Science Applications International Corporation

June 5, 2009

Russ McMillan
Washington State Department of Ecology
300 Desmond Drive
Lacey, WA 98503

Subject: Re-Analysis of PCB Aroclors in Archived Tissue Sample – Sediment Investigation in Port Gardner, Everett, WA

Dear Mr. McMillan:

In 2008, the Washington State Department of Ecology (Ecology) conducted a study in the Port Gardner/Snohomish River estuary to identify potential areas of sediment contamination and confirm the priority areas for cleanup in the Bay and surrounding area. Ecology designed this study to provide information on the overall quality of sediments, determine the general nature and extent of sediment contamination, and help develop protective cleanup levels. The findings of this investigation were released in a report in April 2009 (SAIC 2009).

As part of the study, English sole specimens in Port Gardner were collected for tissue residue analysis of bioaccumulative chemicals of concern (metals, polychlorinated biphenyls [PCB] Aroclors, and dioxin/furan congeners). A single replicate sample of English sole from trawling location A2-T1 (mouth of the Snohomish River) was found to contain Aroclor 1221 at a concentration of 330 µg/kg wet weight (ww). Aroclor 1221 was not measured in any surface sediment collected and analyzed in Port Gardner. Therefore, Ecology requested that this English sole tissue sample be reanalyzed for PCB Aroclors to confirm these results. This Technical Memorandum summarizes the results of this reanalysis.

Tissue Sample Description

Archived samples from the Port Gardner Sediment Investigation are maintained at Analytical Resources, Inc., Tukwila, WA. The archived English sole tissue sample PG-A2-T1-ES-A was removed from archive on May 11, 2009, and reanalyzed for PCB Aroclors. The English sole sample was originally collected on October 8, 2008, and comprised of five fish. The whole bodies of each fish were homogenized separately. Equal volumes from each fish homogenate were combined to make a final composite sample for analysis. Extraction of the sample occurred on May 14, 2009, and analysis was conducted on May 20, 2009. A duplicate analysis was also conducted.

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
Phone: (425)485-5800 • Fax: (425)487-1491 • www.saic.com

QA/QC Summary

A Quality Assurance Level 1 (QA1) review was conducted to evaluate the precision and accuracy of the sample analysis (Enclosure 1). The tissue sample was extracted and analyzed within the recommended holding time for frozen samples. The method blank was clean at the reporting limits. The Laboratory Control Sample (LCS) percent recoveries were within control limits, the surrogate percent recoveries were within control limits, and the matrix spike percent recoveries were also within advisory control limits. The data are considered acceptable, as qualified.

Results

The original and reanalysis results for PCB Aroclors for tissue sample PG-A2-T1-ES-A are presented in Table 1. PCB Aroclors were not detected in the reanalysis and duplicate reanalysis. The laboratory data report is provided in Enclosure 2. Aroclor 1221 was not detected in Port Gardner sediments and under the original analysis, the reported concentration of Aroclor 1221 was qualified as "tentatively identified." The reanalysis results suggest that Aroclor 1221 is not present in English sole tissues in Port Gardner.

References

SAIC. 2009. Sediment Characterization Study in Port Gardner and Lower Snohomish Estuary, Port Gardner, WA. Final Data Report. April 21, 2009. Prepared for the Washington State Department of Ecology, Lacey, WA. Prepared by Science Applications International Corporation, Bothell, WA.

SAIC appreciates the opportunity to support Ecology's efforts in Port Gardner. Please contact me if you have questions regarding this Technical Memorandum.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

John S. Nakayama
Senior Oceanographer
Environmental Sciences Division

cc: Doug Pearman, SAIC
Denise Kilpatrick, SAIC
Will Hafner, SAIC

Enclosures 1 & 2

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Table 1: PCB Aroclor results for English sole sample PG-A2-T1-ES-A.

