HxCB
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB
	393.8025	M+2	C12 H3 35Cl6 37Cl	HpCB
	395.7996	M+4	C12 H3 35Cl5 37Cl2	HpCB
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB
	407.8398	M+4	13C12 H3 35Cl5 37Cl2	HpCB
	[354.9892[	Lock	C9F13	PFK
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCB
	511.7199	M+6	13C12 35Cl9 37Cl3	
	513.7170	M+8	13C12 35Cl8 37Cl4	
	[442.9728]	Lock	C10 F17	PFK

S = internal/recovery standard

H = 1.007825
C = 12.000000
^{13}C = 13.003355
F = 18.9984

^{35}Cl = 34.968853
^{37}Cl = 36.965903

LDC #: 13517A3
SDG #: OPW615T4

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: D

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, #CBT7:

Conc. = (1.55e+08)(2000)(1) / (5.60e+07)(0.97)(10.05)( ) = 567.85 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13576A3 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/8/05
SDG #: DPWG15924 Level IV Page: 1 of 1
Laboratory: AXYS Analytical Services, Ltd. Reviewer: 9
2nd Reviewer: K

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/3 - 31/04
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20.
IV.	Routine calibration	A	%D ≤ 25/35.
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	
VII.	Laboratory control samples	A	LCS. CRM
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	SW	
X.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:
M Tissues

1	LDW-T2-E-SS-WB-comp-1	11	LDW-T4-M-DC-HP-comp-1	21	WG15449-101E	31	
2	LDW-T3-E-SS-WB-comp-1	12	LDW-T3-D-PS-WB-comp-1DUP	22	WG15449-101	32	
3	LDW-T3-F-SS-WB-comp-1	13		23		33	
4	LDW-T3-D-PS-WB-comp-1	14		24		34	
5	LDW-T1-M-ES-WB-comp-2	15		25		35	
6	LDW-T1-M-ES-WB-comp-4	16		26		36	
7	LDW-T2-M-ES-WB-comp-3	17		27		37	
8	LDW-T2-M-ES-WB-comp-5	18		28		38	
9	LDW-T3-M-ES-WB-comp-3	19		29		39	
10	LDW-T3-M-DC-HP-comp-1	20		30		40	

LDC #: 13576A3
SDG #: DPWG1592f

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: MV

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ ~~25~~ 20% for unlabeled standards and < 30% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard > 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning of each 12 hour period?	✓			
Were all percent differences (%D) < ~~40%~~ 35 for unlabeled and labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓	✓		
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 13576A3
SDG #: DPWG15924

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: W

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?		✓		
Was the minimum S/N ratio of all internal standard peaks > 10?	✓			
X. Target compound identification				
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13576A3
SDG #: DPW615924

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 4/6/05 **Blank analysis date:** 4/18/05 **Associated samples:** all

Conc. units: pg/L

Compound	Blank ID	Sample Identification								
NG#	449-101	1	2	3	4	5	6	7	8	9
PCB 1	5.43	23.7/U	6.58/U	7.55/U	3.90/U	12.5/U	22.5/U	15.5/U	23.1/U	9.65/U
PCB 11	6.80	31.7/U	8.27/U			7.38/U				
Total Monochloro Biphenyls	8.04	23.7/U	12.8/U	12.7/U	7.42/U	12.5/U	22.5/U	15.5/U	29.1/U	13.4/U
PCB 3	8.04		6.18/U	5.15/U	3.52/U				3.64/U	3.73/U
PCB 12	6.41		12.4/U			14.9/U	28.8/U	14.0/U	26.2/U	14.4/U
PCB 15	22.3				25.7/U	88.5/U				96.2/U

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 13576A3
SDG #: DPWE15924

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 9
2nd Reviewer: AK

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 4/6/05 **Blank analysis date:** 5/18/05 **Associated samples:** All

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
WG	5449-101	10	11							
PCB 1	5.43	8.44 U	8.21 U							
PCB 11	6.82	24.0 U								
Total MonoChloroBiphenyls	8.04	14.9 U	23.1 U							
PCB 3	8.04	6.51 U	10.5 U							
12	6.4									
15	22.3									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Form 1A
PCB CONGENER ANALYSIS REPORT

CLIENT ID:
LAB BLANK

		Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES		Project No.:	N/A
Contract No.:	4033	Lab Sample ID:	WG15449-101 i2
Matrix:	CORN OIL	Sample Size:	2.00 g
Sample Receipt Date:	N/A	Initial Calibration Date:	19-Apr-2005
Extraction Date:	06-Apr-2005	Instrument ID:	HR GC/MS
Analysis Date:	18-May-2005 Time: 23:54:23	GC Column ID:	SPB-OCTYL
Extract Volume (µL):	400	Sample Data Filename:	PB5C_256 S:5
Injection Volume (µL):	1.0	Blank Data Filename:	PB5C_256 S:5
Dilution Factor:	20	Cal. Ver. Data Filename:	PB5C_256 S:1
Concentration Units :	ng/kg		

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2 - MoCB	1	37.15		KD JB	5.43	2.32	2.18	1.000
3 - MoCB	2			UD		2.61		
4 - MoCB	3	40.2		D JB	8.04	2.73	3.53	1.001
2,2' - DiCB	4	ST		D JB	11.4	8.28	1.34	1.000
2,3 - DiCB	5			UD		5.64		
2,3' - DiCB	6			UD		5.30		
2,4 - DiCB	7			UD		5.27		
2,4' - DiCB	8	54		D JB	10.8	4.89	1.71	1.206
2,5 - DiCB	9			UD		5.20		
2,6 - DiCB	10			UD		5.53		
3,3' - DiCB	11	34.1		KD JB	6.82	5.57	0.97	0.969
3,4 - DiCB	12	32.05	12 + 13	C D JB	6.41	5.47	1.69	0.984
3,4' - DiCB	13		12 + 13	C12				
3,5 - DiCB	14			UD		5.40		
4,4' - DiCB	15	111.5		D JB	22.3	6.25	1.42	1.001
2,2',3 - TriCB	16			UD		3.11		
2,2',4 - TriCB	17	21.55		KD JB	4.31	2.56	0.70	1.138
2,2',5 - TriCB	18	21.1	18 + 30	C D JB	4.22	2.11	1.18	1.112
2,2',6 - TriCB	19			UD		2.78		
2,3,3' - TriCB	20	32.8	20 + 28	C KD JB	6.56	4.03	0.88	0.849

15449AD8_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

0294

AXYS METHOD MLA-010 Rev 05
Form 1A

Lab Sample ID: WG15449-101 i2

CLIENT ID: LAB BLANK
Project No.: N/A
Sample Data Filename: PB5C_256 S:5

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4 - TriCB	21		21 + 33	C UD		3.99		
2,3,4' - TriCB	22			UD		4.27		
2,3,5 - TriCB	23			UD		4.25		
2,3,6 - TriCB	24			UD		1.85		
2,3',4 - TriCB	25			UD		3.55		
2,3',5 - TriCB	26	38.45	26 + 29	C KD JB	7.69	4.14	0.88	1.300
2,3',6 - TriCB	27	11.3		KD JB	2.26	1.75	2.01	1.151
2,4,4' - TriCB	28		20 + 28	C20				
2,4,5 - TriCB	29		26 + 29	C26				
2,4,6 - TriCB	30		18 + 30	C18				
2,4',5 - TriCB	31	84.5		D JB	16.9	3.85	1.19	0.838
2,4',6 - TriCB	32	20.35		D JB	4.07	3.91	0.97	1.196
2',3,4 - TriCB	33		21 + 33	C21				
2',3,5 - TriCB	34			UD		4.10		
3,3',4 - TriCB	35			UD		4.49		
3,3',5 - TriCB	36			UD		4.05		
3,4,4' - TriCB	37	25.45		D JB	5.09	4.51	1.15	1.002
3,4,5 - TriCB	38			UD		4.17		
3,4',5 - TriCB	39			UD		3.90		
2,2',3,3' - TeCB	40	24.1	40 + 41 + 71	C D JB	4.82	3.00	0.75	1.336
2,2',3,4 - TeCB	41		40 + 41 + 71	C40				
2,2',3,4' - TeCB	42			UD		3.18		
2,2',3,5 - TeCB	43			UD		3.57		
2,2',3,5' - TeCB	44	66	44 + 47 + 65	C D JB	13.2	2.73	0.77	1.285
2,2',3,6 - TeCB	45		45 + 51	C UD		2.93		
2,2',3,6' - TeCB	46			UD		3.51		
2,2',4,4' - TeCB	47		44 + 47 + 65	C44				
2,2',4,5 - TeCB	48			UD		2.95		
2,2',4,5' - TeCB	49	67.5	49 + 69	C KD JB	13.5	2.58	0.57	1.258
2,2',4,6 - TeCB	50	14.85	50 + 53	C D JB	2.97	2.82	0.73	1.111
2,2',4,6' - TeCB	51		45 + 51	C45				
2,2',5,5' - TeCB	52	83.5		D JB	16.7	2.83	0.68	1.233
2,2',5,6' - TeCB	53		50 + 53	C50				
2,2',6,6' - TeCB	54			UD		2.16		
2,3,3',4 - TeCB	55			UD		4.83		
2,3,3',4' - TeCB	56			UD		4.78		
2,3,3',5 - TeCB	57			UD		4.70		
2,3,3',5' - TeCB	58			UD		4.61		
2,3,3',6 - TeCB	59		59 + 62 + 75	C UD		2.28		
2,3,4,4' - TeCB	60			UD		4.78		
2,3,4,5 - TeCB	61	70.5	61 + 70 + 74 + 76	C D JB	14.1	4.56	0.66	0.876
2,3,4,6 - TeCB	62		59 + 62 + 75	C59				
2,3,4',5 - TeCB	63			UD		4.57		

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Approved by: _____ QA/QC Chemist

26-05-2005
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0295

AXYS METHOD MLA-010 Rev 05 | CLIENT ID: LAB BLANK
Form 1A
Page 3 of 6 | Project No.: N/A
Lab Sample ID: WG15449-101 i2 | Sample Data Filename: PB5C_256 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64		KD JB	2.85	2.24	0.26	1.348
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66		KD JB	10.7	4.60	0.37	0.885
2,3',4,5 - TeCB	67		UD		4.36		
2,3',4,5' - TeCB	68		UD		4.36		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		UD		4.44		
2,3',5',6 - TeCB	73		UD		2.17		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		X				
3,3',4,5 - TeCB	78		UD		4.97		
3,3',4,5' - TeCB	79		UD		4.21		
3,3',5,5' - TeCB	80		UD		4.43		
3,4,4',5 - TeCB	81		X				
2,2',3,3',4 - PeCB	82		UD		4.50		
2,2',3,3',5 - PeCB	83	83 + 99	C D JB	10.9	3.95	1.62	0.886
2,2',3,3',6 - PeCB	84		UD		4.43		
2,2',3,4,4' - PeCB	85	85 + 116 + 117	C UD		3.36		
2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 + 125	C D JB	5.44	3.43	1.71	0.900
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3,4,6 - PeCB	88	88 + 91	C UD		3.81		
2,2',3,4,6' - PeCB	89		UD		4.11		
2,2',3,4',5 - PeCB	90	90 + 101 + 113	C D JB	15.9	3.48	1.35	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB	92		D JB	4.88	3.99	1.33	0.854
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	C D JB	9.79	3.70	1.56	1.119
2,2',3,5,6' - PeCB	94		UD		4.00		
2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102	C93				
2,2',3,6,6' - PeCB	96		UD		2.74		
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5',6 - PeCB	103		UD		3.44		
2,2',4,6,6' - PeCB	104		UD		2.68		
2,3,3',4,4' - PeCB	105		KD JB	5.61	4.65	2.05	1.001
2,3,3',4,5 - PeCB	106		UD		4.56		

15449AD8_1.xls, S2 | Approved by: _____ QA/QC Chemist | 0296 | 26-05-2005 dd-mm-yyyy

AXYS METHOD MLA-010 Rev 05
Form 1A
Page 4 of 6
Lab Sample ID: WG15449-101 i2

CLIENT ID: LAB BLANK
Project No.: N/A
Sample Data Filename: PB5C_256 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND RATIO	RRT
	5X						
2,3,3',4',5 - PeCB	107	107 + 124	C UD		4.53		
2,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3,3',4,6 - PeCB	109		UD		4.17		
2,3,3',4',6 - PeCB	110	110 + 115	C D JB	12.2	2.96	1.67	0.926
2,3,3',5,5' - PeCB	111		UD		2.97		
2,3,3',5,6 - PeCB	112		UD		3.07		
2,3,3',5',6 - PeCB	113	90 + 101 + 113	C90				
2,3,4,4',5 - PeCB	114		UD		4.52		
2,3,4,4',6 - PeCB	115	110 + 115	C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117	C85				
2,3,4',5,6 - PeCB	117	85 + 116 + 117	C85				
2,3',4,4',5 - PeCB	118		D JB	16.8	4.35	1.60	1.001
2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3',4,5,5' - PeCB	120		UD		2.90		
2,3',4,5',6 - PeCB	121		UD		2.89		
2',3,3',4,5 - PeCB	122		UD		4.79		
2',3,4,4',5 - PeCB	123		UD		4.67		
2',3,4,5,5' - PeCB	124	107 + 124	C107				
2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125	C86				
3,3',4,4',5 - PeCB	126		X				
3,3',4,5,5' - PeCB	127		UD		4.57		
2,2',3,3',4,4' - HxCB	128	128 + 166	C UD		4.52		
2,2',3,3',4,5 - HxCB	129	129 + 138 + 160 + 163	C KD JB	15.9	4.39	0.95	0.929
2,2',3,3',4,5' - HxCB	130		UD		5.57		
2,2',3,3',4,6 - HxCB	131		UD		5.11		
2,2',3,3',4,6' - HxCB	132		UD		5.25		
2,2',3,3',5,5' - HxCB	133		UD		4.98		
2,2',3,3',5,6 - HxCB	134	134 + 143	C UD		5.08		
2,2',3,3',5,6' - HxCB	135	135 + 151 + 154	C UD		1.75		
2,2',3,3',6,6' - HxCB	136		KD JB	3.11	1.35	0.98	1.024
2,2',3,4,4',5 - HxCB	137		UD		5.15		
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
2,2',3,4,4',6 - HxCB	139	139 + 140	C UD		4.60		
2,2',3,4,4',6' - HxCB	140	139 + 140	C139				
2,2',3,4,5,5' - HxCB	141		UD		4.91		
2,2',3,4,5,6 - HxCB	142		UD		5.20		
2,2',3,4,5,6' - HxCB	143	134 + 143	C134				
2,2',3,4,5',6 - HxCB	144		UD		1.82		
2,2',3,4,6,6' - HxCB	145		UD		1.37		
2,2',3,4',5,5' - HxCB	146		UD		4.63		
2,2',3,4',5,6 - HxCB	147	147 + 149	C KD JB	9.53	4.55	1.71	1.132
2,2',3,4',5,6' - HxCB	148		UD		1.82		
2,2',3,4',5',6 - HxCB	149	147 + 149	C147				