Parameter	Original Analysis			Reanalysis			Reanalysis Duplicate		
Analysis Date	**9/9/2008**	**LQ**	**VQ**	**5/20/2009**	**LQ**	**VQ**	**5/20/2009**	**LQ**	**VQ**
Lipid (%)	3.27			3.27			3.27		
PCBs in ug/kg WW									
Aroclor-1221	330	P	NJ	20	U		20	U	
Aroclor-1232	6.5	U	U	20	U		20	U	
Aroclor-1242	6.5	U	U	20	U		20	U	
Aroclor-1016	6.5	U	U	20	U		20	U	
Aroclor-1248	6.5	U	U	20	U		20	U	
Aroclor-1254	6.5	U	U	20	U		20	U	
Aroclor-1260	6.5	U	U	20	U		20	U	
Aroclor-1262	6.5	U	U	20	U		20	U	
Aroclor-1268	6.5	U	U	20	U		20	U	
Total PCBs	330	P	NJ	20	U		20	U	

Data Validation Qualifiers

U The compound was analyzed for, but was not detected at or above the method detection limit
P The analyte was detected on both columns, but values differed by >40% with no chromatographic interference
NJ The analysis indicated the presence of a “tentatively identified” analyte. Reported value is approximate.

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Enclosure 1

QA1 Review Checklist

CHECKLIST FOR PESTICIDES AND PCB COMPOUNDS IN SEDIMENT

Project Name Sediment Characterization Study in Port Gardner

SAIC Project No. 01-0236-00-6928-500

Lab Analytical Resources, Inc. .

Lab # OY53

Responsible Technician Pradeep Divvela, Project Chemist

Reviewed by John Nakayama Date checklist prepared 6/3/09

Date: Sampled 8/8/08

Received by lab 8/21/08

Analysis began PCB Extraction: 05/14/09 PCB Analysis: 05/20/09

Problems noted (e.g., deviations from prescribed methods, analytical problems)

PCBs: On May 11, 2009, SAIC requested that one tissue sample (PG-A2-T1-ES-A) be removed from archive and reanalyzed for PCB Aroclors. Aroclor 1221 was measured in this tissue sample previously, but was not corroborated by concentrations in sediments. The sample was extracted and analyzed within recommended holding times for frozen samples.

All required documents submitted?[a] (Y/N) Yes

Analytical method SW 8082

COMPLETENESS AND HOLDING CONDITIONS

	# Samples Submitted	# Samples Analyzed
Pesticides/PCB	1	1

Holding conditions acceptable? (Y/N) (1 year for frozen sediment or 14 days at 4°C until extraction: extracts must be processed within 40 days)[b] Yes

If no, identify samples

Extract conditions acceptable? (Y/N) (1 year for frozen sediment or 14 days at 4°C)[b] Yes

If no, identify samples

FORMAT

Standard data report sheet

Concentrations in proper units and significant figures Reported to two significant figures

Qualifiers defined (e.g., U = undetected)

U = the compound was not detected at the reported concentration

QA/QC SAMPLES

Method Blank

Total # 1 for PCBs

Frequency 1 for 1 sample
(minimum 1 per extraction batch)[c]

Chemicals detected above 5 μg total (for phthalates) and 25 μg total[d]
(for other organic compounds; lower levels may be appropriate for pesticides and PCBs)

None for PCBs

Certified Reference Materials

Total # 1 LCS for PCBs analysis

Frequency 1 for 1 sample
(<50 samples - 1 per set of samples submitted to lab; >50 samples - 1 per 50 samples analyzed)[c]

CRM used: PCBs: LCS-051409

Chemicals outside 95% confidence interval (for certified values)[d,e]

PCBs: All LCS within recovery limits

Analytical Replicates

Total # 1 duplicate for PCBs

Frequency 1 for 1 sample
(<20 samples - 1 per set of samples submitted to lab; =20 samples - 1 triplicate and additional duplicate for minimum of 5% total replication)[c]

Samples/chemicals with >35% RPD or CV[e]