15449AD8_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

0297

AXYS METHOD MLA-010 Rev 05
Form 1A
Page 5 of 6
Lab Sample ID: WG15449-101 i2

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_256 S:5

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,2',3,4',6,6' - HxCB	150			UD		1.30		
2,2',3,5,5',6 - HxCB	151		135 + 151 + 154	C135				
2,2',3,5,6,6' - HxCB	152			UD		1.28		
2,2',4,4',5,5' - HxCB	153	101	153 + 168	C KD JB	20.2	3.91	0.94	0.899
2,2',4,4',5,6' - HxCB	154		135 + 151 + 154	C135				
2,2',4,4',6,6' - HxCB	155			UD		1.19		
2,3,3',4,4',5 - HxCB	156	26.75	156 + 157	C KD JB	5.35	4.97	0.98	1.000
2,3,3',4,4',5' - HxCB	157		156 + 157	C156				
2,3,3',4,4',6 - HxCB	158			UD		3.62		
2,3,3',4,5,5' - HxCB	159			UD		3.80		
2,3,3',4,5,6 - HxCB	160		129 + 138 + 160 + 163	C129				
2,3,3',4,5',6 - HxCB	161			UD		3.63		
2,3,3',4',5,5' - HxCB	162			UD		3.79		
2,3,3',4',5,6 - HxCB	163		129 + 138 + 160 + 163	C129				
2,3,3',4',5',6 - HxCB	164			UD		3.81		
2,3,3',5,5',6 - HxCB	165			UD		4.02		
2,3,4,4',5,6 - HxCB	166		128 + 166	C128				
2,3',4,4',5,5' - HxCB	167			UD		3.67		
2,3',4,4',5',6 - HxCB	168		153 + 168	C153				
3,3',4,4',5,5' - HxCB	169			X				
2,2',3,3',4,4',5 - HpCB	170	32.3		KD JB	6.46	0.187	0.71	0.936
2,2',3,3',4,4',6 - HpCB	171	13.35	171 + 173	C KD JB	2.67	0.177	0.47	1.162
2,2',3,3',4,5,5' - HpCB	172	1.595		KD JB	0.319	0.179	2.64	0.897
2,2',3,3',4,5,6 - HpCB	173		171 + 173	C171				
2,2',3,3',4,5,6' - HpCB	174	9.25		KD JB	1.85	0.163	1.27	1.133
2,2',3,3',4,5',6 - HpCB	175	3.74		KD JB	0.748	0.155	1.59	1.101
2,2',3,3',4,6,6' - HpCB	176	3.985		D JB	0.797	0.117	1.10	1.035
2,2',3,3',4',5,6 - HpCB	177	10.75		KD JB	2.15	0.175	0.11	1.145
2,2',3,3',5,5',6 - HpCB	178			UD		0.162		
2,2',3,3',5,6,6' - HpCB	179	5.00		D JB	1.00	0.113	1.00	1.010
2,2',3,4,4',5,5' - HpCB	180		180 + 193	C UD		0.147		
2,2',3,4,4',5,6 - HpCB	181	1.89		KD JB	0.378	0.159	0.64	1.155
2,2',3,4,4',5,6' - HpCB	182	7.15		KD JB	1.43	0.160	4.92	1.115
2,2',3,4,4',5',6 - HpCB	183	1.99	183 + 185	C KD JB	3.98	0.156	0.88	1.126
2,2',3,4,4',6,6' - HpCB	184	3.445		KD JB	0.689	0.109	0.65	1.025
2,2',3,4,5,5',6 - HpCB	185		183 + 185	C183				
2,2',3,4,5,6,6' - HpCB	186	1.435		KD JB	0.287	0.119	37.73	1.047
2,2',3,4',5,5',6 - HpCB	187	50.5		KD JB	10.1	0.148	0.78	1.110
2,2',3,4',5,6,6' - HpCB	188	1.98		KD JB	0.396	0.117	0.38	1.000
2,3,3',4,4',5,5' - HpCB	189	1.82		KD JB	0.364	0.169	3.86	1.001
2,3,3',4,4',5,6 - HpCB	190	6.15		KD JB	1.23	0.142	9.68	0.947
2,3,3',4,4',5',6 - HpCB	191	7.4		KD JB	1.48	0.136	0.72	0.918
2,3,3',4,5,5',6 - HpCB	192	2.5		KD JB	0.500	0.141	0.51	0.904

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Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

AXYS METHOD MLA-010 Rev 05
Form 1A
Page 6 of 6
Lab Sample ID: WG15449-101 i2

CLIENT ID: LAB BLANK
Project No.. N/A
Sample Data Filename: PB5C_256 S:5

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5,5',6 - HpCB	193		180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194	13.95		KD JB	2.79	0.200	0.75	0.992
2,2',3,3',4,4',5,6 - OcCB	195	9.75		KD JB	1.95	0.223	1.41	0.946
2,2',3,3',4,4',5,6' - OcCB	196			UD		0.258		
2,2',3,3',4,4',6,6' - OcCB	197		197 + 200	C UD		0.172		
2,2',3,3',4,5,5',6 - OcCB	198	3.59	198 + 199	C KD JB	0.718	0.253	1.86	1.112
2,2',3,3',4,5,5',6' - OcCB	199		198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200		197 + 200	C197				
2,2',3,3',4,5',6,6' - OcCB	201	2.155		KD JB	0.431	0.171	2.19	1.023
2,2',3,3',5,5',6,6' - OcCB	202			UD		0.190		
2,2',3,4,4',5,5',6 - OcCB	203	11.4		D JB	2.28	0.233	0.99	0.920
2,2',3,4,4',5,6,6' - OcCB	204	0.985		KD JB	0.197	0.175	2.92	1.038
2,3,3',4,4',5,5',6 - OcCB	205	2.84		KD JB	0.568	0.159	3.73	1.001
2,2',3,3',4,4',5,5',6 - NoCB	206			UD		10.5		
2,2',3,3',4,4',5,6,6' - NoCB	207			UD		9.05		
2,2',3,3',4,5,5',6,6' - NoCB	208			UD		9.62		
2,2',3,3',4,4',5,5',6,6' - DeCB	209	3.195		KD JB	0.639	0.137	1.09	0.999

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

15449AD8_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

CLIENT ID:
LAB BLANK

Form 1A
HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Sample Collection:	N/A	
Lab Name: AXYS ANALYTICAL SERVICES			Project No.:	N/A	
Contract No.:	4033		Lab Sample ID:	WG15449-101 i2	
Matrix:	CORN OIL		Sample Size:	2.00	g
Sample Receipt Date:	N/A		Initial Calibration Date:	19-Apr-2005	
Extraction Date:	06-Apr-2005		Instrument ID:	HR GC/MS	
Analysis Date:	18-May-2005	Time: 23:54:23	GC Column ID:	SPB-OCTYL	
Extract Volume (µL):	400		Blank Data Filename:	PB5C_256 S:5	
Injection Volume (µL):	1.0		Cal. Ver. Data Filename:	PB5C_256 S:1	
Dilution Factor:	20		Sample Datafile(s):	**PB5C_256 S:5** **DT53_107A S: 4**	
Concentration Units :	ng/kg				

PCB HOMOLOGUE GROUP	LAB FLAG[1]	5X CONC. FOUND	DETECTION LIMIT
Total Monochloro Biphenyls		40.2 8.04	2.73
Total Dichloro Biphenyls		255 51.0	8.28
Total Trichloro Biphenyls		151.5 30.3	4.51
Total Tetrachloro Biphenyls		258.5 51.7	0.469
Total Pentachloro Biphenyls		379.5 75.9	0.697
Total Hexachloro Biphenyls	U		0.904
Total Heptachloro Biphenyls		9 1.80	0.187
Total Octachloro Biphenyls		11.4 2.28	0.258
Total Nonachloro Biphenyls	U		10.5
Decachloro Biphenyl	U		0.137
TOTAL PCBs		1105 221	

(1) U = Not detected
(2) All header information pertains to the initial instrumental analysis of the sample extract.
Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15449PCBTOTAL_1.xls, S3

Approved by: Ken Shorn QA/QC Chemist

26-05-2005
dd-mm-yyyy

0304

LDC #: 13576A3
SDG #: DW15924

VALIDATION FINDINGS WORKSHEET
Internal Standards

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Are all internal standard recoveries were within the 25-150% criteria?

Y (N) N/A Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit: 25-150%)	Qualifications
		4	13PCB126	156 (25-150)	Y/UJ / P(PCB126)
				( )	
		12(DUP)	13PCB126	18T ( )	No Qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Internal Standards	Check Standard Used		Internal Standards	Check Standard Used
A.	^{13}C-3,3',4,4'-TetraCB		K.	^{13}C-2,4,4'-TriCB	
B.	^{13}C-2,3',4,4',5-PentaCB		L.		
C.	^{13}C-3,3',4,4',5-PentaCB		M.		
D.	^{13}C-3,3',4,4',5,5'-HexaCB		N.		
E.	^{13}C-2,2',3,4,4',5,5'-HeptaCB		O.		
F.	^{13}C-2,2',3,3',4,4',5,5'-OCB		P.		
G.	^{13}C-DCB		Q.		
H.	^{13}C-4-CB		R.		
I.	^{13}C-4,4'-DCB		T		

LDC #: 13576A3
SDG #: DPW615924

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: K

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
$\%RSD = 100 * (S/X)$

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	ICAL	4/19/05	PCB-77 (^{13}C-PCB-77)	0.94	0.94	0.92	0.92	7.45	7.32
			PCB-105 (^{13}C-PCB-105)	0.88	0.88	0.90	0.90	2.64	2.91
			PCB-156 (^{13}C-PCB-156)	0.94	0.94	0.97	0.97	4.31	4.11
			PCB-180 (^{13}C-PCB-180)	0.87	0.87	0.88	0.88	3.41	3.41
2	ICAL	4/9/05	PCB-77 (^{13}C-PCB-77)	0.91	0.91	0.88	0.88	9.21	9.24
			PCB-105 (^{13}C-PCB-105)	0.89	0.89	0.87	0.87	8.00	8.03
			PCB-156 (^{13}C-PCB-156)	0.94	0.94	0.95	0.95	4.76	4.86
			PCB-180 (^{13}C-PCB-180)	0.85	0.85	0.84	0.84	8.88	9.06
3	ICAL	4/~~7~~4/05	PCB-77 (^{13}C-PC3-77)	1.03	1.03	1.06	1.06	3.14	3.32
			PCB-105 (^{13}C-PC3-105)						
			PCB-156 (^{13}C-PC3-156)						
			PCB-180 (^{13}C-PC3-180)						

Comments: Refer to Initial Calibration findings worksheet for lis: of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576A3
SDG #: JPW615924

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 4
Reviewer: 9
2nd Reviewer: K

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	PBSC-565:1 4/19	5/18/05	PCB-77 (^{13}C-PCB-77)	0.94	50.0	49.7		
			PCB-105 (^{13}C-PCB-105)	0.88	50.4	50.5		
			PCB-156 (^{13}C-PCB-156)	0.94	102	102		
			PCB-180 (^{13}C-PCB-180)	0.87	50.9	50.9		
2	PBSC-1945:1 4/9	4/17/05	PCB-77 (^{13}C-PCB-77)	0.91	47.5	47.5		
			PCB-105 (^{13}C-PCB-105)	0.89	46.8	46.5		
			PCB-156 (^{13}C-PCB-156)	0.94	99.7	100		
			PCB-180 (^{13}C-PCB-180)	0.85	47.3	47.5		
3	PBSC-2265:1	5/4/05	PCB-77 (^{13}C-PCB-77)	0.94	51.8	51.5		
			PCB-105 (^{13}C-PCB-105)	0.88	52.5	52.6		
			PCB-156 (^{13}C-PCB-156)	0.94	104	105		
			PCB-180 (^{13}C-PCB-180)	0.87	50.3	50.2		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576A3
SDG #: JPW5 1597

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 2 of 4
Reviewer: 4
2nd Reviewer: K

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF ~~Amt~~ (CC)	Recalculated RRF ~~Amt~~ (CC)	Reported %D	Recalculated %D
1	~~PBSC_255~~ (4/21/05)	5/18/05	PCB-77 (^{13}C-PCB-77)	0.94	50.3	50.1		
			PCB-105 (^{13}C-PCB-105)	0.88	50.7	50.7		
			PCB-156 (^{13}C-PCB-156)	0.94	101	101		
			PCB-180 (^{13}C-PCB-180)	0.87	50.7	50.7		
2	JT53_107AS	4/15/05	PCB-77 (^{13}C-PCB-77)	1.03	50.3	50.4		
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					
3	PBSC_195 (4/9/)	4/17/05	PCB-77 (^{13}C-PCB-77)	0.91	48.7	48.8		
			PCB-105 (^{13}C-FCB-105)	0.89	46.6	46.4		
			PCB-156 (^{13}C-FCB-156)	0.94	101	101		
			PCB-180 (^{13}C-FCB-180)	0.85	47.7	48.0		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576A3
SDG #: JPNE159-4

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 4
2nd Reviewer: AC

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported ~~RRF~~ Awt (CC)	Recalculated ~~RRF~~ Awt (CC)	Reported %D	Recalculated %D
1	PBSC-202 S1 (4/19)	4/22/05	PCB-77 (^{13}C-PCB-77)	0.94	51.3	51.0		
			PCB-105 (^{13}C-PCB-105)	0.88	50.2	50.3		
			PCB-156 (^{13}C-PCB-156)	0.94	103	103		
			PCB-180 (^{13}C-PCB-180)	0.87	49.6	~~46~~ 49.6		
2	PBSC-254 S1 (4/19)	5/18/05	PCB-77 (^{13}C-PCB-77)	0.94	50.7	50.3		
			PCB-105 (^{13}C-PCB-105)	0.88	51.1	51.1		
			PCB-156 (^{13}C-PCB-156)	0.94	101	102		
			PCB-180 (^{13}C-PCB-180)	0.87	50.0	50.1		
3	DT53108BS1	4/16/05	PCB-77 (^{13}C-PCB-77)	1.03	47.6	47.9		
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results

LDC #: 13576A3
SDG #: DPWG15924

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 9
2nd Reviewer: 9

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RFF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported ~~RRF~~ (CC)	Recalculated ~~RRF~~ (CC)	Reported %D	Recalculated %D
1	PBSC-222AS 4/19	5/2/05	PCB-77 (^{13}C-PCB-77)	0.94	52.2	51.8		
			PCB-105 (^{13}C-PCB-105)	0.88	52.5	52.6		
			PCB-156 (^{13}C-PCB-156)	0.94	105	105		
			PCB-180 (^{13}C-PCB-180)	0.87	50.1	50.0		
2	PBSC-226S:1 4/19	5/4/05	PCB-77 (^{13}C-PCB-77)					
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					
3			PCB-77 (^{13}C-PCB-77)					
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576A3
SDG #: DPWG1592 4

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: 0

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: _____

Compound	Spike Added (ng/mL)		Spiked Sample Concentration (ng/mL)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PCB-77	100	NA	102	NA	102	102				
PCB-81	↓	↓	102		102	102				
PCB-105	100	NA	104		104	104				
PCB-114			106		106	106				
PCB-118			105		105	105				
PCB-123			104		104	104				
PCB-126	100		90.5		90.5	90.5				
PCB-156/157	200		203		101	101				
~~PCB-157~~										
PCB-167	100	NA	103		103	103				
PCB-169	100	NA	98.0		98.0	98.0				
~~PCB-170~~										
~~PCB-180~~										
PCB-189	100	NA	102		102	102				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and asscciated samples when reported results do nct agree within 10.0% of the recalculated results.

Ions Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls

Descriptor	Accurate mass[a]	Ion ID	Analyte	Substance
1	289.9224	M	C12 H6 35Cl4	TCB
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	M	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	[292.9825]	Lock	C7 F11	PFK
2	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB
	359.8415	M+2	C12 H4 35Cl5 37Cl	HxCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HxCB
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HxCB
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB
	393.8025	M+2	C12 H3 35Cl6 37Cl	HpCB
	395.7996	M+4	C12 H3 35Cl5 37Cl2	HpCB
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB
	407.8398	M+4	13C12 H3 35Cl5 37Cl2	HpCB
	[354.9892]	Lock	C9F13	PFK
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCB
	511.7199	M+6	13C12 35Cl9 37Cl3	
	513.7170	M+8	13C12 35Cl8 37Cl4	
	[442.9728]	Lock	C10 F17	PFK

S = internal/recovery stardard

H = 1.007825
C = 12.000000
^{13}C = 13.003355
F = 18.9984

^{35}Cl = 34.968853
^{37}Cl = 36.965903

LDC #: 18526A3
SDG #: DPW315924

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, PAB10S

Conc. = $\frac{(3.60E+08)(8000)(\quad 1 \quad)}{(7.02E+08)(0.88)(2.39)(\quad)}$

= 195062.9 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13576B3 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/8/05
SDG #: DPWG15926 Level IV Page: 1 of 1
Laboratory: AXYS Analytical Services, Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/2 - 31/05
II.	~~GC/MS~~ HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20
IV.	Routine calibration	A	%D ≤ 25/35
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates /DUP	N/A	
VII.	Laboratory control samples	A	LCS, CRM
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	SW	
X.	Target compound identifications	A SW	5, PCB-1 not reported
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:
MTissues

1	LDW-T1-F-SS-WB-comp-1	11	LDW-T4-M-ES-WB-comp-1	21	WG154540-10	31	
2	LDW-T2-B-SS-WB-comp-1	12	LDW-T1-M-SC-HP-comp-1	22		32	
3	LDW-T3-C-SS-WB-comp-1	13	LDW-T2-M-SC-HP-comp-2	23		33	
4	LDW-T3-E-PS-WB-comp-1	14	LDW-T1-M-ES-FL-comp-2DUP	24		34	
5	LDW-T1-M-ES-FL-comp-1	15		25		35	
6	LDW-T1-M-ES-FL-comp-2	16		26		36	
7	LDW-T2-M-ES-FL-comp-1	17		27		37	
8	LDW-T2-M-ES-FL-comp-2	18		28		38	
9	LDW-T3-M-ES-FL-comp-2	19		29		39	
10	LDW-T3-M-ES-WB-comp-2	20		30		40	

LDC #: 13576B3
SDG #: DPW6159-76

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: VC

Method: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ ~~25%~~ 20% for unlabeled standards and < 30% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard > 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning of each 12 hour period?	✓			
Were all percent differences (%D) < ~~40%~~ 35% for unlabeled and labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 13576B3
SDG #: DPW515976