PCBs: None. All Aroclors undetected

Matrix Spikes (not required for A/B/N if isotope dilution used)

Total # 1

Frequency 1 for 1 samples
(<20 samples - 1 per set of samples submitted to lab; =20 samples - 5% of total samples)[c]

Chemicals outside 50-150% recovery[e] None

Detection Limits

Did any DL exceed SL? (Y/N) N/A

If yes, detection limits exceeding SL (identify samples)

PCBs

Pesticides

Surrogate Recovery (Pesticides/PCBs)

Were surrogates added to all samples?[c] (Y/N) Yes

Identify samples with <60 percent surrogate recovery[e] None

Method Blanks (Relative blank contamination)

Were sample concentrations less than 5 times blank concentrations? (Y/N) Yes
If yes, identify compounds and samples

[a] Organic Compounds

The following documentation is needed for organic compounds:

- A cover letter referencing or describing the procedure used and discussing any analytical problems
- Reconstructed ion chromatograms for GC/MS analyses for each sample
- Mass spectra of detected target compounds (GC/MS) for each sample and associated library spectra
- GC/ECD and/or GC/flame ionization detection chromatograms for each sample
- Raw data quantification reports for each sample
- A calibration data summary reporting calibration range used [and decafluoro-triphenylphosphine (DFTPP) and bromofluorobenzene (BFB) spectra and quantification report for GC/MS analyses]
- Final dilution volumes, sample size, wet-to-dry ratios, and instrument detection limit
- Analyte concentrations with reporting units identified (to two significant figures unless otherwise justified)
- Quantification of all analytes in method blanks (ng/sample)
- Method blanks associated with each sample
- Recovery assessments and a replicate sample summary (laboratories should report all surrogate spike recovery data for each sample; a statement of the range of recoveries should be included in reports using these data)
- Data qualification codes and their definitions

[b] Prototype sampling and analysis plan provided by David Fox, U.S. Army Corps of Engineers on 7 August 1991.

[c] For batches of 5 samples or less, the minimum QA checks should be a blank and the analysis of a CRM (and matrix spikes for any analytes not certified in the CRM). In general, the priority of QA checks for batches of =5 samples should be as follows: CRM > analytical replicate > matrix spikes.

[d] PSEP control limit.

[e] Control limits based on PSDDA Chemistry QA/QC and Streamlining Workshop held 24 January 1991, U.S. Army Corps of Engineers, Seattle District

Enclosure 2

Laboratory Data Report

Analytical Resources, Incorporated
Analytical Chemists and Consultants

May 27, 2009

John Nakayama
SAIC
18706 North Creek Parkway, Suite 110
Bothell, WA 98011

RE: Client Project: 01-0236-00-6929, Port Gardner
ARI Job No.: OY53

Dear John:

Please find enclosed the Chain-of-Custody (COC) record, sample receipt documentation, and the final data package for samples from the project referenced above.

Problems associated with these analyses are discussed in the Case Narrative.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Susan Dunnihoo
Director, Client Services
sue@arilabs.com
206-695-6207

Enclosures

cc: eFile OY53

SD/co

NL50

SAIC
From Science to Solutions

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CHAIN OF CUSTODY RECORD

Project No.: 01-0236-00-6929 Project Mgr: John Nakayama
Project Name: Port Gardner
Project Location: Everett WA
Sample Collectors: LO JB JN
Client Name: Ecology

Shipping Information

Number of Shipping Containers: 5
Date Shipped: 8/21/08
Carrier: SAIC
Waybill No.:

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCBs	SMS Metals								Comments
PG-A2-T1-DC-M-A		Tissue	8/8/08		1	X	X								10670
PG-A2-T1-DC-H-A		↓	↓		1	X	X								10671
PG-A2-T1-ES-A		↓	↓		1	X	X								10677
PG-A2-T2-DC-M-A		↓	↓		1	X	X								10665
PG-A2-T2-DC-H-A		↓	↓		1	X	X								10667
PG-A2-T2-ES-A		↓	↓		1	X	X								10680
PG-A1-T3-DC-M-A		↓	↓		1	X	X								10674
PG-A1-T3-DC-H-A		↓	↓		1	X	X								10673
PG-A1-T3-ES-A		↓	↓		1	X	X								10682