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?		✓		
Was the minimum S/N ratio of all internal standard peaks > 10?	✓			
X. Target compound identification				
For polychlorinated biphenyl congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For polychlorinated biphenyl congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For other polychlorinated biphenyl congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard > 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓	✓		
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 13576B3
SDG #: DPWG159Z6

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: A
2nd Reviewer: AK

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 4/14/05 **Blank analysis date:** 4/24/05 **Associated samples:** All

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
WF1C450-10		1	2	3	4	5	6	7	8	9
PCB 1	2.57	7.02/U	7.34/U		7.38/U		8.80/U	9.38/U		9.45/U
2	2.75	2.62/U	4.04/U	13.2/U	3.33/U	8.43/U	2.76/U	2.74/U	3.70/U	2.46/U
3	5.70	5.21/U	5.88/U		7.31/U	20.5/U	5.03/U	4.07/U	6.73/U	4.53/U
23	2.45	5.28/U	3.50/U			10.7/U	10.1/U	9.58/U		6.84/U
Total Mono-Nona Biphenyls	5.31	7.83/U	17.3/U		18.0/U		16.6/U	16.2/U	24.0/U	16.4/U
PCB 104	1.00		4.66/U							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 13576B3
SDG #: DPWG159-6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: a
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 4/14/05 **Blank analysis date:** 4/24/05 **Associated samples:** MA

Conc. units: pg/g

Compound	Blank ID	Sample Identification								
WG	15450-10	10	11	12	13					
PCB 1	2.5T	10.5/U	10.2/U	4.58/U	5.76/U					
2	2.75	2.96/U	2.42/U	3.24/U	4.39/U					
3	5.70	5.63/U	4.39/U	7.36/U	7.38/U					
23	2.45									
Total Monochloro Biphenyls	5.31	19.0/U	17.0/U	15.2/U	17.4/U					
PCB 104	1.00				3.88/U					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the methoc blank concentration were qualified as not detected, "U".

Form 1A
PCB CONGENER ANALYSIS REPORT

CLIENT ID:
LAB BLANK

		Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES		Project Number:	N/A
Contract No.:	4033	Lab Sample ID:	WG15450-101
Matrix:	TISSUE	Sample Size:	2.00 g
Sample Receipt Date:	N/A	Initial Calibration Date:	19-Apr-2005
Extraction Date:	14-Apr-2005	Instrument ID:	HR GC/MS
Analysis Date:	24-Apr-2005 Time: 23:33:51	GC Column ID:	SPB-OCTYL
Extract Volume (µL):	400	Sample Data Filename:	PB5C_208 S:5
Injection Volume (µL):	1.0	Blank Data Filename:	PB5C_208 S:5
Dilution Factor:	20	Cal. Ver. Data Filename:	PB5C_208 S:1
Concentration Units :	ng/kg		

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2 - MoCB	1	12.85		D JB	2.57	1.43	2.78	1.001
3 - MoCB	2	13.75		D JB	2.75	1.54	2.95	0.988
4 - MoCB	3	28.5		KD JB	5.70	1.72	5.58	1.000
2,2' - DiCB	4			UD		9.84		
2,3 - DiCB	5			UD		7.45		
2,3' - DiCB	6			UD		7.23		
2,4 - DiCB	7			UD		7.14		
2,4' - DiCB	8			UD		6.71		
2,5 - DiCB	9			UD		7.01		
2,6 - DiCB	10			UD		7.21		
3,3' - DiCB	11			UD		7.70		
3,4 - DiCB	12		12 + 13	C UD		7.46		
3,4' - DiCB	13		12 + 13	C12				
3,5 - DiCB	14			UD		7.17		
4,4' - DiCB	15			UD		8.63		
2,2',3 - TriCB	16			UD		1.52		
2,2',4 - TriCB	17	13.95		KD JB	2.79	1.33	2.02	1.138
2,2',5 - TriCB	18	12.9	18 + 30	C KD JB	2.56	1.13	1.94	1.114
2,2',6 - TriCB	19			UD		1.48		
2,3,3' - TriCB	20	24.6	20 + 28	C D JB	4.92	0.781	0.89	0.848

15450AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

0213

24-05-2005
dd-mm-yyyy

AXYS METHOD MLA-010 Rev 05
Form 1A

Lab Sample ID: WG15450-101

CLIENT ID: LAB BLANK
Project Number: N/A
Sample Data Filename: PB5C_208 S:5

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4 - TriCB	21	10.0	21 + 33	C D JB	2.00	0.790	1.18	0.857
2,3,4' - TriCB	22	8.1		D JB	1.62	0.824	1.06	0.872
2,3,5 - TriCB	23	12.25		D JB	2.45	0.827	0.94	1.273
2,3,6 - TriCB	24			UD		0.987		
2,3',4 - TriCB	25			UD		0.736		
2,3',5 - TriCB	26	6.45	26 + 29	C D JB	1.29	0.772	1.13	1.300
2,3',6 - TriCB	27			UD		0.945		
2,4,4' - TriCB	28		20 + 28	C20				
2,4,5 - TriCB	29		26 + 29	C26				
2,4,6 - TriCB	30		18 + 30	C18				
2,4',5 - TriCB	31	14.35		D JB	2.87	0.780	1.15	0.837
2,4',6 - TriCB	32	4.35		D JB	0.870	0.840	1.09	1.195
2',3,4 - TriCB	33		21 + 33	C21				
2',3,5 - TriCB	34			UD		0.836		
3,3',4 - TriCB	35			UD		0.924		
3,3',5 - TriCB	36	3.835		KD JB	0.767	0.735	0.48	0.930
3,4,4' - TriCB	37	20.85		D JB	4.17	0.788	0.90	1.001
3,4,5 - TriCB	38			UD		0.803		
3,4',5 - TriCB	39			UD		0.808		
2,2',3,3' - TeCB	40		40 + 41 + 71	C UD		2.28		
2,2',3,4 - TeCB	41		40 + 41 + 71	C40				
2,2',3,4' - TeCB	42			UD		2.36		
2,2',3,5 - TeCB	43			UD		2.47		
2,2',3,5' - TeCB	44	37.5	44 + 47 + 65	C KD JB	7.50	2.05	0.53	1.286
2,2',3,6 - TeCB	45		45 + 51	C UD		2.18		
2,2',3,6' - TeCB	46			UD		2.58		
2,2',4,4' - TeCB	47		44 + 47 + 65	C44				
2,2',4,5 - TeCB	48			UD		2.20		
2,2',4,5' - TeCB	49		49 + 69	C UD		1.90		
2,2',4,6 - TeCB	50		50 + 53	C UD		2.11		
2,2',4,6' - TeCB	51		45 + 51	C45				
2,2',5,5' - TeCB	52	29.45		KD JB	5.89	2.18	0.53	1.235
2,2',5,6' - TeCB	53		50 + 53	C50				
2,2',6,6' - TeCB	54			UD		1.70		
2,3,3',4 - TeCB	55			UD		4.87		
2,3,3',4' - TeCB	56			UD		4.83		
2,3,3',5 - TeCB	57			UD		4.75		
2,3,3',5' - TeCB	58			UD		4.60		
2,3,3',6 - TeCB	59		59 + 62 + 75	C UD		1.66		
2,3,4,4' - TeCB	60			UD		4.75		
2,3,4,5 - TeCB	61	47.95	61 + 70 + 74 + 70	C D JD	9.59	4.57	0.72	0.876
2,3,4,6 - TeCB	62		59 + 62 + 75	C59				
2,3,4',5 - TeCB	63			UD		4.51		