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Date/Time: 8/21/08 1200	Date/Time: 8/21/08 1450	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

• White: Lab Returns to Originator Upon Receipt of Samples • Canary: Lab Retains • Pink: Lab Returns to Project Manager with Final Report • Goldenrod: Retained by Sampler

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: SAIC Project Name: Port Gardner

COC No: — Delivered by: Hand

Assigned ARI Job No: NL50 Tracking No: —

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Record cooler temperature (recommended 2.0-6.0 °C for chemistry ..... 2.8/0.4/2.4/0.8/1.8 °C

Cooler Accepted by: JL Date: 8/21/08 Time: 1450

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?		Ice	
Was sufficient ice used (if appropriate)?		(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottle arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist)		YES	(NO)
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO

Samples Logged by: JL Date: 8/21/08 Time: 1630

*** Notify Project Manager of discrepancies or concerns ****

Explain discrepancies or negative responses:

By: Date:

ANALYTICAL
RESOURCES
INCORPORATED

Case Narrative

Client: SAIC
Project: 01-0236-00-6929, Port Gardner
Matrix: Tissue
ARI Job No.: OY53

Sample receipt

As requested by SAIC on May 11, 2009, one tissue sample was removed from archive and logged under ARI job OY53. The sample was analyzed in duplicate for PCBs, as requested.

PCB-Aroclors by SW8082

The sample was extracted and analyzed within recommended holding times for frozen samples.

Initial and continuing calibrations were within the requirements. The internal standard areas were within accepted limits.

The method blank was clean at the reporting limit. The LCS percent recoveries were within control limits.

The surrogate percent recoveries were within control limits.

The matrix spike and matrix spike percent recoveries were within advisory control limits.

Data Reporting Qualifiers

Effective 12/28/04

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

NR Spiked compound recovery is not reported due to chromatographic interference

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

LCS SOLUTIONS

05/15/09

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1549-3	PCB	20	ACETONE	10/10/09
2#	1472-3	BCOC PEST	10	ACETONE	NA
3	1579-3	PEST	02/04/20	ACETONE	09/23/09
4	1594-2	LOW PEST	0.2/0.4/2	ACETONE	09/23/09
5	1580-2	EPH	1500	MECL2	01/29/10
6	1559-2	PCP	12.5/125	ACETONE	11/05/09
7	1597-2	ABN	100	ACETONE	02/01/10
8	1566-1	TBT	2.5	MECL2	12/04/09
9	1567-3	PORE TBT	.125/.25	MECL2	12/04/09
10	1596-2	ABN ACID	100/200	MEOH	10/21/09
11	1591-1	TPHD	15000	ACETONE	03/26/10
12	1597-3	ABN BASE	200	ACETONE	02/05/10
13	1573-2	LOW PCB	2	ACETONE	10/10/09
14*	1547-1	LOW ABN ACID	10/20	MEOH	04/10/10
15	1591-3	SIM PNA	15/75	MEOH	08/28/09
16*	1502-2	DIOXANE	100	MEOH	02/26/10
17#	1516-2	1248 PCB	20	ACETONE	NA
18	1591-4	LOW SIM PNA	1.5	ACETONE	08/28/09
19	1574-4	AK103	7500	MECL2	12/02/09
20	1572-2	PNA	100	ACETONE	12/26/09
21	1593-3	SKY/BHT	100	MEOH	03/31/10
22	1599-1	HERB	12.5/12500	MEOH	08/18/09
23*	1505-1	LW ABN BASE	20	MEOH	03/20/10
24	1573-4	LOW ABN	10	ACETONE	08/01/09
25#	1481-1	DIPHENYL	100	MEOH	NA
26*	1545-2	OP-PEST	25	MEOH	02/16/10
27#	1495-1	STEROLS	200	MEOH	NA
28	1595-1	ADD. PEST	4	ACETONE	09/15/09
29#	1496-3	DECANES	100	MEOH	NA
30#	1497-2	EDB/DBCP	2	ACETONE	NA
31	1596-1	TERPINEOL	100	MEOH	04/03/10