15450AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

24-05-2005
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0214

AXYS METHOD MLA-010 Rev 05
Form 1A

Lab Sample ID: WG15450-101

CLIENT ID: LAB BLANK
Project Number: N/A
Sample Data Filename: PB5C_208 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,4',6 - TeCB	64		UD		1.58		
2,3,5,6 - TeCB	65	44 + 47 + 65	C44				
2,3',4,4' - TeCB	66		UD		4.47		
2,3',4,5 - TeCB	67		UD		4.28		
2,3',4,5' - TeCB	68		UD		4.20		
2,3',4,6 - TeCB	69	49 + 69	C49				
2,3',4',5 - TeCB	70	61 + 70 + 74 + 76	C61				
2,3',4',6 - TeCB	71	40 + 41 + 71	C40				
2,3',5,5' - TeCB	72		UD		4.54		
2,3',5',6 - TeCB	73		UD		1.55		
2,4,4',5 - TeCB	74	61 + 70 + 74 + 76	C61				
2,4,4',6 - TeCB	75	59 + 62 + 75	C59				
2',3,4,5 - TeCB	76	61 + 70 + 74 + 76	C61				
3,3',4,4' - TeCB	77		X				
3,3',4,5 - TeCB	78		UD		4.69		
3,3',4,5' - TeCB	79		UD		3.96		
3,3',5,5' - TeCB	80		UD		4.02		
3,4,4',5 - TeCB	81		X				
2,2',3,3',4 - PeCB	82		UD		1.89		
2,2',3,3',5 - PeCB	83	83 + 99	C D JB	6.13	1.58	1.44	0.887
2,2',3,3',6 - PeCB	84		UD		1.70		
2,2',3,4,4' - PeCB	85	85 + 116 + 117	C D JB	2.76	1.33	1.45	0.920
2,2',3,4,5 - PeCB	86	86 + 87 + 97 + 108 + 119 + 125	C D JB	7.89	1.42	1.72	0.902
2,2',3,4,5' - PeCB	87	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3,4,6 - PeCB	88	88 + 91	C UD		1.52		
2,2',3,4,6' - PeCB	89		UD		1.65		
2,2',3,4',5 - PeCB	90	90 + 101 + 113	C D JB	10.2	1.42	1.34	0.870
2,2',3,4',6 - PeCB	91	88 + 91	C88				
2,2',3,5,5' - PeCB	92		D JB	2.55	1.55	1.48	0.853
2,2',3,5,6 - PeCB	93	93 + 95 + 98 + 100 + 102	C UD		1.50		
2,2',3,5,6' - PeCB	94		UD		1.58		
2,2',3,5',6 - PeCB	95	93 + 95 + 98 + 100 + 102	C93				
2,2',3,6,6' - PeCB	96		KD JB	0.326	0.263	0.79	1.012
2,2',3',4,5 - PeCB	97	86 + 87 + 97 + 108 + 119 + 125	C86				
2,2',3',4,6 - PeCB	98	93 + 95 + 98 + 100 + 102	C93				
2,2',4,4',5 - PeCB	99	83 + 99	C83				
2,2',4,4',6 - PeCB	100	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5,5' - PeCB	101	90 + 101 + 113	C90				
2,2',4,5,6' - PeCB	102	93 + 95 + 98 + 100 + 102	C93				
2,2',4,5',6 - PeCB	103		UD		1.35		
2,2',4,6,6' - PeCB	104		KD JB	1.00	0.275	1.17	1.000
2,3,3',4,4' - PeCB	105		D JB	5.51	1.65	1.50	1.000
2,3,3',4,5 - PeCB	106		UD		1.43		

15450AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

AXYS ANALYTICAL SERVICES LTD P.O. BOX 2219, 2045 MILLS RD. WEST, SIDNEY, B.C., CANADA V8L 3S8 TEL (250) 655-5800 FAX (250) 655-5811

AXYS METHOD MLA-010 Rev 05
Form 1A
Page 4 of 6
Lab Sample ID: WG15450-101

CLIENT ID: LAB BLANK
Project Number: N/A
Sample Data Filename: PB5C_208 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
	5X						
2,3,3',4',5 - PeCB	107 17.95	107 + 124	C D JB	3.59	1.72	1.38	0.991
2,3,3',4,5' - PeCB	108	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3,3',4,6 - PeCB	109		UD		1.32		
2,3,3',4',6 - PeCB	110 39.45	110 + 115	C D JB	7.89	1.22	1.50	0.925
2,3,3',5,5' - PeCB	111		UD		1.24		
2,3,3',5,6 - PeCB	112		UD		1.21		
2,3,3',5',6 - PeCB	113	90 + 101 + 113	C90				
2,3,4,4',5 - PeCB	114 18.45		D JB	3.69	1.60	1.34	1.000
2,3,4,4',6 - PeCB	115	110 + 115	C110				
2,3,4,5,6 - PeCB	116	85 + 116 + 117	C85				
2,3,4',5,6 - PeCB	117	85 + 116 + 117	C85				
2,3',4,4',5 - PeCB	118 49.2		D JB	9.84	1.45	1.60	1.000
2,3',4,4',6 - PeCB	119	86 + 87 + 97 + 108 + 119 + 125	C86				
2,3',4,5,5' - PeCB	120		UD		1.21		
2,3',4,5',6 - PeCB	121		UD		1.18		
2',3,3',4,5 - PeCB	122		UD		1.73		
2',3,4,4',5 - PeCB	123		X				
2',3,4,5,5' - PeCB	124	107 + 124	C107				
2',3,4,5,6' - PeCB	125	86 + 87 + 97 + 108 + 119 + 125	C86				
3,3',4,4',5 - PeCB	126		X				
3,3',4,5,5' - PeCB	127		UD		1.60		
2,2',3,3',4,4' - HxCB	128 19.2	128 + 166	C D JB	3.84	2.08	1.12	0.959
2,2',3,3',4,5 - HxCB	129 63	129 + 138 + 160 + 163	C D JB	12.6	2.03	1.13	0.929
2,2',3,3',4,5' - HxCB	130		UD		2.41		
2,2',3,3',4,6 - HxCB	131		UD		2.25		
2,2',3,3',4,6' - HxCB	132		UD		2.29		
2,2',3,3',5,5' - HxCB	133		UD		2.18		
2,2',3,3',5,6 - HxCB	134	134 + 143	C UD		2.42		
2,2',3,3',5,6' - HxCB	135 11.55	135 + 151 + 154	C D JB	2.31	0.340	1.14	1.104
2,2',3,3',6,6' - HxCB	136		UD		0.260		
2,2',3,4,4',5 - HxCB	137		UD		2.30		
2,2',3,4,4',5' - HxCB	138	129 + 138 + 160 + 163	C129				
2,2',3,4,4',6 - HxCB	139	139 + 140	C UD		1.89		
2,2',3,4,4',6' - HxCB	140	139 + 140	C139				
2,2',3,4,5,5' - HxCB	141		UD		2.32		
2,2',3,4,5,6 - HxCB	142		UD		2.27		
2,2',3,4,5,6' - HxCB	143	134 + 143	C134				
2,2',3,4,5',6 - HxCB	144		UD		0.345		
2,2',3,4,6,6' - HxCB	145 1.78		D JB	0.356	0.278	1.41	1.037
2,2',3,4',5,5' - HxCB	146 11.2		KD JB	2.24	2.02	0.55	0.885
2,2',3,4',5,6 - HxCB	147 40.1	147 + 149	C D JB	8.02	2.14	1.37	1.132
2,2',3,4',5,6' - HxCB	148		UD		0.358		
2,2',3,4',5',6 - HxCB	149	147 + 149	C147				

15450AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

0216

AXYS METHOD MLA-010 Rev 05 | CLIENT ID: LAB BLANK
Form 1A
Page 5 of 6 | Project Number: N/A
Lab Sample ID: WG15450-101 | Sample Data Filename: PB5C_208 S:5

COMPOUND	IUPAC NO.	5X	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,2',3,4',6,6' - HxCB	150			UD		0.255		
2,2',3,5,5',6 - HxCB	151		135 + 151 + 154	C135				
2,2',3,5,6,6' - HxCB	152			UD		0.254		
2,2',4,4',5,5' - HxCB	153	5T	153 + 168	C KD JB	11.4	1.74	1.03	0.899
2,2',4,4',5,6' - HxCB	154		135 + 151 + 154	C135				
2,2',4,4',6,6' - HxCB	155			UD		0.250		
2,3,3',4,4',5 - HxCB	156	41.5	156 + 157	C D JB	8.30	2.56	1.08	1.000
2,3,3',4,4',5' - HxCB	157		156 + 157	C156				
2,3,3',4,4',6 - HxCB	158	9.1		D JB	1.82	1.64	1.41	0.938
2,3,3',4,5,5' - HxCB	159			UD		1.85		
2,3,3',4,5,6 - HxCB	160		129 + 138 + 160 + 163	C129				
2,3,3',4,5',6 - HxCB	161			UD		1.74		
2,3,3',4',5,5' - HxCB	162			UD		1.81		
2,3,3',4',5,6 - HxCB	163		129 + 138 + 160 + 163	C129				
2,3,3',4',5',6 - HxCB	164			UD		1.83		
2,3,3',5,5',6 - HxCB	165			UD		1.80		
2,3,4,4',5,6 - HxCB	166		128 + 166	C128				
2,3',4,4',5,5' - HxCB	167	21.1		D JB	4.22	1.86	1.20	1.001
2,3',4,4',5',6 - HxCB	168		153 + 168	C153				
3,3',4,4',5,5' - HxCB	169			X				
2,2',3,3',4,4',5 - HpCB	170	19.45		D JB	3.89	0.436	0.90	0.936
2,2',3,3',4,4',6 - HpCB	171	5.3	171 + 173	C KD JB	1.06	0.412	2.31	1.161
2,2',3,3',4,5,5' - HpCB	172	10.25		D JB	2.05	0.436	0.95	0.898
2,2',3,3',4,5,6 - HpCB	173		171 + 173	C171				
2,2',3,3',4,5,6' - HpCB	174			UD		0.380		
2,2',3,3',4,5',6 - HpCB	175			UD		0.354		
2,2',3,3',4,6,6' - HpCB	176			UD		0.266		
2,2',3,3',4',5,6 - HpCB	177	11.8		D JB	2.36	0.394	1.01	1.145
2,2',3,3',5,5',6 - HpCB	178	4.12		KD JB	0.824	0.357	2.36	1.086
2,2',3,3',5,6,6' - HpCB	179	6.65		KD JB	1.33	0.259	1.25	1.009
2,2',3,4,4',5,5' - HpCB	180	50.5	180 + 193	C D JB	10.1	0.354	0.98	0.911
2,2',3,4,4',5,6 - HpCB	181			UD		0.392		
2,2',3,4,4',5,6' - HpCB	182	9.0		D JB	1.80	0.378	1.06	1.115
2,2',3,4,4',5',6 - HpCB	183		183 + 185	C UD		0.370		
2,2',3,4,4',6,6' - HpCB	184	4.65		KD JB	0.930	0.250	3.58	1.025
2,2',3,4,5,5',6 - HpCB	185		183 + 185	C183				
2,2',3,4,5,6,6' - HpCB	186	2.455		D JB	0.491	0.277	1.08	1.047
2,2',3,4',5,5',6 - HpCB	187	29.4		D JB	5.88	0.338	1.13	1.109
2,2',3,4',5,6,6' - HpCB	188	10.2		D JB	2.04	0.268	0.93	1.000
2,3,3',4,4',5,5' - HpCB	189	22.2		D JB	4.44	0.267	1.15	1.000
2,3,3',4,4',5,6 - HpCB	190	11.1		KD JB	2.22	0.325	4.45	0.947
2,3,3',4,4',5',6 - HpCB	191	7.3		KD JB	1.46	0.326	2.84	0.919
2,3,3',4,5,5',6 - HpCB	192	3.52		KD JB	0.704	0.344	0.38	0.903

15450AD1_1.xls, S2

Approved by: _____ QA/QC Chemist

26-05-2005
dd-mm-yyyy

- 0217

AXYS METHOD MLA-010 Rev 05 | CLIENT ID: LAB BLANK
Form 1A
Page 6 of 6 | Project Number: N/A
Lab Sample ID: WG15450-101 | Sample Data Filename: PB5C_208 S:5

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
2,3,3',4',5,5',6 - HpCB	193	180 + 193	C180				
2,2',3,3',4,4',5,5' - OcCB	194		UD		0.366		
2,2',3,3',4,4',5,6 - OcCB	195		UD		0.430		
2,2',3,3',4,4',5,6' - OcCB	196		KD JB	0.940	0.589	2.15	0.917
2,2',3,3',4,4',6,6' - OcCB	197	197 + 200	C KD JB	0.563	0.456	1.85	1.046
2,2',3,3',4,5,5',6 - OcCB	198	198 + 199	C KD JB	0.979	0.599	12.31	1.112
2,2',3,3',4,5,5',6' - OcCB	199	198 + 199	C198				
2,2',3,3',4,5,6,6' - OcCB	200	197 + 200	C197				
2,2',3,3',4,5',6,6' - OcCB	201		KD JB	1.08	0.455	0.60	1.023
2,2',3,3',5,5',6,6' - OcCB	202		KD JB	1.52	0.480	1.11	1.001
2,2',3,4,4',5,5',6 - OcCB	203		UD		0.540		
2,2',3,4,4',5,6,6' - OcCB	204		UD		0.458		
2,3,3',4,4',5,5',6 - OcCB	205		UD		0.322		
2,2',3,3',4,4',5,5',6 - NoCB	206		UD		16.1		
2,2',3,3',4,4',5,6,6' - NoCB	207		UD		14.0		
2,2',3,3',4,5,5',6,6' - NoCB	208		UD		15.8		
2,2',3,3',4,4',5,5',6,6' - DeCB	209		D JB	3.60	0.434	0.66	1.000

(1) C = co-eluting congener; U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

15450AD1_1.xls, S2 | Approved by: _____ QA/QC Chemist | 0218 | 24-05-2005 dd-mm-yyyy

AXYS METHOD MLA-010 Rev 05
1668A-DB1-S2_D1
Page 1 of 1

Form 1A
PCB CONGENER ANALYSIS REPORT

CLIENT ID:
LAB BLANK

		Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES		**Project No.:**	N/A
Contract No.:	4033	**Lab Sample ID:**	WG15450-101
Matrix:	TISSUE	**Sample Size:**	2.00 g
Sample Receipt Date:	N/A	**Initial Calibration Date:**	04-Apr-2005
Extraction Date:	14-Apr-2005	**Instrument ID:**	HR GC/MS
Analysis Date:	22-Apr-2005 **Time:** 1:14:02	**GC Column ID:**	DB-1
Extract Volume (µL):	20	**Sample Datafile:**	**DT53_113 S: 5**
Injection Volume (µL):	2.0	**Blank Data Filename:**	DT53_113 S: 5
Dilution Factor:	N/A	**Cal. Ver. Data Filename:**	DT53_113 S: 1
Concentration Units :	ng/kg		

COMPOUND	IUPAC NO.	CO-ELUTIONS	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT	ION ABUND. RATIO	RRT
		5X					
3,3',4,4' - TeCB	77	2.9	JB	0.580	0.250	0.88	1.001
3,4,4',5 - TeCB	81		U		0.250		
2,3,3',4,4' - PeCB	105						
2,3,4,4',5 - PeCB	114						
2,3',4,4',5 - PeCB	118						
2',3,4,4',5 - PeCB	123	1.4T	JB	0.294	0.250	1.53	1.001
3,3',4,4',5 - PeCB	126	1.38	JB	0.276	0.250	1.40	1.001
2,3,3',4,4',5 - HxCB	156						
2,3,3',4,4',5' - HxCB	157						
2,3',4,4',5,5' - HxCB	167						
3,3',4,4',5,5' - HxCB	169		U		0.428		
2,2',3,3',4,4',5 - HpCB	170						
2,2',3,4,4',5,5' - HpCB	180						
2,3,3',4,4',5,5' - HpCB	189						

(1) U = not detected; K = peak detected, but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; E = exceeds calibrated linear range, see dilution data; D = dilution data; Z = compound not requested; J = concentration less than LMCL; B = analyte found in sample and the associated blank; X = results reported separately

These pages are part of a larger report that may contain information necessary for full data evaluation.

15450cAD1_1.xls, S2

Approved by: _____ QA/QC Chemist

24-05-2005
dd-mm-yyyy

0221

CLIENT ID:
LAB BLANK

Form 1A
HOMOLOGUE TOTAL POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS REPORT

			Sample Collection:	N/A
Lab Name: AXYS ANALYTICAL SERVICES			Project Number:	N/A
Contract No.:	4033		Lab Sample ID:	WG15450-101
Matrix:	TISSUE		Sample Size:	2.00 g
Sample Receipt Date:	N/A		Initial Calibration Date:	19-Apr-2005
Extraction Date:	14-Apr-2005		Instrument ID:	HR GC/MS
Analysis Date:	24-Apr-2005	Time: 23:33:51	GC Column ID:	SPB-OCTYL DB-1
Extract Volume (µL):	400		Blank Data Filename:	PB5C_208 S:5
Injection Volume (µL):	1.0		Cal. Ver. Data Filename:	PB5C_208 S:1
Dilution Factor:	20		Sample Datafile(s):	**PB5C_208 S:5** **DT53_113 S: 5**
Concentration Units :	ng/kg			

PCB HOMOLOGUE GROUP	5X	LAB FLAG[1]	CONC. FOUND	DETECTION LIMIT
Total Monochloro Biphenyls	26.55		5.31	1.72
Total Dichloro Biphenyls		U		9.84
Total Trichloro Biphenyls	101		20.2	1.52
Total Tetrachloro Biphenyls	51		10.2	0.250
Total Pentachloro Biphenyls	303		60.6	0.250
Total Hexachloro Biphenyls	207		41.4	0.428
Total Heptachloro Biphenyls	165.5		33.1	0.436
Total Octachloro Biphenyls		U		0.599
Total Nonachloro Biphenyls		U		16.1
Decachloro Biphenyl	18		3.60	0.434
TOTAL PCBs			174	

(1) U = Not detected
(2) All header information pertains to the initial instrumental analysis of the sample extract.
Additional sample datafiles listed refer to secondary analysis of the sample extract.