LCS SOLUTIONS

05/15/09

32	1598-1	GUAIACOL	50-200	ACETONE	04/30/10
33	1522-1	RESIN ACID	250	ACETONE	06/11/09
34	1530-2	CONGENERS	1	ACETONE	07/23/09
35	1601-2	ALKYL PNA A	10	MEOH	04/03/10
36	1601-3	ALKYL PNA B	10	MEOH	05/13/10
50	1571-1	FULL RESIN	250	ACETONE	06/10/09
	*=REVERIFIED SOLUTION				
	#=PROJECT SPECIFIC SOLUTION				

SURR SOLUTIONS

05/15/09

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1584-5	ABN	100/150	MEOH	02/18/10
B	1572-1	SIM PNA	15/75	MEOH	08/28/09
C*	1559-1	SIM ABN	25/37.5	MEOH	03/13/10
D	1573-3	LOW PCB	0.2	ACETONE	07/31/09
E*	1478-1	HERB	62.5	MEOH	09/21/09
F	1574-3	PCP	12.5	ACETONE	01/06/10
G*	1534-1	1,4DIOXANE	100	MEOH	02/26/10
H	1594-1	OP-PEST	25	MEOH	04/01/10
I	1559-4	LOW S. PNA	1.5	MEOH	08/28/09
J	1566-5	TBT-PORE	0.125	MECL2	12/04/09
K	1538-1	MED PCB	20	ACETONE	07/31/09
L	1584-4	TBT	2.5	MECL2	12/04/09
M	1578-1	EPH	1500	MECL2	12/09/09
N	1538-2	PCB	2	ACETONE	07/31/09
O	1567-4	TPH	450	MECL2	09/24/09
P	1598-2	HCID	2250	MECL2	01/07/10
Q#	1497-3	EDB	2	ACETONE	NA
R	1521-4	RESIN ACID	250	ACETONE	06/11/09
S	1568-5	PBDE	.25	MEOH	12/11/09
T	1601-1	ALKYL PNA	10	MEOH	11/26/09
U	*=REVERIFIED SOLUTION				
V	#=PROJECT SPECIFIC SOLUTION				
W					
X					
Y					
Z					

Data Summary Package

prepared
for

Science Applications, Intl.

Project: PORT GARDNER, 01-0236-00-6929

ARI JOB NO: OY53

prepared
by

Analytical Resources, Inc.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: PG-A2-T1-ES-A
SAMPLE

Lab Sample ID: OY53A
LIMS ID: 09-11059
Matrix: Tissue
Data Release Authorized: VTS
Reported: 05/22/09

QC Report No: OY53-Science Applications, Intl.
Project: PORT GARDNER
01-0236-00-6929
Date Sampled: 08/08/08
Date Received: 05/12/09

Date Extracted: 05/14/09
Date Analyzed: 05/20/09 19:30
Instrument/Analyst: ECD5/PKC
GPC Cleanup: Yes
Sulfur Cleanup: No
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.1 g-as-rec
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U
37324-23-5	Aroclor 1262	20	< 20 U
11100-14-4	Aroclor 1268	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	90.0%
Tetrachlorometaxylene	94.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: PG-A2-T1-ES-A
DUPLICATE

Lab Sample ID: OY53A
LIMS ID: 09-11059
Matrix: Tissue
Data Release Authorized: VTS
Reported: 05/22/09

QC Report No: OY53-Science Applications, Intl.
Project: PORT GARDNER
01-0236-00-6929
Date Sampled: 08/08/08
Date Received: 05/12/09

Date Extracted: 05/14/09
Date Analyzed: 05/20/09 19:48
Instrument/Analyst: ECD5/PKC
GPC Cleanup: Yes
Sulfur Cleanup: No
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.1 g-as-rec
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U
37324-23-5	Aroclor 1262	20	< 20 U
11100-14-4	Aroclor 1268	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	83.2%
Tetrachlorometaxylene	87.5%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Tissue

QC Report No: OY53-Science Applications, Intl.
Project: PORT GARDNER
01-0236-00-6929

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-051409	97.0%	30-160	87.8%	30-160	0
LCS-051409	90.5%	30-160	87.5%	30-160	0
PG-A2-T1-ES-A	90.0%	30-160	94.8%	30-160	0
PG-A2-T1-ES-A DUP	83.2%	30-160	87.5%	30-160	0

Client Specified Control Limits
Prep Method: TissM
Log Number Range: 09-11059 to 09-11059

FORM-II SW8082

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082

Sample ID: LCS-051409
LAB CONTROL

Lab Sample ID: LCS-051409
LIMS ID: 09-11059
Matrix: Tissue
Data Release Authorized: VTS
Reported: 05/22/09

QC Report No: OY53-Science Applications, Intl.
Project: PORT GARDNER
01-0236-00-6929
Date Sampled: NA
Date Received: NA

Date Extracted: 05/14/09
Date Analyzed: 05/20/09 19:13
Instrument/Analyst: ECD5/PKC
GPC Cleanup: Yes
Sulfur Cleanup: No
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g-as-rec
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	111	100	111%
Aroclor 1260	115	100	115%

PCB Surrogate Recovery

Decachlorobiphenyl	90.5%
Tetrachlorometaxylene	87.5%

Results reported in µg/kg (ppb)

PCB METHOD BLANK SUMMARY

BLANK NO.

OY53MBS1

Lab Name: ANALYTICAL RESOURCES, INC
Client: SAIC

ARI Job No.: OY53
Project: PORT GARDNER

Lab Sample ID: OY53MBS1
Lab File ID: 0520B030

Date Extracted: 05/14/09
Matrix: SOLID

Date Analyzed: 05/20/09
Instrument ID: ECD5

Time Analyzed: 1856
GC Columns: ZB5/ZB35

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	OY53LCSS1	OY53LCSS1	05/20/09
02	PG-A2-T1-ES-A	OY53A	05/20/09
03	PG-A2-T1-ES-A DUP	OY53ADUP	05/20/09

ALL RUNS ARE DUAL COLUMN

FORM IV PCB

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD Method SW8082
Page 1 of 1

Sample ID: MB-051409
METHOD BLANK

Lab Sample ID: MB-051409
LIMS ID: 09-11059
Matrix: Tissue
Data Release Authorized: VTS
Reported: 05/22/09

QC Report No: OY53-Science Applications, Intl.
Project: PORT GARDNER
01-0236-00-6929
Date Sampled: NA
Date Received: NA

Date Extracted: 05/14/09
Date Analyzed: 05/20/09 18:56
Instrument/Analyst: ECD5/PKC
GPC Cleanup: Yes
Sulfur Cleanup: No
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 25.0 g
Final Extract Volume: 5.0 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	20	< 20 U
53469-21-9	Aroclor 1242	20	< 20 U
12672-29-6	Aroclor 1248	20	< 20 U
11097-69-1	Aroclor 1254	20	< 20 U
11096-82-5	Aroclor 1260	20	< 20 U
11104-28-2	Aroclor 1221	20	< 20 U
11141-16-5	Aroclor 1232	20	< 20 U
37324-23-5	Aroclor 1262	20	< 20 U
11100-14-4	Aroclor 1268	20	< 20 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	97.0%
Tetrachlorometaxylene	87.8%