These pages are part of a larger report that may contain information necessary for full data evaluation.

15450PCBTOTAL_1.xls. S3

Approved by: _____ QA/QC Chemist

25-05-2005
dd-mm-yyyy

0223

LDC #: 13ST6B3
SDG #: DPW615926

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: Q
2nd Reviewer: X

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Are all internal standard recoveries were within the 25-150% criteria?

Y N N/A Was the S/N ratio all internal standard peaks ≥ 10?

#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit: 25-150%)	Qualifications
		5	~~13PCB1~~	~~ND~~ Not quantifiable ( )	~~J/UJ/P~~ (PCB1)
			13PCB3	10.0 (25-150)	J/UJ/P
			13PCB4	13.6 (↓)	↓
			13PCB1 *	4.5 (25-150)	~~J/UJ/P~~ P-SR
				( )	
				( )	(PCB 2 → 14)
				( )	
				( )	
				( )	
				( )	
			* PCB-1 was not reported	( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Internal Standards	Check Standard Used		Internal Standards	Check Standard Used
A.	^{13}C-3,3',4,4'-TetraCB		K.	^{13}C-2,4,4'-TriCB	
B.	^{13}C-2,3',4,4',5-PentaCB		L.		
C.	^{13}C-3,3',4,4',5-PentaCB		M.		
D.	^{13}C-3,3',4,4',5,5'-HexaCB		N.		
E.	^{13}C-2,2',3,4,4',5,5'-HeptaCB		O.		
F.	^{13}C-2,2',3,3',4,4',5,5'-OCB		P.		
G.	^{13}C-DCB		Q.		
H.	^{13}C-4-CB		R.		
I.	^{13}C-4,4'-DCB		T		

LDC #: 135763
SDG #: DPWF159-4

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: 2

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 668)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
$\%RSD = 100 * (S/X)$

A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	1CALC	4/19/05	PCB-77 (^{13}C-PCB-77)	0.94	0.94	0.92	0.92	7.45	7.32
			PCB-105 (^{13}C-PCB-105)	0.88	0.88	0.90	0.90	2.64	2.91
			PCB-156 (^{13}C-PCB-156)	0.94	0.94	0.97	0.97	4.31	4.11
			PCB-180 (^{13}C-PCB-180)	0.87	0.87	0.88	0.88	3.41	3.41
2	1CALC	4/4/05	PCB-77 (^{13}C-PCB-77)	1.03	1.03	1.06	1.06	3.14	3.32
			PCB-105 (^{13}C-PCB-105)						
			PCB-156 (^{13}C-PCB-156)						
			PCB-180 (^{13}C-PCB-180)						
3			PCB-77 (^{13}C-PCB-77)						
			PCB-105 (^{13}C-PCB-105)						
			PCB-156 (^{13}C-PCB-156)						
			PCB-180 (^{13}C-PCB-180)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13976B3
SDG #: DPWF1592G

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	PBSC-2085 4/19	4/25/05	PCB-77 (^{13}C-PCB-77)	0.94	48.0	47.9		
			PCB-105 (^{13}C-PCB-105)	0.88	49.5	49.4		
			PCB-156 (^{13}C-PCB-156)	0.94	105	105		
			PCB-180 (^{13}C-PCB-180)	0.87	49.0	48.9		
2	DT53_1135:1	4/27/05	PCB-77 (^{13}C-PCB-77)	1.03	53.5	53.6		
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					
3	PBSC-2095:1	4/25/05	PCB-77 (^{13}C-PCB-77)	0.94	49.2	49.0		
			PCB-105 (^{13}C-PCB-105)	0.88	48.2	48.2		
			PCB-156 (^{13}C-PCB-156)	0.94	102	103		
			PCB-180 (^{13}C-PCB-180)	0.87	47.3	47.3		

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576B3
SDG #: DPW615936

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Page: 1 of 1
Reviewer: a
2nd Reviewer: a

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Methoc 1668)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	DT53_1145	4/22/05	PCB-77 (^{13}C-PCB-77)	1.03	54.3	54.2		
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					
2	PBSC_2105	4/26/05	PCB-77 (^{13}C-PCB-77)	0.94	48.7	48.6		
			PCB-105 (^{13}C-PCB-105)	0.88	48.5	48.8		
			PCB-156 (^{13}C-PCB-156)	0.94	102	102		
			PCB-180 (^{13}C-PCB-180)	0.87	48.6	48.6		
3	DT53_1495	5/15/05	PCB-77 (^{13}C-PCB-77)	1.03	43.8	43.8		
			PCB-105 (^{13}C-PCB-105)					
			PCB-156 (^{13}C-PCB-156)					
			PCB-180 (^{13}C-PCB-180)					

Comments: Refer to Routine Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13576B3
SDG #: DPWG159Z6

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: WG15450-102

Compound	Spike Added (ng/mL)		Spiked Sample Concentration (ng/mL)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PCB-77	100	NA	96.8	NA	96.8	96.8				
PCB-81	↓	↓	98.0	↓	98.0	98.0				
PCB-105			95.8		95.8	95.8				
PCB-114			95.3		95.3	95.3				
PCB-118			96.3		96.3	96.3				
PCB-123			98.4		98.4	98.4				
PCB-126			97.3		97.3	97.3				
PCB-156/157	200		211		105	105				
~~PCB-157~~	~~100~~		~~104~~		~~104~~					
PCB-167	100		104		104	104				
PCB-169	↓		107		107	107				
~~PCB-170~~										
~~PCB-180~~										
PCB-189	100	↓	98.9	↓	98.9	98.9				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and asscciated samples when reported results do not agree within 10.0% of the recalculated results.

Ions Monitored for HRGC/HRMS Analysis of Polychlorinated Biphenyls

Descriptor	Accurate mass[a]	Ion ID	Analyte	Substance
1	289.9224	M	C12 H6 35Cl4	TCB
	291.9194	M+2	C12 H6 35Cl3 37Cl4	TCB
	301.9626	M	13C12 H6 35Cl4	PeCB
	303.9597	M+2	13C12 H6 35Cl3 37Cl	PeCB
	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	|292.9825]	Lock	C7 F11	PFK
2	325.8804	M+2	C12 H5 35Cl4 37Cl	PeCB
	327.8775	M+4	C12 H5 35Cl3 37Cl2	PeCB
	337.9207	M+2	13C12 H5 35Cl4 37Cl	PeCB
	339.9178	M+4	13C12 H5 35Cl3 37Cl2	PeCB
	359.8415	M+2	C12 H4 35Cl5 37Cl	HxCB
	361.8385	M+4	C12 H4 35Cl4 37Cl2	HxCB
	371.8817	M+2	13C12 H4 35Cl5 37Cl	HxCB
	373.8788	M+4	13C12 H4 35Cl4 37Cl2	HxCB
	393.8025	M+2	C12 H3 35Cl6 37Cl	HpCB
	395.7996	M+4	C12 H3 35Cl5 37Cl2	HpCB
	405.8428	M+2	13C12 H3 35Cl6 37Cl	HpCB
	407.8398	M+4	13C12 H3 35Cl5 37Cl2	HpCB
	[354.9892[	Lock	C9F13	PFK
3	509.7229	M+4	13C12 35Cl10 37Cl2	DCB
	511.7199	M+6	13C12 35Cl9 37Cl3	
	513.7170	M+8	13C12 35Cl8 37Cl4	
	[442.9728]	Lock	C10 F17	PFK

S = internal/recovery standard

H = 1.007825
C = 12.000000
^{13}C = 13.003355
F = 18.9984

^{35}Cl = 34.968853
^{37}Cl = 36.965903

LDC #: 35763B3
SDG #: DPW615936

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: 1

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in millilters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, PCBTT:

Conc. = $\frac{(4.26e+08)(4000)(1)}{(4.33e+08)(1.03)(2.19)(\quad)}$

= 1744.6 ng/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification