QUALITY CONTROL REPORT

Work Order	: **EB0910858**	Page	: 1 of 9
Amendment	: **1**		
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Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 09-JUL-2009
Sampler	: Richard Cole	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
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Sarah Ashworth	Organic Chemist	Organics
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1036567)									
EB0910898-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	22.6	20.0	12.2	0% - 20%
EB0910898-010	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	15.5	16.2	3.9	0% - 50%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1041285)									
EB0910858-001	TRIP01	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	1.4	1.5	7.2	0% - 50%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.3	0.4	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	12.6	12.7	1.2	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	60.1	60.3	0.3	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	233	228	1.9	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	217	216	0.7	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	14.5	14.8	2.2	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	554	544	2.0	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	30.2	29.1	3.8	0% - 20%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	83.1	84.3	1.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1041284)									
EB0910858-001	TRIP01	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.40	0.38	6.2	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 1038068)									
EB0910858-001	TRIP01	EP005: Total Organic Carbon	---	0.02	%	4.25	4.10	3.4	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1037267)									
EB0910850-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EB0910936-007	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1040824)									
EB0910915-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EB0911010-005	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1037267)									
EB0910850-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEX (QC Lot: 1037267) - continued									
EB0910850-001	Anonymous	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0910936-007	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1038009)									
EB0910858-001	TRIP01	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	430	360	18.0	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	80	70	15.4	No Limit
		EP132: Acenaphthylene	208-96-8	10	µg/kg	380	320	16.8	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	400	330	16.8	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	950	810	15.9	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1060	900	16.1	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1340	1150	14.9	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	670	570	16.5	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	780	660	16.8	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	430	420	0.0	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	950	770	# 20.5	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	300	240	# 20.7	0% - 20%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	210	190	11.8	0% - 50%
		EP132: Fluoranthene	206-44-0	10	µg/kg	2080	1760	16.9	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	300	250	18.8	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	690	580	16.0	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	4580	3620	# 23.6	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	340	300	11.6	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	1330	1070	# 21.7	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	1780	1500	17.0	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit
ES0910119-020	Anonymous	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	1320	1290	2.2	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	200	190	0.0	0% - 50%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	1180	1160	2.4	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	700	680	2.7	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	820	840	2.3	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	1160	1180	1.6	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	1390	1410	1.3	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1038009) - continued									
ES0910119-020	Anonymous	EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	620	650	4.4	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	830	830	0.0	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	450	480	6.1	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	760	790	3.6	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	350	340	0.0	0% - 20%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	160	160	0.0	0% - 50%
		EP132: Fluoranthene	206-44-0	10	µg/kg	2100	2100	0.0	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	830	800	3.5	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	710	720	0.0	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	14600	15400	5.0	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	300	300	0.0	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	2540	2470	3.0	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	1950	1940	1.0	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1041285)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.1 mg/kg	106	70	130
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.76 mg/kg	96.6	70	130
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	60.9 mg/kg	110	70	130
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	97.6	70	130
EG020-SD: Cobalt	7440-48-4	10	mg/kg	<10.0	24.5 mg/kg	101	70	130
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	54.8 mg/kg	95.1	70	130
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.2 mg/kg	106	70	130
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	5.6 mg/kg	90.1	70	130
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	34 mg/kg	109	70	130
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	104 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1041284)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.090 mg/kg	107	74.2	126
EP005: Total Organic Carbon (TOC) (QCLot: 1038068)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1037267)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	92.0	71	123
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1040824)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	259 mg/kg	89.6	65	112
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	524 mg/kg	82.3	76.2	122
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEX (QCLot: 1037267)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.9	78	121
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	85.2	78	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.4	72	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	88.3	66	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.3	70	118
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038009)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	84.8	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	111	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	82.4	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	89.9	62.9	124

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038009) - continued								
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	86.0	58.2	117
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	86.7	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	93.9	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	93.0	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	95.5	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	97.4	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	98.2	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	100	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	93.9	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	93.4	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	98.8	61.7	129
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	94.6	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	91.3	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	99.3	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	1000 µg/kg	95.8	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	88.0	63.2	120
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	88.5	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	92.4	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	94.3	67.9	127

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1041285)							
EM0906401-001	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	92.9	70	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	96.2	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	89.1	70	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	88.9	70	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	83.2	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	96.1	70	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	85.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1041284)							
EB0910858-001	TRIP01	EG035T-LL: Mercury	7439-97-6	0.50 mg/kg	98.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1037267)							
EB0910858-001	TRIP01	EP080: C6 - C9 Fraction	----	28 mg/kg	70.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1040824)							
EB0910858-001	TRIP01	EP071: C10 - C14 Fraction	----	259 mg/kg	74.7	70	130
		EP071: C15 - C28 Fraction	----	524 mg/kg	85.5	70	130
EP080: BTEX (QCLot: 1037267)							
EB0910858-001	TRIP01	EP080: Benzene	71-43-2	2 mg/kg	75.1	70	130
		EP080: Toluene	108-88-3	2 mg/kg	71.6	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038009)							
EB0910858-001	TRIP01	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	82.4	21	129
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	48.8	40	130
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	67.3	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	64.7	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	35.7	35	122
		EP132: Anthracene	120-12-7	100 µg/kg	# 25.7	44	124
		EP132: Benz(a)anthracene	56-55-3	100 µg/kg	# Not Determined	48	124
		EP132: Benzo(a)pyrene	50-32-8	100 µg/kg	# Not Determined	44	123
		EP132: Benzo(b)fluoranthene	205-99-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(e)pyrene	192-97-2	100 µg/kg	# 38.4	46	130
		EP132: Benzo(g.h.i)perylene	191-24-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(k)fluoranthene	207-08-9	100 µg/kg	# 34.1	54	123
		EP132: Chrysene	218-01-9	100 µg/kg	# Not Determined	55	122
		EP132: Coronene	191-07-1	100 µg/kg	# Not Determined	33	134
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	46.1	46	129
		EP132: Fluoranthene	206-44-0	100 µg/kg	# Not Determined	52	125

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1038009) - continued							
EB0910858-001	TRIP01	EP132: Fluorene	86-73-7	100 µg/kg	# 39.4	45	121
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	100 µg/kg	# 24.7	41	132
		EP132: N-2-Fluorenyl Acetamide	53-96-3	1000 µg/kg	99.4	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	34	130
		EP132: Perylene	198-55-0	100 µg/kg	# 36.0	38	124
		EP132: Phenanthrene	85-01-8	100 µg/kg	# Not Determined	45	124
		EP132: Pyrene	129-00-0	100 µg/kg	# Not Determined	51	129

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0910858**	Page	: 1 of 6
Amendment	: **1**		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 09-JUL-2009
Sampler	: Richard Cole	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**----**	----	----	**10-JUL-2009**	13-JUL-2009	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**16-JUL-2009**	03-AUG-2009	✓	**16-JUL-2009**	02-JAN-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**16-JUL-2009**	03-AUG-2009	✓	**17-JUL-2009**	03-AUG-2009	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
TRIP01	**06-JUL-2009**	**13-JUL-2009**	---	----	**14-JUL-2009**	03-AUG-2009	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**13-JUL-2009**	20-JUL-2009	✓	**13-JUL-2009**	20-JUL-2009	✓
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**16-JUL-2009**	20-JUL-2009	✓	**16-JUL-2009**	25-AUG-2009	✓
EP080: BTEX							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**13-JUL-2009**	20-JUL-2009	✓	**13-JUL-2009**	20-JUL-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
TRIP01	**06-JUL-2009**	**15-JUL-2009**	20-JUL-2009	✓	**15-JUL-2009**	24-AUG-2009	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	8270 GCMS Capiliary column, SIM mode.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Acetylation	ORG17A-AC	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Chrysene**	218-01-9	20.5 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Coronene**	191-07-1	20.7 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Naphthalene**	91-20-3	23.6 %	0-20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Phenanthrene**	85-01-8	21.7 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Anthracene**	120-12-7	25.7 %	44-124%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benz(a)anthracene**	56-55-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benzo(a)pyrene**	50-32-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benzo(b)fluoranthene**	205-99-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benzo(e)pyrene**	192-97-2	38.4 %	46-130%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Benzo(k)fluoranthene**	207-08-9	34.1 %	54-123%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Chrysene**	218-01-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Coronene**	191-07-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Fluorene**	86-73-7	39.4 %	45-121%	**Recovery less than lower data quality objective**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Indeno(1.2.3.cd)pyrene**	193-39-5	24.7 %	41-132%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Perylene**	198-55-0	36.0 %	38-124%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0910858-001	TRIP01	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	EB0910858-001	TRIP01	**1.2-Dichloroethane-D4**	17060-07-0	74.5 %	80-121 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0910858-001	TRIP01	**Toluene-D8**	2037-26-5	75.3 %	81-117 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0910858-001	TRIP01	**4-Bromofluorobenzene**	460-00-4	70.7 %	74-121 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

16/7 OF

1 of 1

Chain of Custody

AECOM

AECOM - Sydney	
Level 5, 828 Pacific Highway	Tel: 61 2 8484 8999
	Fax: 61 2 8484 8989
Pymble NSW 2073 Australia	E-mail:

Laboratory Details

Lab. Name: ALS Brisbane
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: EB4330 09

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Hbr
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: christgan.donnetti@aecom.com; richard.cole@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Metals M13 (Few extra for Metals)	TOC	PAH	BTEX / TPH	Other
(1)	TRIP01	6.7.09	X					X		3 x soil jars	X	X	X	X	

Environmental Division Brisbane
Work Order
EB0910858
Telephone : +61-7-3243 7222

SCANNED
DATE 9/7

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No. | Esky ID

Relinquished by:	Richard Cole	Signed:		Date:	6.7.09		
Recieved by:	Frank	Signed:		Date:	8/7/09 11am		
Relinquished by:	Frank	Signed:		Date:	8/7/09 5pm		
Recieved by:		Signed:		Date:			

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0910858**		
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ----
Site	: ----		
Sampler	: Richard Cole	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 09-JUL-2009	Issue Date	: 28-JUL-2009
Client Requested Due Date	: 22-JUL-2009	Scheduled Reporting Date	: **22-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4C,1.3C,5.2 C - Ice present
No. of coolers/boxes	: 3 MEDIUM	No. of samples received	: 1
Sercurity Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Metals will be analysed by ICPMS and PAH will be by Ultra Trace as per directive received from Christiaan.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane/ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required Level of Reporting)	SOIL - EP132B Ultratrace PAH's	SOIL - S-04 TPH/BTEX
EB0910858-001	06-JUL-2009 15:00	TRIP01	✓	✓	✓	✓	✓

Requested Deliverables

MR CHRISTIAAN DONNETTI

- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MR RICHARD COLE

- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0911142**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Site	: ----		
		No. of samples received	: 4
Quote number	: SY/330/09V3	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matt Frost	Organic Instrument Chemist	Organics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EP131A+B: Poor matrix spike and surrogate recoveries due to sample matrix interference.**
- **EP132: Poor matrix spike recovery due to sample matrix interferences.**
- **TBT: Sample TRIP05 required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly. Surrogate recovery not determined.**
- **Volatile TPH/BTEX: Sample TRIP05 shows poor matrix spike recovery due to matrix interference (high moisture).**
- **Volatile TPH/BTEX: Samples TRIP05 and TRIP06 shows poor surrogate recovery due to matrix interference (high moisture).**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP06	TRIP10	TRIP05	TRIP03	----
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	08-JUL-2009 15:00	----
Compound	CAS Number	LOR	Unit		EB0911142-001	EB0911142-002	EB0911142-003	EB0911142-004	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		34.2	47.7	41.6	44.1	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg		16.6	35.9	20.7	18.6	----
Cadmium	7440-43-9	0.1	mg/kg		7.4	1.0	1.6	1.5	----
Chromium	7440-47-3	1.0	mg/kg		69.5	124	80.6	64.5	----
Copper	7440-50-8	1.0	mg/kg		133	509	244	202	----
Cobalt	7440-48-4	0.5	mg/kg		11.3	11.9	11.0	22.1	----
Lead	7439-92-1	1.0	mg/kg		155	338	200	172	----
Nickel	7440-02-0	1.0	mg/kg		15.0	25.2	15.3	19.5	----
Selenium	7782-49-2	0.1	mg/kg		1.2	3.3	1.7	1.9	----
Silver	7440-22-4	0.1	mg/kg		0.4	1.5	0.7	0.5	----
Vanadium	7440-62-2	2.0	mg/kg		59.9	95.3	71.1	95.6	----
Zinc	7440-66-6	1.0	mg/kg		799	967	693	642	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.27	0.78	0.47	0.38	----
EK026G: Total Cyanide By Discrete Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		----	----	2.96	3.13	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg		----	<1.0	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	<0.5	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg		----	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	<0.5	----	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg		----	<2.0	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	<100	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	TRIP06	TRIP10	TRIP05	TRIP03	----
				Client sampling date / time	09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	08-JUL-2009 15:00	----
					EB0911142-001	EB0911142-002	EB0911142-003	EB0911142-004	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C29 - C36 Fraction	----	100	mg/kg		----	----	**130**	<100	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	<0.5	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	**10.4**	**240**	<0.5	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		----	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		----	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		----	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		----	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		----	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		----	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		----	<0.50	----	----	----
^ DDT (total)	----	0.50	µg/kg		----	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		----	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		----	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		----	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		----	<0.50	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		----	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg		----	<0.50	----	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		----	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	<0.50	----	----	----
gamma-BHC	58-89-9	0.50	µg/kg		----	<0.50	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		----	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	<0.50	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		----	<5.0	----	----	----
Aroclor 1016	12974-11-2	5.0	µg/kg		----	<5.0	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP06	TRIP10	TRIP05	TRIP03	----
				Client sampling date / time: 09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	08-JUL-2009 15:00	----
				EB0911142-001	EB0911142-002	EB0911142-003	EB0911142-004	----
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued								
Aroclor 1221	11104-28-2	5.0	µg/kg	----	<5.0	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	<5.0	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	<5.0	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	<5.0	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	----	<5.0	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	----	<5.0	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	----	----	<10	<10	----
2-Methylnaphthalene	91-57-6	10	µg/kg	----	----	**420**	**540**	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	----	----	<10	<10	----
Acenaphthene	83-32-9	10	µg/kg	----	----	**100**	**80**	----
Acenaphthylene	208-96-8	10	µg/kg	----	----	**410**	**360**	----
Anthracene	120-12-7	10	µg/kg	----	----	**360**	**300**	----
Benz(a)anthracene	56-55-3	10	µg/kg	----	----	**580**	**450**	----
Benzo(a)pyrene	50-32-8	10	µg/kg	----	----	**690**	**550**	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg	----	----	**800**	**680**	----
Benzo(e)pyrene	192-97-2	10	µg/kg	----	----	**520**	**430**	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg	----	----	**300**	**240**	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg	----	----	**350**	**300**	----
Chrysene	218-01-9	10	µg/kg	----	----	**490**	**500**	----
Coronene	191-07-1	10	µg/kg	----	----	**110**	**80**	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg	----	----	**70**	**60**	----
Fluoranthene	206-44-0	10	µg/kg	----	----	**1280**	**1060**	----
Fluorene	86-73-7	10	µg/kg	----	----	**380**	**330**	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	----	----	**280**	**220**	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	----	----	<100	<100	----
Naphthalene	91-20-3	10	µg/kg	----	----	**6420**	**5600**	----
Perylene	198-55-0	10	µg/kg	----	----	**220**	**180**	----
Phenanthrene	85-01-8	10	µg/kg	----	----	**1100**	**930**	----
Pyrene	129-00-0	10	µg/kg	----	----	**1050**	**910**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	**91.7**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**92.9**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**82.8**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	**96.4**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	**76.1**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	**92.1**	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: TRIP06	TRIP10	TRIP05	TRIP03	----
				Client sampling date / time: 09-JUL-2009 15:00	09-JUL-2009 15:00	09-JUL-2009 15:00	08-JUL-2009 15:00	----
				EB0911142-001	EB0911142-002	EB0911142-003	EB0911142-004	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	**77.0**	**75.2**	----
Toluene-D8	2037-26-5	0.1	%	----	----	**73.9**	**70.6**	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	**60.9**	**62.4**	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	**48.5**	**Not Determined**	**37.5**	----
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	**33.9**	----	----	----
EP131T: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**35.8**	----	----	----
EP132T: Base/Neutral Extractable Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**59.8**	**52.8**	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**61.1**	**56.4**	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**58.4**	**53.3**	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	121
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

QUALITY CONTROL REPORT

Work Order	: **EB0911142**	Page	: 1 of 12
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Order number	: ----		
		No. of samples received	: 4
Quote number	: SY/330/09V3	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matt Frost	Organic Instrument Chemist	Organics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1042920)									
EB0911142-004	TRIP03	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	44.1	44.6	1.1	0% - 20%
EB0911203-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	37.9	37.4	1.3	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1047896)									
EB0911142-001	TRIP06	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	7.4	6.1	18.8	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	1.2	1.3	9.2	0% - 50%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.3	11.0	3.0	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	69.5	62.6	10.3	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	133	130	2.4	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	155	146	6.5	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	15.0	14.6	3.0	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	799	713	11.4	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	16.6	16.1	2.7	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	59.9	57.9	3.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1047895)									
EB0911142-001	TRIP06	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.27	0.27	0.0	0% - 20%
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1042866)									
EB0911142-001	TRIP06	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 1043596)									
EB0911142-003	TRIP05	EP005: Total Organic Carbon	---	0.02	%	2.96	3.09	4.3	0% - 20%
EP075(SIM)A: Phenolic Compounds (QC Lot: 1045933)									
EB0911142-002	TRIP10	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1043005)									
EB0911142-003	TRIP05	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1045407)									
EB0911209-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EB0911273-017	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1045934)									
EB0911142-003	TRIP05	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	130	140	8.7	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1043005)									
EB0911142-003	TRIP05	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 1045423)									
EB0911142-004	TRIP03	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EP0903871-010	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	13.9	15.7	12.0	0% - 20%
EP090: Organotin Compounds (QC Lot: 1047214)									
ES0910561-040	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
ES0910561-009	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	0.7	1.1	41.8	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1043495)									
EB0911142-002	TRIP10	EP131A: Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: DDT (total)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP131A: Organochlorine Pesticides (QC Lot: 1043495) - continued									
EB0911142-002	TRIP10	EP131A: Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: gamma-BHC	58-89-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Total Chlordane (sum)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1043496)									
EB0911142-002	TRIP10	EP131B: Total Polychlorinated biphenyls	---	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12974-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1043441)									
EB0911142-003	TRIP05	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	420	430	0.0	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	100	100	0.0	0% - 50%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	410	420	2.5	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	360	370	4.2	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	580	630	8.4	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	690	750	8.3	0% - 20%
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	800	800	0.0	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	520	480	7.7	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	300	290	5.3	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	350	300	15.9	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	490	580	17.6	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	110	110	0.0	0% - 50%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	70	70	0.0	No Limit
		EP132: Fluoranthene	206-44-0	10	µg/kg	1280	1430	10.7	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	380	380	0.0	0% - 20%
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	280	270	5.1	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1043441) - continued									
EB0911142-003	TRIP05	EP132: Naphthalene	91-20-3	10	µg/kg	6420	6740	4.8	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	220	200	7.1	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	1100	1190	7.5	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	1050	1170	10.8	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1047896)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.8 mg/kg	96.5	82	118
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.82 mg/kg	101	83	115
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	61.6 mg/kg	99.3	84	122
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	107	81	121
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	55.5 mg/kg	99.2	83	115
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.1 mg/kg	114	83	121
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	105 mg/kg	103	86	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047895)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.111 mg/kg	85.5	70	120
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1042866)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	50 mg/kg	77.4	74	130
EP005: Total Organic Carbon (TOC) (QCLot: 1043596)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1045933)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	5.0 mg/kg	80.5	61	119
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	5.0 mg/kg	80.0	63	117
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	5.0 mg/kg	77.0	62	119
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	10 mg/kg	78.7	57	120
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	5.0 mg/kg	85.4	49	125
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	58	116
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	5.0 mg/kg	70.7	58	116
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	5.0 mg/kg	78.2	59	119
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.8	61	121
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	5.0 mg/kg	# 130	55	116
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	5.0 mg/kg	61.4	53	116
EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	10 mg/kg	88.9	41	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1043005)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	76.3	71	123
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1045407)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1045407) - continued								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	259 mg/kg	80.2	65	112
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	524 mg/kg	78.1	76.2	122
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1045934)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	259 mg/kg	108	65	112
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	524 mg/kg	97.4	76.2	122
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEX (QCLot: 1043005)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.3	78	121
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	80.9	78	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	81.6	72	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	79.9	66	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	80.8	70	118
EP090: Organotin Compounds (QCLot: 1045423)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	86.2	28	129
EP090: Organotin Compounds (QCLot: 1047214)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	107	28	129
EP131A: Organochlorine Pesticides (QCLot: 1043495)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	82.3	31.7	140
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	79.7	24.5	150
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	87.9	36.9	139
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	76.2	38.2	137
EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	94.6	42.5	141
EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	79.9	34.8	140
EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	88.0	38	143
EP131A: DDT (total)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	90.9	43.2	134
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	81.8	23.7	139
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	84.4	35.8	138
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	90.4	7.45	158
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	93.7	21.6	162
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	59.8	19.3	131
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	83.2	17.9	141
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	107	31	153
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	83.8	34.3	138
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	68.4	18.6	146

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1043495) - continued								
EP131A: gamma-BHC	58-89-9	0.5	µg/kg	<0.50	5 µg/kg	80.9	30.7	145
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	88.9	15	157
EP131A: cis-Chlordane	5103-71-9	0.5	µg/kg	<0.50	5 µg/kg	82.1	22.3	145
EP131A: trans-Chlordane	5103-74-2	0.5	µg/kg	<0.50	5 µg/kg	67.7	42.4	139
EP131A: Total Chlordane (sum)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1043496)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1016	12974-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	74.8	61.3	121
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1043441)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	89.0	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	89.3	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	78.2	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	75.4	62.9	124
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	61.9	58.2	117
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	73.6	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	78.5	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	77.6	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	75.9	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	80.9	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	86.9	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	82.0	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	81.0	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	98.1	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	81.5	61.7	129
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	78.4	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	75.4	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	83.8	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	1000 µg/kg	# 49.5	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	75.1	63.2	120
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	80.8	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	77.8	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	77.7	67.9	127

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1047896)							
EB0911142-002	TRIP10	EG020-SD: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	109	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	106	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	# Not Determined	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	103	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	118	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	109	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047895)							
EB0911142-002	TRIP10	EG035T-LL: Mercury	7439-97-6	5.0 mg/kg	99.9	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1042866)							
EB0911142-003	TRIP05	EK026G: Total Cyanide	57-12-5	20 mg/kg	70.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1043005)							
EB0911142-004	TRIP03	EP080: C6 - C9 Fraction	----	28 mg/kg	# 49.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1045407)							
EB0911209-001	Anonymous	EP071: C10 - C14 Fraction	----	259 mg/kg	80.5	70	130
		EP071: C15 - C28 Fraction	----	524 mg/kg	77.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1045934)							
EB0911400-001	Anonymous	EP071: C10 - C14 Fraction	----	259 mg/kg	108	70	130
		EP071: C15 - C28 Fraction	----	524 mg/kg	96.6	70	130
EP080: BTEX (QCLot: 1043005)							
EB0911142-004	TRIP03	EP080: Benzene	71-43-2	2 mg/kg	75.1	70	130
		EP080: Toluene	108-88-3	2 mg/kg	70.7	70	130
EP090: Organotin Compounds (QCLot: 1045423)							
EP0903871-001	Anonymous	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	27.7	20	130
EP090: Organotin Compounds (QCLot: 1047214)							
EB0911142-003	TRIP05	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	# Not Determined	20	130
EP131A: Organochlorine Pesticides (QCLot: 1043495)							
EB0911142-002	TRIP10	EP131A: Aldrin	309-00-2	5 µg/kg	37.9	31.7	140
		EP131A: alpha-BHC	319-84-6	5 µg/kg	41.9	24.5	150
		EP131A: beta-BHC	319-85-7	5 µg/kg	# Not Determined	36.9	139
		EP131A: delta-BHC	319-86-8	5 µg/kg	# 21.1	38.2	137

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1043495) - continued							
EB0911142-002	TRIP10	EP131A: 4.4`-DDD	72-54-8	5 µg/kg	64.8	42.5	141
		EP131A: 4.4`-DDE	72-55-9	5 µg/kg	65.6	34.8	140
		EP131A: 4.4`-DDT	50-29-3	5 µg/kg	49.4	38	143
		EP131A: Dieldrin	60-57-1	5 µg/kg	47.5	43.2	134
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	51.3	23.7	139
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	54.0	35.8	138
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	46.8	7.45	158
		EP131A: Endrin	72-20-8	5 µg/kg	51.1	21.6	162
		EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	55.3	19.3	131
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	45.7	17.9	141
		EP131A: Heptachlor	76-44-8	5 µg/kg	# Not Determined	31	153
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	61.9	34.3	138
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	44.7	18.6	146
		EP131A: gamma-BHC	58-89-9	5 µg/kg	# Not Determined	30.7	145
		EP131A: Methoxychlor	72-43-5	5 µg/kg	35.0	15	157
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	45.5	22.3	145
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	# 38.7	42.4	139
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1043496)							
EB0911142-002	TRIP10	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	# 37.7	61.3	121
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1043441)							
EB0911142-003	TRIP05	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	64.5	21	129
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	104	40	130
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	37.0	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	# Not Determined	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	# Not Determined	35	122
		EP132: Anthracene	120-12-7	100 µg/kg	# Not Determined	44	124
		EP132: Benz(a)anthracene	56-55-3	100 µg/kg	53.6	48	124
		EP132: Benzo(a)pyrene	50-32-8	100 µg/kg	# Not Determined	44	123
		EP132: Benzo(b)fluoranthene	205-99-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(e)pyrene	192-97-2	100 µg/kg	# Not Determined	46	130
		EP132: Benzo(g.h.i)perylene	191-24-2	100 µg/kg	# Not Determined	43	129
		EP132: Benzo(k)fluoranthene	207-08-9	100 µg/kg	# Not Determined	54	123
		EP132: Chrysene	218-01-9	100 µg/kg	# 37.4	55	122
		EP132: Coronene	191-07-1	100 µg/kg	# 5.3	33	134
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	# Not Determined	46	129
		EP132: Fluoranthene	206-44-0	100 µg/kg	# Not Determined	52	125
		EP132: Fluorene	86-73-7	100 µg/kg	# Not Determined	45	121
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	100 µg/kg	# Not Determined	41	132

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1043441) - continued							
EB0911142-003	TRIP05	EP132: N-2-Fluorenyl Acetamide	53-96-3	1000 µg/kg	64.9	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	34	130
		EP132: Perylene	198-55-0	100 µg/kg	# 22.9	38	124
		EP132: Phenanthrene	85-01-8	100 µg/kg	# Not Determined	45	124
		EP132: Pyrene	129-00-0	100 µg/kg	# Not Determined	51	129

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0911142**	Page	: 1 of 10
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Order number	: ----		
		No. of samples received	: 4
Quote number	: SY/330/09V3	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
TRIP03	**08-JUL-2009**	**----**	----	----	**17-JUL-2009**	15-JUL-2009	×
Soil Glass Jar - Unpreserved							
TRIP06, TRIP10, TRIP05	**09-JUL-2009**	**----**	----	----	**17-JUL-2009**	16-JUL-2009	×
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved							
TRIP03	**08-JUL-2009**	**24-JUL-2009**	05-AUG-2009	✓	**27-JUL-2009**	04-JAN-2010	✓
Soil Glass Jar - Unpreserved							
TRIP06, TRIP10, TRIP05	**09-JUL-2009**	**24-JUL-2009**	06-AUG-2009	✓	**27-JUL-2009**	05-JAN-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
TRIP03	**08-JUL-2009**	**24-JUL-2009**	05-AUG-2009	✓	**27-JUL-2009**	05-AUG-2009	✓
Soil Glass Jar - Unpreserved							
TRIP06, TRIP10, TRIP05	**09-JUL-2009**	**24-JUL-2009**	06-AUG-2009	✓	**27-JUL-2009**	06-AUG-2009	✓
EK026G: Total Cyanide By Discrete Analyser							
Soil Glass Jar - Unpreserved							
TRIP06, TRIP05	**09-JUL-2009**	**17-JUL-2009**	16-JUL-2009	×	**21-JUL-2009**	31-JUL-2009	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
TRIP03	**08-JUL-2009**	**17-JUL-2009**	---	----	**20-JUL-2009**	05-AUG-2009	✓
Pulp Bag							
TRIP05	**09-JUL-2009**	**17-JUL-2009**	---	----	**20-JUL-2009**	06-AUG-2009	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved							
TRIP10	**09-JUL-2009**	**21-JUL-2009**	23-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved TRIP03	**08-JUL-2009**	**17-JUL-2009**	22-JUL-2009	✓	**17-JUL-2009**	22-JUL-2009	✓
Soil Glass Jar - Unpreserved TRIP03	**08-JUL-2009**	**21-JUL-2009**	22-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved TRIP05	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**17-JUL-2009**	23-JUL-2009	✓
Soil Glass Jar - Unpreserved TRIP05	**09-JUL-2009**	**21-JUL-2009**	23-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
EP080: BTEX							
Soil Glass Jar - Unpreserved TRIP03	**08-JUL-2009**	**17-JUL-2009**	22-JUL-2009	✓	**17-JUL-2009**	22-JUL-2009	✓
Soil Glass Jar - Unpreserved TRIP05	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**17-JUL-2009**	23-JUL-2009	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved TRIP03	**08-JUL-2009**	**22-JUL-2009**	22-JUL-2009	✓	**23-JUL-2009**	31-AUG-2009	✓
Soil Glass Jar - Unpreserved TRIP10, TRIP05	**09-JUL-2009**	**23-JUL-2009**	23-JUL-2009	✓	**27-JUL-2009**	01-SEP-2009	✓
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved TRIP10	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**27-JUL-2009**	26-AUG-2009	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved TRIP10	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**27-JUL-2009**	26-AUG-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved TRIP03	**08-JUL-2009**	**17-JUL-2009**	22-JUL-2009	✓	**26-JUL-2009**	26-AUG-2009	✓
Soil Glass Jar - Unpreserved TRIP05	**09-JUL-2009**	**17-JUL-2009**	23-JUL-2009	✓	**26-JUL-2009**	26-AUG-2009	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	4	31	**12.9**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	21	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	21	**9.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	21	**9.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Organotin Analysis	EP090	2	31	**6.5**	**5.0**	✓	ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	21	**9.5**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Cyanide By Discrete Analyser	EK026G	SOIL	APHA 21st 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	8270 GCMS Capiliary column, SIM mode.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for TCN in Soils	EK026PR	SOIL	APHA 21st ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Acetylation	ORG17A-AC	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)A: Phenolic Compounds	1202110-002	----	**2.4.6-Trichlorophenol**	88-06-2	130 %	55-116%	**Recovery greater than upper control limit**
EP132B: Polynuclear Aromatic Hydrocarbons	1198792-002	----	**N-2-Fluorenyl Acetamide**	53-96-3	49.5 %	50-138%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	EB0911142-002	TRIP10	**Copper**	7440-50-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	EB0911142-002	TRIP10	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080/071: Total Petroleum Hydrocarbons	EB0911142-004	TRIP03	**C6 - C9 Fraction**	----	49.0 %	70-130%	**Recovery less than lower data quality objective**
EP090: Organotin Compounds	EB0911142-003	TRIP05	**Tributyltin**	56573-85-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP131A: Organochlorine Pesticides	EB0911142-002	TRIP10	**beta-BHC**	319-85-7	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	TRIP10	**delta-BHC**	319-86-8	21.1 %	38.2-137%	**Recovery less than lower data quality objective**
EP131A: Organochlorine Pesticides	EB0911142-002	TRIP10	**Heptachlor**	76-44-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	TRIP10	**gamma-BHC**	58-89-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	TRIP10	**trans-Chlordane**	5103-74-2	38.7 %	42.4-139%	**Recovery less than lower data quality objective**
EP131B: Polychlorinated Biphenyls (as Aroclors)	EB0911142-002	TRIP10	**Aroclor 1254**	11097-69-1	37.7 %	61.3-121%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Acenaphthene**	83-32-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Acenaphthylene**	208-96-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Anthracene**	120-12-7	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Benzo(a)pyrene**	50-32-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Benzo(b)fluoranthene**	205-99-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Benzo(e)pyrene**	192-97-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Benzo(k)fluoranthene**	207-08-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Chrysene**	218-01-9	37.4 %	55-122%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Coronene**	191-07-1	5.3 %	33-134%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Dibenz(a.h)anthracene**	53-70-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Fluorene**	86-73-7	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Indeno(1.2.3.cd)pyrene**	193-39-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Perylene**	198-55-0	22.9 %	38-124%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	EB0911142-003	TRIP05	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	EB0911142-004	TRIP03	**1.2-Dichloroethane-D4**	17060-07-0	75.2 %	80-121 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0911142-003	TRIP05	**1.2-Dichloroethane-D4**	17060-07-0	77.0 %	80-121 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0911142-004	TRIP03	**Toluene-D8**	2037-26-5	70.6 %	81-117 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0911142-003	TRIP05	**Toluene-D8**	2037-26-5	73.9 %	81-117 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0911142-004	TRIP03	**4-Bromofluorobenzene**	460-00-4	62.4 %	74-121 %	**Recovery less than lower data quality objective**
EP080S: TPH(V)/BTEX Surrogates	EB0911142-003	TRIP05	**4-Bromofluorobenzene**	460-00-4	60.9 %	74-121 %	**Recovery less than lower data quality objective**
EP090S: Organotin Surrogate	EB0911142-003	TRIP05	**Tripropyltin**	----	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content						
Soil Glass Jar - Unpreserved						
TRIP03	----	----	----	17-JUL-2009	15-JUL-2009	**2**
Soil Glass Jar - Unpreserved						
TRIP06, TRIP10, TRIP05	----	----	----	17-JUL-2009	16-JUL-2009	**1**
EK026G: Total Cyanide By Discrete Analyser						
Soil Glass Jar - Unpreserved						
TRIP06, TRIP05	17-JUL-2009	16-JUL-2009	**1**	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Chain of Custody

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS BRISBANE
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY 330 09 V2.

Sampled By: Richard Cole
AECOM Project No: 53017805
Project Name: Port Kembla Outer harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email : Chgastiaan.Donnetti@aecom.com, Richard.Cole@aecom.com	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: Metals M13 (see Q sheet)	TOC	PAH (ultra trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAH	Cyanide	TBT	Phenols	OCP (Ultra trace)	Total PCBs (Ultra trace)	Other
	TRIP06	9.7.09	X					X		2x soil jars	✓							✓					
	TRIP10	9.7.09	X					X		1x large 1x small	✓								✓	✓	✓	✓	
	TRIP05	9.7.09	X					X		1x large 1x small	✓	✓	✓	✓				✓	✓				
	TRIP03	8.7.09	X					X		1x large 1x small	✓	✓	✓	✓					✓				

Environmental Division
Brisbane
Work Order
EB0911142
Telephone : +61-7-3243 7222

Lab Report No. | Esky ID

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Relinquished by: Richard Cole — Signed: — Date: 10/7/09
Recieved by: Frank — Signed: — Date: 10/7/9 11am

Relinquished by: Frank — Signed: — Date: 13/7/9 14pm
Recieved by: — Signed: — Date:

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0911142**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008MAUAUS0047 (EN/004/08)
Site	: ----		
Sampler	: Richard Cole	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 14-JUL-2009	Issue Date	: 16-JUL-2009 13:36
Client Requested Due Date	: 28-JUL-2009	Scheduled Reporting Date	: **28-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 6.6 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 4
Sercurity Seal	: Intact.	No. of samples analysed	: 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required Level of Reporting)	SOIL - EK026G (Solids) Total Cyanide By Discrete Analyser	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP090 (solids) Organotins	SOIL - EP132B Ultratrace PAH's
EB0911142-001	09-JUL-2009 15:00	TRIP06		✓	✓	✓	✓			
EB0911142-002	09-JUL-2009 15:00	TRIP10		✓	✓	✓		✓	✓	
EB0911142-003	09-JUL-2009 15:00	TRIP05	✓	✓	✓	✓	✓		✓	✓
EB0911142-004	08-JUL-2009 15:00	TRIP03	✓	✓	✓	✓			✓	✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-04 TPH/BTEX	SOIL - UTO-2S Ultratrace OC PCB Pesticides
EB0911142-002	09-JUL-2009 15:00	TRIP10		✓
EB0911142-003	09-JUL-2009 15:00	TRIP05	✓	
EB0911142-004	08-JUL-2009 15:00	TRIP03	✓	

Requested Deliverables

MR CHRISTIAAN DONNETTI

- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MR RICHARD COLE

- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0911145**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Site	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: SOIL			Client sample ID	TRIP12	TRIP08	TRIP09	----	----
			Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit	EB0911145-001	EB0911145-002	EB0911145-003	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**52.2**	**25.4**	**36.0**	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	**2.56**	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	**215**	**6.16**	**41.4**	----	----
Cadmium	7440-43-9	0.1	mg/kg	**2.7**	**0.3**	**1.1**	----	----
Chromium	7440-47-3	1.0	mg/kg	**95.4**	**18.7**	**110**	----	----
Copper	7440-50-8	1.0	mg/kg	**873**	**55.8**	**381**	----	----
Cobalt	7440-48-4	0.5	mg/kg	**13.7**	**3.3**	**6.1**	----	----
Lead	7439-92-1	1.0	mg/kg	**2300**	**45.4**	**515**	----	----
Nickel	7440-02-0	1.0	mg/kg	**32.8**	**4.1**	**15.2**	----	----
Selenium	7782-49-2	0.1	mg/kg	**8.7**	**0.6**	**5.2**	----	----
Silver	7440-22-4	0.1	mg/kg	**1.7**	**0.2**	**1.3**	----	----
Vanadium	7440-62-2	2.0	mg/kg	**118**	**69.0**	**49.2**	----	----
Zinc	7440-66-6	1.0	mg/kg	**2620**	**170**	**1350**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	**1.75**	**0.09**	**0.88**	----	----
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	----	----	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	**3.2**	----	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	----	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	----	----	----	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP12	TRIP08	TRIP09	----	----
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0911145-001	EB0911145-002	EB0911145-003	----	----
EP131A: Organochlorine Pesticides - Continued									
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	----	----	----	----
^ DDT (total)	----	0.50	µg/kg		<0.50	----	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	----	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	----	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	----	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	----	----	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	----	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	----	----	----	----
gamma-BHC	58-89-9	0.50	µg/kg		<0.50	----	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	----	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	----	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	----	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1016	12974-11-2	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	----	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**95.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**86.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**79.1**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**85.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**110**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP12	TRIP08	TRIP09	----	----
				Client sampling date / time	10-JUL-2009 15:00	10-JUL-2009 15:00	10-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0911145-001	EB0911145-002	EB0911145-003	----	----
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		107	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		----	70.7	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		29.6	----	----	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		36.4	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164

QUALITY CONTROL REPORT

Work Order	: **EB0911145**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Order number	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1042933)									
EB0911145-001	TRIP12	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	52.2	52.0	0.3	0% - 20%
EA055: Moisture Content (QC Lot: 1043440)									
EB0911272-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	3.2	3.0	6.0	No Limit
EB0911289-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	5.2	4.8	6.0	No Limit
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1047896)									
EB0911142-001	Anonymous	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	7.4	6.1	18.8	0% - 20%
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	1.2	1.3	9.2	0% - 50%
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	11.3	11.0	3.0	0% - 20%
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	69.5	62.6	10.3	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	133	130	2.4	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	155	146	6.5	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	15.0	14.6	3.0	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	799	713	11.4	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	16.6	16.1	2.7	0% - 50%
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	59.9	57.9	3.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1047895)									
EB0911142-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.27	0.27	0.0	0% - 20%
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1042866)									
EB0911142-001	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1047217)									
EB0911345-004	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EB0911375-006	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 1047217) - continued									
EB0911375-006	Anonymous	EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 1047214)									
ES0910561-040	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
ES0910561-009	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	0.7	1.1	41.8	No Limit
EP131A: Organochlorine Pesticides (QC Lot: 1043495)									
EB0911142-002	Anonymous	EP131A: Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: 4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: DDT (total)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endosulfan (sum)	115-29-7	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin aldehyde	7421-93-4	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Endrin ketone	53494-70-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor	76-44-8	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Heptachlor epoxide	1024-57-3	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: gamma-BHC	58-89-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Methoxychlor	72-43-5	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: cis-Chlordane	5103-71-9	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: trans-Chlordane	5103-74-2	0.50	µg/kg	<0.50	<0.50	0.0	No Limit
		EP131A: Total Chlordane (sum)	---	0.50	µg/kg	<0.50	<0.50	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 1043496)									
EB0911142-002	Anonymous	EP131B: Total Polychlorinated biphenyls	---	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1016	12974-11-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1221	11104-28-2	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1232	11141-16-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1242	53469-21-9	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1248	12672-29-6	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1254	11097-69-1	5.0	µg/kg	<5.0	<5.0	0.0	No Limit
		EP131B: Aroclor 1260	11096-82-5	5.0	µg/kg	<5.0	<5.0	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1047896)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.8 mg/kg	96.5	82	118
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.82 mg/kg	101	83	115
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	61.6 mg/kg	99.3	84	122
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	107	81	121
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	55.5 mg/kg	99.2	83	115
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.1 mg/kg	114	83	121
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	105 mg/kg	103	86	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047895)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.111 mg/kg	85.5	70	120
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1042866)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	50 mg/kg	77.4	74	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1047217)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	5.0 mg/kg	81.5	61	119
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	5.0 mg/kg	80.6	63	117
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	5.0 mg/kg	86.4	62	119
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	10 mg/kg	78.3	57	120
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	5.0 mg/kg	79.8	49	125
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	5.0 mg/kg	78.9	58	116
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	5.0 mg/kg	91.1	58	116
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	5.0 mg/kg	83.5	59	119
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	5.0 mg/kg	78.6	61	121
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	5.0 mg/kg	81.2	55	116
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	5.0 mg/kg	73.4	53	116
EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	10 mg/kg	66.6	41	137
EP090: Organotin Compounds (QCLot: 1047214)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	107	28	129
EP131A: Organochlorine Pesticides (QCLot: 1043495)								
EP131A: Aldrin	309-00-2	0.5	µg/kg	<0.50	5 µg/kg	82.3	31.7	140
EP131A: alpha-BHC	319-84-6	0.5	µg/kg	<0.50	5 µg/kg	79.7	24.5	150

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1043495) - continued								
EP131A: beta-BHC	319-85-7	0.5	µg/kg	<0.50	5 µg/kg	87.9	36.9	139
EP131A: delta-BHC	319-86-8	0.5	µg/kg	<0.50	5 µg/kg	76.2	38.2	137
EP131A: 4.4`-DDD	72-54-8	0.5	µg/kg	<0.50	5 µg/kg	94.6	42.5	141
EP131A: 4.4`-DDE	72-55-9	0.5	µg/kg	<0.50	5 µg/kg	79.9	34.8	140
EP131A: 4.4`-DDT	50-29-3	0.5	µg/kg	<0.50	5 µg/kg	88.0	38	143
EP131A: DDT (total)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Dieldrin	60-57-1	0.5	µg/kg	<0.50	5 µg/kg	90.9	43.2	134
EP131A: alpha-Endosulfan	959-98-8	0.5	µg/kg	<0.50	5 µg/kg	81.8	23.7	139
EP131A: beta-Endosulfan	33213-65-9	0.5	µg/kg	<0.50	5 µg/kg	84.4	35.8	138
EP131A: Endosulfan sulfate	1031-07-8	0.5	µg/kg	<0.50	5 µg/kg	90.4	7.45	158
EP131A: Endosulfan (sum)	115-29-7	0.5	µg/kg	<0.50	----	----	----	----
EP131A: Endrin	72-20-8	0.5	µg/kg	<0.50	5 µg/kg	93.7	21.6	162
EP131A: Endrin aldehyde	7421-93-4	0.5	µg/kg	<0.50	5 µg/kg	59.8	19.3	131
EP131A: Endrin ketone	53494-70-5	0.5	µg/kg	<0.50	5 µg/kg	83.2	17.9	141
EP131A: Heptachlor	76-44-8	0.5	µg/kg	<0.50	5 µg/kg	107	31	153
EP131A: Heptachlor epoxide	1024-57-3	0.5	µg/kg	<0.50	5 µg/kg	83.8	34.3	138
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/kg	<0.50	5 µg/kg	68.4	18.6	146
EP131A: gamma-BHC	58-89-9	0.5	µg/kg	<0.50	5 µg/kg	80.9	30.7	145
EP131A: Methoxychlor	72-43-5	0.5	µg/kg	<0.50	5 µg/kg	88.9	15	157
EP131A: cis-Chlordane	5103-71-9	0.5	µg/kg	<0.50	5 µg/kg	82.1	22.3	145
EP131A: trans-Chlordane	5103-74-2	0.5	µg/kg	<0.50	5 µg/kg	67.7	42.4	139
EP131A: Total Chlordane (sum)	----	0.5	µg/kg	<0.50	----	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1043496)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1016	12974-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	74.8	61.3	121
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1047896)							
EB0911142-002	Anonymous	EG020-SD: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	109	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	106	70	130
		EG020-SD: Copper	7440-50-8	50 mg/kg	# Not Determined	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	103	70	130
		EG020-SD: Lead	7439-92-1	50 mg/kg	118	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	109	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047895)							
EB0911142-002	Anonymous	EG035T-LL: Mercury	7439-97-6	5.0 mg/kg	99.9	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1042866)							
EB0911142-003	Anonymous	EK026G: Total Cyanide	57-12-5	20 mg/kg	70.0	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 1047217)							
EB0911345-003	Anonymous	EP075(SIM): Phenol	108-95-2	2.5 mg/kg	87.0	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	2.5 mg/kg	83.4	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	2.5 mg/kg	76.1	70	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	2.5 mg/kg	85.9	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	2.5 mg/kg	84.7	70	130
EP090: Organotin Compounds (QCLot: 1047214)							
EB0911142-003	Anonymous	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	# Not Determined	20	130
EP131A: Organochlorine Pesticides (QCLot: 1043495)							
EB0911142-002	Anonymous	EP131A: Aldrin	309-00-2	5 µg/kg	37.9	31.7	140
		EP131A: alpha-BHC	319-84-6	5 µg/kg	41.9	24.5	150
		EP131A: beta-BHC	319-85-7	5 µg/kg	# Not Determined	36.9	139
		EP131A: delta-BHC	319-86-8	5 µg/kg	# 21.1	38.2	137
		EP131A: 4.4`-DDD	72-54-8	5 µg/kg	64.8	42.5	141
		EP131A: 4.4`-DDE	72-55-9	5 µg/kg	65.6	34.8	140
		EP131A: 4.4`-DDT	50-29-3	5 µg/kg	49.4	38	143
		EP131A: Dieldrin	60-57-1	5 µg/kg	47.5	43.2	134
		EP131A: alpha-Endosulfan	959-98-8	5 µg/kg	51.3	23.7	139
		EP131A: beta-Endosulfan	33213-65-9	5 µg/kg	54.0	35.8	138
		EP131A: Endosulfan sulfate	1031-07-8	5 µg/kg	46.8	7.45	158
		EP131A: Endrin	72-20-8	5 µg/kg	51.1	21.6	162

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 1043495) - continued							
EB0911142-002	Anonymous	EP131A: Endrin aldehyde	7421-93-4	5 µg/kg	55.3	19.3	131
		EP131A: Endrin ketone	53494-70-5	5 µg/kg	45.7	17.9	141
		EP131A: Heptachlor	76-44-8	5 µg/kg	# Not Determined	31	153
		EP131A: Heptachlor epoxide	1024-57-3	5 µg/kg	61.9	34.3	138
		EP131A: Hexachlorobenzene (HCB)	118-74-1	5 µg/kg	44.7	18.6	146
		EP131A: gamma-BHC	58-89-9	5 µg/kg	# Not Determined	30.7	145
		EP131A: Methoxychlor	72-43-5	5 µg/kg	35.0	15	157
		EP131A: cis-Chlordane	5103-71-9	5 µg/kg	45.5	22.3	145
		EP131A: trans-Chlordane	5103-74-2	5 µg/kg	# 38.7	42.4	139
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 1043496)							
EB0911142-002	Anonymous	EP131B: Aroclor 1254	11097-69-1	50 µg/kg	# 37.7	61.3	121

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0911145**	Page	: 1 of 7
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-JUL-2009
Sampler	: Richard Cole	Issue Date	: 29-JUL-2009
Order number	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
TRIP12, TRIP08, TRIP09	**10-JUL-2009**	**----**	----	----	**17-JUL-2009**	17-JUL-2009	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved							
TRIP12, TRIP08, TRIP09	**10-JUL-2009**	**24-JUL-2009**	07-AUG-2009	✓	**27-JUL-2009**	06-JAN-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
TRIP12, TRIP08, TRIP09	**10-JUL-2009**	**24-JUL-2009**	07-AUG-2009	✓	**27-JUL-2009**	07-AUG-2009	✓
EK026G: Total Cyanide By Discrete Analyser							
Soil Glass Jar - Unpreserved							
TRIP08	**10-JUL-2009**	**17-JUL-2009**	17-JUL-2009	✓	**21-JUL-2009**	31-JUL-2009	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved							
TRIP12	**10-JUL-2009**	**23-JUL-2009**	24-JUL-2009	✓	**23-JUL-2009**	01-SEP-2009	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
TRIP08	**10-JUL-2009**	**23-JUL-2009**	24-JUL-2009	✓	**27-JUL-2009**	01-SEP-2009	✓
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved							
TRIP12	**10-JUL-2009**	**17-JUL-2009**	24-JUL-2009	✓	**27-JUL-2009**	26-AUG-2009	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved							
TRIP12	**10-JUL-2009**	**17-JUL-2009**	24-JUL-2009	✓	**27-JUL-2009**	26-AUG-2009	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	3	27	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Cyanide By Discrete Analyser	EK026G	SOIL	APHA 21st 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Organochlorine Pesticides (Ultra-trace)	EP131A	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)
PCB's (Ultra-trace)	EP131B	SOIL	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD) This technique is compliant with NEPM (1999) Schedule B(3) (Method 504)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for TCN in Soils	EK026PR	SOIL	APHA 21st ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	EB0911142-002	Anonymous	**Copper**	7440-50-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	EB0911142-002	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP090: Organotin Compounds	EB0911142-003	Anonymous	**Tributyltin**	56573-85-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP131A: Organochlorine Pesticides	EB0911142-002	Anonymous	**beta-BHC**	319-85-7	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	Anonymous	**delta-BHC**	319-86-8	21.1 %	38.2-137%	**Recovery less than lower data quality objective**
EP131A: Organochlorine Pesticides	EB0911142-002	Anonymous	**Heptachlor**	76-44-8	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	Anonymous	**gamma-BHC**	58-89-9	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP131A: Organochlorine Pesticides	EB0911142-002	Anonymous	**trans-Chlordane**	5103-74-2	38.7 %	42.4-139%	**Recovery less than lower data quality objective**
EP131B: Polychlorinated Biphenyls (as Aroclors)	EB0911142-002	Anonymous	**Aroclor 1254**	11097-69-1	37.7 %	61.3-121%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Chain of Custody

1 of 1

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail:

Laboratory Details
Lab. Name: ALS Brisbane
Lab. Address:
Contact Name:
Lab. Ref:
Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: S4338 09

Sampled By: Richard Cole
AECOM Project No: S3017805
Project Name: Port Kembla Outer Harbour
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr _____days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: _____)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: richard.cole@aecom.com christiaan.donnelli@aecom.com	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	TOC	PAH (ultra low)	BTEX + TPH	SPOCAS	Eluviate Metals	Eluviate PAHs	Cyanide	STBT	Phenols	OCP (ult)	Total PCBs (ult)	Metals M13	Other
	TRIP12 1	10.7.09	X					X		2x soil jars									✓	✓	✓	✓	
	TRIP08 2	10.7.09	X					X		2x soil jars							✓	✓				✓	
SAE	TRIP02 3	10.7.09	X					X		2x soil jars												✓	
Extra:	TRIP09 &3																						

Environmental Division
Brisbane
Work Order
EB0911145

Telephone : +61-7-3243 7222

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg

Comments:

Lab Report No. | Esky ID

Relinquished by: Richard Cole Signed: Date: 13/7/09
Recieved by: Frank Signed: Date: 13/7/09 1:15pm

Relinquished by: Signed: Date:
Recieved by: Signed: Date:

Printed copies of this document are uncontrolled

BMS-PM-DV-F046

Revision: Jun 08

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0911145**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 Port Kembla Outer Harbour	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: EB2009MAUAUS0293 (SY/330/09V3)
Site	: ----		
Sampler	: Richard Cole	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 14-JUL-2009	Issue Date	: 21-JUL-2009 11:37
Client Requested Due Date	: 28-JUL-2009	Scheduled Reporting Date	: **28-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 7.8,7.0,8.2,-1.2 C - Ice present
No. of coolers/boxes	: 4 MEDIUM, 2 LARGE	No. of samples received	: 3
Sercurity Seal	: Intact.	No. of samples analysed	: 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample TRIP02 was not received.**
- **Received an extra sample labelled: TRIP09. As per email sent from Jacob Waugh of ALS Sydney, this sample will remain on hold unless notified otherwise.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required Level of Reporting)	SOIL - EK026G (Solids) Total Cyanide By Discrete Analyser	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP090 (solids) Organotins	SOIL - UTO-2S Ultratrace OC PCB Pesticides
EB0911145-001	10-JUL-2009 15:00	TRIP12	✓	✓	✓		✓		✓
EB0911145-002	10-JUL-2009 15:00	TRIP08	✓	✓	✓	✓		✓	
EB0911145-003	10-JUL-2009 15:00	TRIP09		✓	✓				

Requested Deliverables

MR CHRISTIAAN DONNETTI

- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MR RICHARD COLE

- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0911300**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR RICHARD COLE	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: richard.cole@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: ----	Issue Date	: 28-JUL-2009
Site	: PORT KEMBLA		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Celine Conceicao	Spectroscopist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG093:LCS recovery for Pb falls outside ALS Dynamic Control Limit. However, it is within the acceptance criteria based on ALS DQO. No further action is required.**

Analytical Results

Sub-Matrix: WATER				Client sample ID	TRIP01	----	----	----	----
				Client sampling date / time	13-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0911300-001	----	----	----	----
EA015: Total Dissolved Solids									
^ Total Dissolved Solids @180°C	GIS-210-010	1	mg/L		37000	----	----	----	----
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	1	mg/L		4	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Selenium	7782-49-2	2	µg/L		<2	----	----	----	----
Antimony	7440-36-0	0.5	µg/L		<0.5	----	----	----	----
Arsenic	7440-38-2	0.5	µg/L		1.6	----	----	----	----
Cadmium	7440-43-9	0.2	µg/L		<0.2	----	----	----	----
Chromium	7440-47-3	0.5	µg/L		<0.5	----	----	----	----
Cobalt	7440-48-4	0.2	µg/L		<0.2	----	----	----	----
Copper	7440-50-8	1	µg/L		2	----	----	----	----
Lead	7439-92-1	0.2	µg/L		0.5	----	----	----	----
Nickel	7440-02-0	0.5	µg/L		<0.5	----	----	----	----
Silver	7440-22-4	0.1	µg/L		<0.1	----	----	----	----
Vanadium	7440-62-2	0.5	µg/L		2.2	----	----	----	----
Zinc	7440-66-6	5	µg/L		6	----	----	----	----
EK025G: Free cyanide by Discrete Analyser									
Free Cyanide	----	0.004	mg/L		<0.004	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.02	µg/L		<0.02	----	----	----	----
Acenaphthylene	208-96-8	0.02	µg/L		<0.02	----	----	----	----
Acenaphthene	83-32-9	0.02	µg/L		<0.02	----	----	----	----
Fluorene	86-73-7	0.02	µg/L		<0.02	----	----	----	----
Phenanthrene	85-01-8	0.02	µg/L		<0.02	----	----	----	----
Anthracene	120-12-7	0.02	µg/L		<0.02	----	----	----	----
Fluoranthene	206-44-0	0.02	µg/L		<0.02	----	----	----	----
Pyrene	129-00-0	0.02	µg/L		<0.02	----	----	----	----
Benz(a)anthracene	56-55-3	0.02	µg/L		<0.02	----	----	----	----
Chrysene	218-01-9	0.02	µg/L		<0.02	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.02	µg/L		<0.02	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.02	µg/L		<0.02	----	----	----	----
Benzo(a)pyrene	50-32-8	0.005	µg/L		<0.005	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.02	µg/L		<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	TRIP01	----	----	----	----
				Client sampling date / time	13-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0911300-001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a.h)anthracene	53-70-3	0.02	µg/L		<0.02	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.02	µg/L		<0.02	----	----	----	----
^ Total PAH	----	0.005	µg/L		<0.005	----	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.010	µg/L		<0.010	----	----	----	----
alpha-BHC	319-84-6	0.010	µg/L		<0.010	----	----	----	----
beta-BHC	319-85-7	0.010	µg/L		<0.010	----	----	----	----
delta-BHC	319-86-8	0.010	µg/L		<0.010	----	----	----	----
4.4`-DDD	72-54-8	0.010	µg/L		<0.010	----	----	----	----
4.4`-DDE	72-55-9	0.010	µg/L		<0.010	----	----	----	----
4.4`-DDT	50-29-3	0.010	µg/L		<0.010	----	----	----	----
^ DDT (total)	----	0.010	µg/L		<0.010	----	----	----	----
Dieldrin	60-57-1	0.010	µg/L		<0.010	----	----	----	----
alpha-Endosulfan	959-98-8	0.010	µg/L		<0.010	----	----	----	----
beta-Endosulfan	33213-65-9	0.010	µg/L		<0.010	----	----	----	----
Endosulfan sulfate	1031-07-8	0.010	µg/L		<0.010	----	----	----	----
Endosulfan (sum)	115-29-7	0.010	µg/L		<0.010	----	----	----	----
Endrin	72-20-8	0.010	µg/L		<0.010	----	----	----	----
Endrin aldehyde	7421-93-4	0.010	µg/L		<0.010	----	----	----	----
Endrin ketone	53494-70-5	0.010	µg/L		<0.010	----	----	----	----
Heptachlor	76-44-8	0.005	µg/L		<0.005	----	----	----	----
Heptachlor epoxide	1024-57-3	0.010	µg/L		<0.010	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L		<0.010	----	----	----	----
gamma-BHC	58-89-9	0.010	µg/L		<0.010	----	----	----	----
Methoxychlor	72-43-5	0.010	µg/L		<0.010	----	----	----	----
cis-Chlordane	5103-71-9	0.010	µg/L		<0.010	----	----	----	----
trans-Chlordane	5103-74-2	0.010	µg/L		<0.010	----	----	----	----
Total Chlordane (sum)	----	0.010	µg/L		<0.010	----	----	----	----
Oxychlordane	27304-13-8	0.010	µg/L		<0.010	----	----	----	----
EP132A: Phenolic Compounds									
2-Chlorophenol	95-57-8	0.05	µg/L		<0.05	----	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.05	µg/L		<0.05	----	----	----	----
m-Cresol	108-39-4	0.1	µg/L		<0.1	----	----	----	----
o-Cresol	95-48-7	0.1	µg/L		<0.1	----	----	----	----
p-Cresol	106-44-5	0.1	µg/L		<0.1	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.1	µg/L		<0.1	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.1	µg/L		<0.1	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.1	µg/L		<0.1	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**				Client sample ID	TRIP01	----	----	----	----
				Client sampling date / time	13-JUL-2009 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EB0911300-001**	**----**	**----**	**----**	**----**
EP132A: Phenolic Compounds - Continued									
Hexachlorophene	70-30-4	0.1	µg/L		<0.1	----	----	----	----
2-Nitrophenol	88-75-5	0.1	µg/L		<0.1	----	----	----	----
4-Nitrophenol	100-02-7	0.1	µg/L		<0.1	----	----	----	----
Pentachlorophenol	87-86-5	0.05	µg/L		<0.05	----	----	----	----
Phenol	108-95-2	0.1	µg/L		<0.1	----	----	----	----
Tetrachlorophenol	58-90-2	0.1	µg/L		<0.1	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.1	µg/L		<0.1	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.1	µg/L		<0.1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**87.0**	----	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**86.4**	----	----	----	----
EP132S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.1	%		**57.4**	----	----	----	----
Phenol-d6	13127-88-3	0.1	%		**41.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**98.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**108**	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**94.5**	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%		**93.1**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**78.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**109**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**82.3**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**111**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP132S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	21	100
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

QUALITY CONTROL REPORT

Work Order	: **EB0911300**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR RICHARD COLE	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: richard.cole@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: PORT KEMBLA		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: ----	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Celine Conceicao	Spectroscopist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Wisam Abou-Maraseh	Spectroscopist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA015: Total Dissolved Solids (QC Lot: 1044021)									
EB0911159-002	Anonymous	EA015: Total Dissolved Solids @180°C	GIS-210-010	1	mg/L	108	132	20.0	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1047852)									
EB0911300-001	TRIP01	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES0910576-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0003	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1050309)									
EM0906535-001	Anonymous	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	1.9	1.8	0.0	No Limit
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	1.3	1.5	14.3	No Limit
		EG093A-T: Copper	7440-50-8	1	µg/L	<1	<1	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	<5	<5	0.0	No Limit
ES0910564-013	Anonymous	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-T: Cobalt	7440-48-4	0.2	µg/L	0.2	0.2	0.0	No Limit
		EG093A-T: Lead	7439-92-1	0.2	µg/L	0.2	<0.2	0.0	No Limit
		EG093A-T: Antimony	7440-36-0	0.5	µg/L	2.9	2.8	4.8	No Limit
		EG093A-T: Arsenic	7440-38-2	0.5	µg/L	3.9	3.8	3.6	No Limit
		EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-T: Nickel	7440-02-0	0.5	µg/L	2.2	2.2	0.0	No Limit
		EG093A-T: Vanadium	7440-62-2	0.5	µg/L	8.1	8.4	3.9	0% - 50%
		EG093A-T: Copper	7440-50-8	1	µg/L	<1	<1	0.0	No Limit
		EG093A-T: Zinc	7440-66-6	5	µg/L	5	5	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1050310)									
EM0906535-001	Anonymous	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
ES0910564-013	Anonymous	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
EK025G: Free cyanide by Discrete Analyser (QC Lot: 1051215)									
EB0911300-001	TRIP01	EK025G: Free Cyanide	---	0.004	mg/L	<0.004	<0.004	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1045077)									
ES0910405-022	Anonymous	EP132-LL: Benzo(a)pyrene	50-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP132-LL: Total PAH	---	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1045077) - continued									
ES0910405-022	Anonymous	EP132-LL: Naphthalene	91-20-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Acenaphthylene	208-96-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Acenaphthene	83-32-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Fluorene	86-73-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Phenanthrene	85-01-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Anthracene	120-12-7	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Fluoranthene	206-44-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Pyrene	129-00-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Benz(a)anthracene	56-55-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Chrysene	218-01-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Benzo(b)fluoranthene	205-99-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Benzo(k)fluoranthene	207-08-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Indeno(1.2.3.cd)pyrene	193-39-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Dibenz(a.h)anthracene	53-70-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP132-LL: Benzo(g.h.i)perylene	191-24-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP132A: Phenolic Compounds (QC Lot: 1045076)									
ES0910405-022	Anonymous	EP132: 2-Chlorophenol	95-57-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP132: 4-Chloro-3-Methylphenol	59-50-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP132: Pentachlorophenol	87-86-5	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP132: m-Cresol	108-39-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: o-Cresol	95-48-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: p-Cresol	106-44-5	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2.4-Dichlorophenol	120-83-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2.6-Dichlorophenol	87-65-0	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2.4-Dimethylphenol	105-67-9	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Hexachlorophene	70-30-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2-Nitrophenol	88-75-5	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 4-Nitrophenol	100-02-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Phenol	108-95-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: Tetrachlorophenol	58-90-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2.4.5-Trichlorophenol	95-95-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EP132: 2.4.6-Trichlorophenol	88-06-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA015: Total Dissolved Solids (QCLot: 1044021)								
EA015: Total Dissolved Solids @180°C	GIS-210-010	1	mg/L	<1	2000 mg/L	101	85	109
EA025: Suspended Solids (QCLot: 1044022)								
EA025LL: Suspended Solids (SS)	----	1	mg/L	<1	150 mg/L	93.3	89	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047852)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	108	81	119
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1050309)								
EG093A-T: Antimony	7440-36-0	0.5	µg/L	<0.5	----	---	----	----
EG093A-T: Arsenic	7440-38-2	0.5	µg/L	<0.5	10 µg/L	97.8	89	125
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	87.4	78	112
EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	10 µg/L	93.9	86	126
EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	10 µg/L	92.7	90	126
EG093A-T: Copper	7440-50-8	1	µg/L	<1	10 µg/L	98.1	87	123
EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	10 µg/L	# 86.0	89	121
EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	93.3	85	125
EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	----	---	----	----
EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	10 µg/L	107	87	121
EG093A-T: Zinc	7440-66-6	5	µg/L	<5	10 µg/L	98.0	82	128
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1050310)								
EG093B-T: Selenium	7782-49-2	2	µg/L	<2	10 µg/L	94.8	75	130
EK025G: Free cyanide by Discrete Analyser (QCLot: 1051215)								
EK025G: Free Cyanide	----	0.004	mg/L	<0.004	0.5 mg/L	75.2	70	124
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1043536)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	86.2	56.7	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1045077)								
EP132-LL: Naphthalene	91-20-3	0.02	µg/L	<0.02	0.025 µg/L	109	68.3	116
EP132-LL: Acenaphthylene	208-96-8	0.02	µg/L	<0.02	0.025 µg/L	102	72.4	112
EP132-LL: Acenaphthene	83-32-9	0.02	µg/L	<0.02	0.025 µg/L	103	73.2	111
EP132-LL: Fluorene	86-73-7	0.02	µg/L	<0.02	0.025 µg/L	80.6	72.9	114
EP132-LL: Phenanthrene	85-01-8	0.02	µg/L	<0.02	0.025 µg/L	91.2	74.8	112
EP132-LL: Anthracene	120-12-7	0.02	µg/L	<0.02	0.025 µg/L	88.1	73.4	113
EP132-LL: Fluoranthene	206-44-0	0.02	µg/L	<0.02	0.025 µg/L	93.4	74.8	117
EP132-LL: Pyrene	129-00-0	0.02	µg/L	<0.02	0.025 µg/L	112	74.1	117
EP132-LL: Benz(a)anthracene	56-55-3	0.02	µg/L	<0.02	0.025 µg/L	83.8	73.6	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1045077) - continued								
EP132-LL: Chrysene	218-01-9	0.02	µg/L	<0.02	0.025 µg/L	90.5	69.6	120
EP132-LL: Benzo(b)fluoranthene	205-99-2	0.02	µg/L	<0.02	0.025 µg/L	78.9	71.4	119
EP132-LL: Benzo(k)fluoranthene	207-08-9	0.02	µg/L	<0.02	0.025 µg/L	80.2	74.8	118
EP132-LL: Benzo(a)pyrene	50-32-8	0.005	µg/L	<0.005	0.025 µg/L	# 72.4	75.2	117
EP132-LL: Indeno(1.2.3.cd)pyrene	193-39-5	0.02	µg/L	<0.02	0.025 µg/L	98.5	67.8	119
EP132-LL: Dibenz(a.h)anthracene	53-70-3	0.02	µg/L	<0.02	0.025 µg/L	88.6	71.5	117
EP132-LL: Benzo(g.h.i)perylene	191-24-2	0.02	µg/L	<0.02	0.025 µg/L	87.2	66.6	121
EP132-LL: Total PAH	----	0.005	µg/L	<0.005	----	----	----	----
EP131A: Organochlorine Pesticides (QCLot: 1045963)								
EP131A: Aldrin	309-00-2	0.001	µg/L	----	0.1 µg/L	79.6	35.8	139
		0.01	µg/L	<0.010	----	----	----	----
EP131A: alpha-BHC	319-84-6	0.001	µg/L	----	0.1 µg/L	73.4	19.7	153
		0.01	µg/L	<0.010	----	----	----	----
EP131A: beta-BHC	319-85-7	0.001	µg/L	----	0.1 µg/L	# 42.6	43.8	136
		0.01	µg/L	<0.010	----	----	----	----
EP131A: delta-BHC	319-86-8	0.001	µg/L	----	0.1 µg/L	44.9	37.4	144
		0.01	µg/L	<0.010	----	----	----	----
EP131A: 4.4`-DDD	72-54-8	0.001	µg/L	----	0.1 µg/L	103	37.5	145
		0.01	µg/L	<0.010	----	----	----	----
EP131A: 4.4`-DDE	72-55-9	0.001	µg/L	----	0.1 µg/L	94.8	30.5	146
		0.01	µg/L	<0.010	----	----	----	----
EP131A: 4.4`-DDT	50-29-3	0.001	µg/L	----	0.1 µg/L	113	31	151
		0.01	µg/L	<0.010	----	----	----	----
EP131A: DDT (total)	----	0.01	µg/L	<0.010	----	----	----	----
EP131A: Dieldrin	60-57-1	0.001	µg/L	----	0.1 µg/L	112	34.4	145
		0.01	µg/L	<0.010	----	----	----	----
EP131A: alpha-Endosulfan	959-98-8	0.001	µg/L	----	0.1 µg/L	74.4	30.2	141
		0.01	µg/L	<0.010	----	----	----	----
EP131A: beta-Endosulfan	33213-65-9	0.001	µg/L	----	0.1 µg/L	116	30.3	148
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Endosulfan sulfate	1031-07-8	0.001	µg/L	----	0.1 µg/L	108	19.1	150
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Endosulfan (sum)	115-29-7	0.01	µg/L	<0.010	----	----	----	----
EP131A: Endrin	72-20-8	0.001	µg/L	----	0.1 µg/L	94.7	13	165
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Endrin aldehyde	7421-93-4	0.001	µg/L	----	0.1 µg/L	122	28.3	134
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Endrin ketone	53494-70-5	0.001	µg/L	----	0.1 µg/L	82.1	15.1	146
		0.01	µg/L	<0.010	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP131A: Organochlorine Pesticides (QCLot: 1045963) - continued								
EP131A: Heptachlor	76-44-8	0.001	µg/L	----	0.1 µg/L	56.2	33.2	148
		0.005	µg/L	<0.005	----	----	----	----
EP131A: Heptachlor epoxide	1024-57-3	0.001	µg/L	----	0.1 µg/L	73.9	36	143
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.001	µg/L	----	0.1 µg/L	49.3	14	146
		0.01	µg/L	<0.010	----	----	----	----
EP131A: gamma-BHC	58-89-9	0.001	µg/L	----	0.1 µg/L	47.3	27.2	147
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Methoxychlor	72-43-5	0.001	µg/L	----	0.1 µg/L	113	34.4	150
		0.01	µg/L	<0.010	----	----	----	----
EP131A: cis-Chlordane	5103-71-9	0.001	µg/L	----	0.1 µg/L	92.3	15.4	152
		0.01	µg/L	<0.010	----	----	----	----
EP131A: trans-Chlordane	5103-74-2	0.001	µg/L	----	0.1 µg/L	68.4	45.1	140
		0.01	µg/L	<0.010	----	----	----	----
EP131A: Total Chlordane (sum)	----	0.01	µg/L	<0.010	----	----	----	----
EP132A: Phenolic Compounds (QCLot: 1045076)								
EP132: 2-Chlorophenol	95-57-8	0.05	µg/L	<0.05	2 µg/L	100	74.2	119
EP132: 4-Chloro-3-Methylphenol	59-50-7	0.05	µg/L	<0.05	2 µg/L	99.9	70.1	115
EP132: m-Cresol	108-39-4	0.10	µg/L	<0.1	2 µg/L	# 99.0	45.3	93.3
EP132: o-Cresol	95-48-7	0.10	µg/L	<0.1	2 µg/L	99.7	46	103
EP132: p-Cresol	106-44-5	0.10	µg/L	<0.1	2 µg/L	98.5	43.6	102
EP132: 2.4-Dichlorophenol	120-83-2	0.10	µg/L	<0.1	2 µg/L	98.8	70.2	117
EP132: 2.6-Dichlorophenol	87-65-0	0.10	µg/L	<0.1	2 µg/L	98.2	69.8	115
EP132: 2.4-Dimethylphenol	105-67-9	0.10	µg/L	<0.1	2 µg/L	97.7	40	128
EP132: Hexachlorophene	70-30-4	0.10	µg/L	<0.1	2 µg/L	84.4	24.4	102
EP132: 2-Nitrophenol	88-75-5	0.10	µg/L	<0.1	2 µg/L	# 27.1	49.7	112
EP132: 4-Nitrophenol	100-02-7	0.10	µg/L	<0.1	2 µg/L	# 32.3	32.8	109
EP132: Pentachlorophenol	87-86-5	0.05	µg/L	<0.05	2 µg/L	36.4	32.6	89.4
EP132: Phenol	108-95-2	0.10	µg/L	<0.1	2 µg/L	# 95.0	26.5	58.7
EP132: Tetrachlorophenol	58-90-2	0.10	µg/L	<0.1	2 µg/L	55.1	34.4	108
EP132: 2.4.5-Trichlorophenol	95-95-4	0.10	µg/L	<0.1	2 µg/L	87.8	56.4	117
EP132: 2.4.6-Trichlorophenol	88-06-2	0.10	µg/L	<0.1	2 µg/L	93.6	56.8	117

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1047852)							
EB0911300-001	TRIP01	EG035T: Mercury	7439-97-6	0.010 mg/L	107	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1050309)							
EB0911456-002	Anonymous	EG093A-T: Arsenic	7440-38-2	50 µg/L	107	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	90.4	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	93.1	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	99.2	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	105	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	83.5	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	99.0	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	104	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	102	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1045077)							
ES0910405-022	Anonymous	EP132-LL: Naphthalene	91-20-3	0.025 µg/L	108	70	130
		EP132-LL: Acenaphthylene	208-96-8	0.025 µg/L	78.8	70	130
		EP132-LL: Acenaphthene	83-32-9	0.025 µg/L	73.3	70	130
		EP132-LL: Fluorene	86-73-7	0.025 µg/L	87.9	70	130
		EP132-LL: Phenanthrene	85-01-8	0.025 µg/L	97.2	70	130
		EP132-LL: Anthracene	120-12-7	0.025 µg/L	92.3	70	130
		EP132-LL: Fluoranthene	206-44-0	0.025 µg/L	# 69.1	70	130
		EP132-LL: Pyrene	129-00-0	0.025 µg/L	79.5	70	130
		EP132-LL: Benz(a)anthracene	56-55-3	0.025 µg/L	# 62.8	70	130
		EP132-LL: Chrysene	218-01-9	0.025 µg/L	77.0	70	130
		EP132-LL: Benzo(b)fluoranthene	205-99-2	0.025 µg/L	93.1	70	130
		EP132-LL: Benzo(k)fluoranthene	207-08-9	0.025 µg/L	88.2	70	130
		EP132-LL: Benzo(a)pyrene	50-32-8	0.025 µg/L	# 66.5	70	130
		EP132-LL: Indeno(1.2.3.cd)pyrene	193-39-5	0.025 µg/L	# 65.5	70	130
		EP132-LL: Dibenz(a.h)anthracene	53-70-3	0.025 µg/L	# 62.0	70	130
		EP132-LL: Benzo(g.h.i)perylene	191-24-2	0.025 µg/L	# 68.0	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0911300**	Page	: 1 of 7
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR RICHARD COLE	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: richard.cole@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: PORT KEMBLA		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: ----	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids							
Clear Plastic Bottle - Natural							
TRIP01	**13-JUL-2009**	**----**	----	----	**20-JUL-2009**	20-JUL-2009	✓
EA025: Suspended Solids							
Clear Plastic Bottle - Natural							
TRIP01	**13-JUL-2009**	**----**	----	----	**20-JUL-2009**	20-JUL-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
TRIP01	**13-JUL-2009**	**----**	----	----	**24-JUL-2009**	10-AUG-2009	✓
EG093T: Total Metals in Saline Water by ORC-ICPMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
TRIP01	**13-JUL-2009**	**25-JUL-2009**	09-JAN-2010	✓	**25-JUL-2009**	09-JAN-2010	✓
EK025G: Free cyanide by Discrete Analyser							
White Plastic Bottle - NaOH/Cadmium Nitrate							
TRIP01	**13-JUL-2009**	**27-JUL-2009**	27-JUL-2009	✓	**27-JUL-2009**	27-JUL-2009	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
TRIP01	**13-JUL-2009**	**20-JUL-2009**	20-JUL-2009	✓	**21-JUL-2009**	29-AUG-2009	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
TRIP01	**13-JUL-2009**	**20-JUL-2009**	20-JUL-2009	✓	**23-JUL-2009**	31-AUG-2009	✓
EP131A: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved							
TRIP01	**13-JUL-2009**	**20-JUL-2009**	20-JUL-2009	✓	**23-JUL-2009**	31-AUG-2009	✓
EP132A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved							
TRIP01	**13-JUL-2009**	**20-JUL-2009**	20-JUL-2009	✓	**22-JUL-2009**	31-AUG-2009	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Free CN by Discrete Analyser	EK025G	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH Compounds in Water	EP132-LL	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (Low Level)	EA025LL	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids	EA015	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	19	**10.5**	**9.5**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Free CN by Discrete Analyser	EK025G	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH Compounds in Water	EP132-LL	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (Low Level)	EA025LL	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids	EA015	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	19	**5.3**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Free CN by Discrete Analyser	EK025G	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH Compounds in Water	EP132-LL	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (Low Level)	EA025LL	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids	EA015	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	19	**5.3**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH Compounds in Water	EP132-LL	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	19	**5.3**	**4.8**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids	EA015	WATER	APHA 21st ed., 2540C A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Suspended Solids (Low Level)	EA025LL	WATER	APHA 21st ed., 2540D A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . Extra volume is used to counter the effect from saline water. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Free CN by Discrete Analyser	EK025G	WATER	APHA 21st ed., 4500-CN-C&N Free Cyanide is determined on samples after distillation using a pyridine-barbituric acid colouring reagent followed with an Discrete Analyser finish. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organochlorine Pesticides (Ultra-trace)	EP131A	WATER	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD). This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	WATER	USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
PAH Compounds in Water	EP132-LL	WATER	8270 GCMS, LVI, Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions

Preparation Methods	Method	Matrix	Method Descriptions
Free Cyanide	EK025-PR	WATER	APHA 21st ed., 4500 CN- C&N. The sample is distilled at natural pH. The CN is trapped in a caustic solution, and quanitified by colourimetry on FIA. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	USEPA 3510 (Extraction)/ In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with echange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an apporpriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG093T: Total Metals in Saline Water by ORC-ICPMS	1207424-003	----	**Lead**	7439-92-1	86.0 %	89-121%	**Recovery less than lower control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	1201075-007	----	**Benzo(a)pyrene**	50-32-8	72.4 %	75.2-117%	**Recovery less than lower control limit**
EP131A: Organochlorine Pesticides	1202144-002	----	**beta-BHC**	319-85-7	42.6 %	43.8-136%	**Recovery less than lower control limit**
EP132A: Phenolic Compounds	1201075-002	----	**m-Cresol**	108-39-4	99.0 %	45.3-93.3%	**Recovery greater than upper control limit**
EP132A: Phenolic Compounds	1201075-002	----	**2-Nitrophenol**	88-75-5	27.1 %	49.7-112%	**Recovery less than lower control limit**
EP132A: Phenolic Compounds	1201075-002	----	**4-Nitrophenol**	100-02-7	32.3 %	32.8-109%	**Recovery less than lower control limit**
EP132A: Phenolic Compounds	1201075-002	----	**Phenol**	108-95-2	95.0 %	26.5-58.7%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Fluoranthene**	206-44-0	69.1 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Benz(a)anthracene**	56-55-3	62.8 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Benzo(a)pyrene**	50-32-8	66.5 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Indeno(1.2.3.cd)pyrene**	193-39-5	65.5 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Dibenz(a.h)anthracene**	53-70-3	62.0 %	70-130%	**Recovery less than lower data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0910405-022	Anonymous	**Benzo(g.h.i)perylene**	191-24-2	68.0 %	70-130%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	1	13	7.7	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0911300**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR RICHARD COLE	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: richard.cole@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: ----	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ----
Site	: PORT KEMBLA		
Sampler	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 17-JUL-2009	Issue Date	: 28-JUL-2009 13:25
Client Requested Due Date	: 28-JUL-2009	Scheduled Reporting Date	: **28-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 1.4,0.4,3.0 C - Ice present
No. of coolers/boxes	: 3 MEDIUM	No. of samples received	: 1
Sercurity Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EA015 Total Dissolved Solids	WATER - EA025LL Suspended Solids (Low level)	WATER - EG035T Total Mercury by FIMS	WATER - EG093A-T Total metals in Saline Water Suite A by ORC-ICPMS	WATER - EG093B-T Total Metals in Saline Water -Suite B by ORC-ICPMS	WATER - EK025G Free CN By Discrete Analyser	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP131A Ultra Trace Organochlorine Pesticides
EB0911300-001	13-JUL-2009 15:00	TRIP01	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP132A Phenols Ultratrace - 16 analytes	WATER - EP132-LL Super Ultra Trace PAH
EB0911300-001	13-JUL-2009 15:00	TRIP01	✓	✓

Requested Deliverables

MR RICHARD COLE

- *AU Certificate of Analysis - NATA (COA)	Email	richard.cole@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richard.cole@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richard.cole@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	richard.cole@aecom.com
- A4 - AU Tax Invoice (INV)	Email	richard.cole@aecom.com
- Default - Chain of Custody (COC)	Email	richard.cole@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	richard.cole@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	richard.cole@aecom.com
- EDI Format - XTab (XTAB)	Email	richard.cole@aecom.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0911461**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 PKPC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-JUL-2009
Sampler	: KATE PIGRAM	Issue Date	: 30-JUL-2009
Site	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Sarah Ashworth	Organic Chemist	Inorganics
Sarah Ashworth	Organic Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG020-SD (Total Metals in Sediments by ICP-MS); Sample EB0911641-002 (Trip 16) shows poor spike recovery for Copper and Lead due to sample heterogeneity. Confirmed by visual inspection.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	Trip 17	Trip 16	Trip 15	----	----
				Client sampling date / time	14-JUL-2009 15:00	15-JUL-2009 15:00	16-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0911461-001	EB0911461-002	EB0911461-003	----	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		29.2	23.6	52.2	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg		6.27	8.87	9.77	----	----
Cadmium	7440-43-9	0.1	mg/kg		0.2	1.3	0.2	----	----
Chromium	7440-47-3	1.0	mg/kg		139	124	128	----	----
Copper	7440-50-8	1.0	mg/kg		60.3	32.2	34.7	----	----
Cobalt	7440-48-4	0.5	mg/kg		2.8	5.4	7.0	----	----
Lead	7439-92-1	1.0	mg/kg		36.4	103	27.4	----	----
Nickel	7440-02-0	1.0	mg/kg		9.9	11.4	10.2	----	----
Selenium	7782-49-2	0.1	mg/kg		0.4	0.7	0.6	----	----
Silver	7440-22-4	0.1	mg/kg		0.2	0.4	0.2	----	----
Vanadium	7440-62-2	2.0	mg/kg		1780	409	860	----	----
Zinc	7440-66-6	1.0	mg/kg		178	754	187	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		0.08	0.13	0.04	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		1.97	1.85	1.51	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		<10	<10	<10	----	----
2-Methylnaphthalene	91-57-6	10	µg/kg		60	700	180	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<10	<10	<10	----	----
Acenaphthene	83-32-9	10	µg/kg		20	140	60	----	----
Acenaphthylene	208-96-8	10	µg/kg		50	760	170	----	----
Anthracene	120-12-7	10	µg/kg		50	480	120	----	----
Benz(a)anthracene	56-55-3	10	µg/kg		140	750	340	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	Trip 17	Trip 16	Trip 15	----	----
				Client sampling date / time	14-JUL-2009 15:00	15-JUL-2009 15:00	16-JUL-2009 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0911461-001	EB0911461-002	EB0911461-003	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	10	µg/kg		140	1030	340	----	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg		170	1110	510	----	----
Benzo(e)pyrene	192-97-2	10	µg/kg		90	620	230	----	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		100	740	140	----	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		70	440	140	----	----
Chrysene	218-01-9	10	µg/kg		120	620	290	----	----
Coronene	191-07-1	10	µg/kg		50	410	50	----	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		20	80	30	----	----
Fluoranthene	206-44-0	10	µg/kg		270	1820	700	----	----
Fluorene	86-73-7	10	µg/kg		40	420	110	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		90	590	130	----	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	<100	<100	----	----
Naphthalene	91-20-3	10	µg/kg		590	12000	1450	----	----
Perylene	198-55-0	10	µg/kg		50	280	110	----	----
Phenanthrene	85-01-8	10	µg/kg		180	1650	550	----	----
Pyrene	129-00-0	10	µg/kg		230	1920	610	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		87.8	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		91.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		77.0	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		83.4	77.7	70.4	----	----
Anthracene-d10	1719-06-8	0.1	%		87.6	72.9	69.6	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		91.7	68.9	68.1	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	121
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

QUALITY CONTROL REPORT

Work Order	: **EB0911461**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 PKPC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 21-JUL-2009
Sampler	: KATE PIGRAM	Issue Date	: 30-JUL-2009
Order number	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Organics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Sarah Ashworth	Organic Chemist	Inorganics
Sarah Ashworth	Organic Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1048652)									
EB0911529-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	20.5	20.8	1.3	0% - 20%
EB0911583-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	9.0	9.1	1.3	No Limit
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 1049685)									
EB0911461-001	Trip 17	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020-SD: Selenium	7782-49-2	0.1	mg/kg	0.4	0.4	0.0	No Limit
		EG020-SD: Silver	7440-22-4	0.1	mg/kg	0.2	0.2	0.0	No Limit
		EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	2.8	3.1	10.4	No Limit
		EG020-SD: Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	0.0	No Limit
		EG020-SD: Chromium	7440-47-3	1.0	mg/kg	139	163	16.0	0% - 20%
		EG020-SD: Copper	7440-50-8	1.0	mg/kg	60.3	65.8	8.7	0% - 20%
		EG020-SD: Lead	7439-92-1	1.0	mg/kg	36.4	40.6	10.8	0% - 20%
		EG020-SD: Nickel	7440-02-0	1.0	mg/kg	9.9	11.4	14.0	0% - 50%
		EG020-SD: Zinc	7440-66-6	1.0	mg/kg	178	208	16.0	0% - 20%
		EG020-SD: Arsenic	7440-38-2	1.00	mg/kg	6.27	6.88	9.2	No Limit
		EG020-SD: Vanadium	7440-62-2	2.0	mg/kg	1780	1750	1.6	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1049684)									
EB0911461-001	Trip 17	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.08	0.08	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 1052799)									
EB0911461-001	Trip 17	EP005: Total Organic Carbon	---	0.02	%	1.97	1.83	7.4	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1049221)									
EB0911461-001	Trip 17	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1049789)									
EB0911519-001	Anonymous	EP071: C15 - C28 Fraction	---	100	mg/kg	330	460	33.8	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	140	31.8	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1049221)									
EB0911461-001	Trip 17	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1049296)									
EP0903990-049	Anonymous	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1049296) - continued									
EP0903990-049	Anonymous	EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	70	50	34.4	No Limit
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Anthracene	120-12-7	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Chrysene	218-01-9	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Coronene	191-07-1	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Fluoranthene	206-44-0	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Fluorene	86-73-7	10	µg/kg	20	10	0.0	No Limit
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Naphthalene	91-20-3	10	µg/kg	10	10	0.0	No Limit
		EP132: Perylene	198-55-0	10	µg/kg	<10	<10	0.0	No Limit
		EP132: Phenanthrene	85-01-8	10	µg/kg	30	20	0.0	No Limit
		EP132: Pyrene	129-00-0	10	µg/kg	10	10	0.0	No Limit
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.0	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1049685)								
EG020-SD: Antimony	7440-36-0	0.5	mg/kg	<0.50	----	----	----	----
EG020-SD: Arsenic	7440-38-2	1.0	mg/kg	<1.00	13.8 mg/kg	107	82	118
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	2.82 mg/kg	92.3	83	115
EG020-SD: Chromium	7440-47-3	1.0	mg/kg	<1.0	61.6 mg/kg	84.2	84	122
EG020-SD: Copper	7440-50-8	1.0	mg/kg	<1.0	54.7 mg/kg	90.6	81	121
EG020-SD: Cobalt	7440-48-4	0.5	mg/kg	<0.5	----	----	----	----
EG020-SD: Lead	7439-92-1	1.0	mg/kg	<1.0	55.5 mg/kg	97.6	83	115
EG020-SD: Nickel	7440-02-0	1.0	mg/kg	<1.0	55.1 mg/kg	102	83	121
EG020-SD: Selenium	7782-49-2	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
EG020-SD: Vanadium	7440-62-2	2	mg/kg	<2.0	----	----	----	----
EG020-SD: Zinc	7440-66-6	1.0	mg/kg	<1.0	105 mg/kg	104	86	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1049684)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.111 mg/kg	110	70	120
EP005: Total Organic Carbon (TOC) (QCLot: 1052799)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1049221)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	109	71	123
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1049789)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	259 mg/kg	94.0	65	112
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	524 mg/kg	84.0	76.2	122
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEX (QCLot: 1049221)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	78	121
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	100	78	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	102	72	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	99.6	66	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	102	70	118
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1049296)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	95.4	34.8	123
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	92.7	66.6	122
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	108	6.88	147
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	90.2	62.9	124

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1049296) - continued								
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	82.4	58.2	117
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	87.5	61.4	117
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	103	65.7	125
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	90.1	60.7	119
EP132: Benzo(b)fluoranthene	205-99-2	10	µg/kg	<10	100 µg/kg	95.1	68.6	126
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	95.3	70	129
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	94.6	52.4	135
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	93.8	70.4	126
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	101	67.5	126
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	95.5	34.7	141
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	98.1	61.7	129
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	100	68.7	126
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	96.3	66.7	123
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	95.3	56.6	131
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	1000 µg/kg	# 47.9	50	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	86.2	63.2	120
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	88.0	58.6	119
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	98.5	65.4	124
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	98.9	67.9	127

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 1049685)							
EB0911461-002	Trip 16	EG020-SD: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG020-SD: Cadmium	7440-43-9	25 mg/kg	89.3	70	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	125	70	130
		EG020-SD: Cobalt	7440-48-4	50 mg/kg	94.0	70	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	89.4	70	130
		EG020-SD: Vanadium	7440-62-2	50 mg/kg	# Not Determined	70	130
		EG020-SD: Zinc	7440-66-6	50 mg/kg	# Not Determined	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1049684)							
EB0911461-002	Trip 16	EG035T-LL: Mercury	7439-97-6	0.5 mg/kg	99.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1049789)							
EB0911519-001	Anonymous	EP071: C10 - C14 Fraction	----	259 mg/kg	101	70	130
		EP071: C15 - C28 Fraction	----	524 mg/kg	111	70	130
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1049296)							
EP0903990-049	Anonymous	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	69.5	21	129
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	53.2	40	130
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	59.8	8	158
		EP132: Acenaphthene	83-32-9	100 µg/kg	77.2	38	127
		EP132: Acenaphthylene	208-96-8	100 µg/kg	71.4	35	122
		EP132: Anthracene	120-12-7	100 µg/kg	67.3	44	124
		EP132: Benz(a)anthracene	56-55-3	100 µg/kg	80.4	48	124
		EP132: Benzo(a)pyrene	50-32-8	100 µg/kg	75.3	44	123
		EP132: Benzo(b)fluoranthene	205-99-2	100 µg/kg	88.7	43	129
		EP132: Benzo(e)pyrene	192-97-2	100 µg/kg	77.3	46	130
		EP132: Benzo(g.h.i)perylene	191-24-2	100 µg/kg	50.4	43	129
		EP132: Benzo(k)fluoranthene	207-08-9	100 µg/kg	83.7	54	123
		EP132: Chrysene	218-01-9	100 µg/kg	68.7	55	122
		EP132: Coronene	191-07-1	100 µg/kg	40.4	33	134
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	52.2	46	129
		EP132: Fluoranthene	206-44-0	100 µg/kg	67.5	52	125
		EP132: Fluorene	86-73-7	100 µg/kg	69.8	45	121
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	100 µg/kg	45.3	41	132
		EP132: N-2-Fluorenyl Acetamide	53-96-3	1000 µg/kg	52.2	28	152
		EP132: Naphthalene	91-20-3	100 µg/kg	64.5	34	130
		EP132: Perylene	198-55-0	100 µg/kg	71.9	38	124
		EP132: Phenanthrene	85-01-8	100 µg/kg	68.4	45	124

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1049296) - continued							
EP0903990-049	Anonymous	EP132: Pyrene	129-00-0	100 µg/kg	67.6	51	129

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0911461**	Page	: 1 of 6
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 PKPC	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 21-JUL-2009
Sampler	: KATE PIGRAM	Issue Date	: 30-JUL-2009
Order number	: ----		
		No. of samples received	: 3
Quote number	: SY/330/09V3	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**----**	----	----	**23-JUL-2009**	21-JUL-2009	×
Soil Glass Jar - Unpreserved Trip 16	**15-JUL-2009**	**----**	----	----	**23-JUL-2009**	22-JUL-2009	×
Soil Glass Jar - Unpreserved Trip 15	**16-JUL-2009**	**----**	----	----	**23-JUL-2009**	23-JUL-2009	✓
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**27-JUL-2009**	11-AUG-2009	✓	**27-JUL-2009**	10-JAN-2010	✓
Soil Glass Jar - Unpreserved Trip 16	**15-JUL-2009**	**27-JUL-2009**	12-AUG-2009	✓	**27-JUL-2009**	11-JAN-2010	✓
Soil Glass Jar - Unpreserved Trip 15	**16-JUL-2009**	**27-JUL-2009**	13-AUG-2009	✓	**27-JUL-2009**	12-JAN-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**27-JUL-2009**	11-AUG-2009	✓	**28-JUL-2009**	11-AUG-2009	✓
Soil Glass Jar - Unpreserved Trip 16	**15-JUL-2009**	**27-JUL-2009**	12-AUG-2009	✓	**28-JUL-2009**	12-AUG-2009	✓
Soil Glass Jar - Unpreserved Trip 15	**16-JUL-2009**	**27-JUL-2009**	13-AUG-2009	✓	**28-JUL-2009**	13-AUG-2009	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag Trip 17	**14-JUL-2009**	**29-JUL-2009**	---	----	**29-JUL-2009**	11-AUG-2009	✓
Pulp Bag Trip 16	**15-JUL-2009**	**29-JUL-2009**	---	----	**29-JUL-2009**	12-AUG-2009	✓
Pulp Bag Trip 15	**16-JUL-2009**	**29-JUL-2009**	---	----	**29-JUL-2009**	13-AUG-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**24-JUL-2009**	28-JUL-2009	✓	**24-JUL-2009**	28-JUL-2009	✓
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**24-JUL-2009**	28-JUL-2009	✓	**25-JUL-2009**	02-SEP-2009	✓
EP080: BTEX							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**24-JUL-2009**	28-JUL-2009	✓	**24-JUL-2009**	28-JUL-2009	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved Trip 17	**14-JUL-2009**	**24-JUL-2009**	28-JUL-2009	✓	**26-JUL-2009**	02-SEP-2009	✓
Soil Glass Jar - Unpreserved Trip 16	**15-JUL-2009**	**24-JUL-2009**	29-JUL-2009	✓	**26-JUL-2009**	02-SEP-2009	✓
Soil Glass Jar - Unpreserved Trip 15	**16-JUL-2009**	**24-JUL-2009**	30-JUL-2009	✓	**26-JUL-2009**	02-SEP-2009	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS (Low Level)	EG035T-LL	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	8270 GCMS Capiliary column, SIM mode.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Acetylation	ORG17A-AC	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	1206102-002	----	**N-2-Fluorenyl Acetamide**	53-96-3	47.9 %	50-138%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG020-SD: Total Metals in Sediments by ICPMS	EB0911461-002	Trip 16	**Vanadium**	7440-62-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	EB0911461-002	Trip 16	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content						
Soil Glass Jar - Unpreserved Trip 17	----	----	----	23-JUL-2009	21-JUL-2009	**2**
Soil Glass Jar - Unpreserved Trip 16	----	----	----	23-JUL-2009	22-JUL-2009	**1**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

AECOM

Chain of Custody

AECOM - Sydney
Level 5, 828 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax 61 2 8484 8989
E-mail: Christiaan.Donetti@aecom.com Kate.Pigram@aecom.com

Sampled By: KATE PIGRAM
AECOM Project No: S2017805

Laboratory Details
Lab. Name: ALS BRISBANE
Lab. Address: 32 SHAND ST, STAFFORD
Contact Name: QLD 4053
Lab. Ref:
Project Name: PLPC
Tel (07) 3243 7202
Fax (07) 3243 7218
Preliminary Report by:
Final Report by:
Lab Quote No: SY33009
PO No.

Specifications:

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr ______ days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.17	
5. Special storage requirements? (details: ______)	
6. Shell Quality Partnership:	
7. Report Format: ☐ Fax ☐ Hardcopy ☐ Email:	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Metals (M13)	TOC	PAH (ultra-trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAHs	Cyanide	CRBT	Phenols	OCP	Total PCBs	TCLP Metals	TCLP PAHs	Other: HOLD
1	TRIP 17	14/07/09	X					X		VARIOUS	X	X	X	X											
2	TRIP 16	15/07/09	↓					↓			X	X	X												
3	TRIP 15	16/07/09	↓					↓			X	X	X												

Environmental Division
Brisbane
Work Order
EB0911461
Telephone : +61-7-3243 7222

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg Sb Ag Co Se V
Comments:
Lab Report No.
Esky ID

Relinquished by:	Signed:	Date:	
Recieved by: Frank	Signed:	Date: 17/7/9 5:30	
Relinquished by: KATE PIGRAM	Signed: KPigram	Date: 17/07/09	
Recieved by:	Signed:	Date:	

Printed copies of this document are uncontrolled

BMS-PM-DV-F046

Revision: Jun 08

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0911461**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MR CHRISTIAAN DONNETTI	Contact	: Tim Kilmister
Address	: LEVEL 11, 44 MARKET STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: christiaan.donnetti@aecom.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: ----	Telephone	: +61-7-3243 7222
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: S3017805 PKPC	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: EB2009MAUAUS0293 (SY/330/09V3)
Site	: ----		
Sampler	: KATE PIGRAM	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 21-JUL-2009	Issue Date	: 28-JUL-2009 13:19
Client Requested Due Date	: 27-JUL-2009	Scheduled Reporting Date	: **27-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 1.8,-1.8,-0.4 C - Ice present
No. of coolers/boxes	: 3 MEDIUM , 1 LARGE	No. of samples received	: 3
Sercurity Seal	: Intact.	No. of samples analysed	: 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035T-LL Total Mercury by FIMS - Low Level	SOIL - EP132B Ultratrace PAH's	SOIL - S-04 TPH/BTEX
EB0911461-001	14-JUL-2009 15:00	Trip 17	✓	✓	✓	✓	✓	✓
EB0911461-002	15-JUL-2009 15:00	Trip 16	✓	✓	✓	✓	✓	
EB0911461-003	16-JUL-2009 15:00	Trip 15	✓	✓	✓	✓	✓	

Requested Deliverables

MR CHRISTIAAN DONNETTI

- *AU Certificate of Analysis - NATA (COA)	Email	christiaan.donnetti@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	christiaan.donnetti@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	christiaan.donnetti@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	christiaan.donnetti@aecom.com
- A4 - AU Tax Invoice (INV)	Email	christiaan.donnetti@aecom.com
- Default - Chain of Custody (COC)	Email	christiaan.donnetti@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	christiaan.donnetti@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MS KATE PIGRAM

- *AU Certificate of Analysis - NATA (COA)	Email	kate.pigram@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kate.pigram@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kate.pigram@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	kate.pigram@aecom.com
- Default - Chain of Custody (COC)	Email	kate.pigram@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	kate.pigram@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	kate.pigram@aecom.com
- EDI Format - XTab (XTAB)	Email	kate.pigram@aecom.com

About AECOM

AECOM is a leading provider of advanced environmental, planning, design, engineering, management and advisory services in the buildings, energy, environment, government, mining, power, transport and water markets.

From our offices across Australia and New Zealand, we leverage AECOM's global reach while providing a unique blend of local knowledge, innovation and technical excellence combined with a personal commitment to meeting our clients' specific needs.

Together, AECOM forms a strong global network of more than 43,000 professionals united by a common purpose to enhance and sustain the world's built, natural and social environments.

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PORT KEMBLA OUTER HARBOUR DEVELOPMENT

Environmental Assessment Volumes

Volume 1

Main Environmental Assessment Document
Appendix A: Consultation Supplementary Documentation

Volume 2

Appendix B: Contamination: Sediment Quality - Main Document

Volume 3

Appendix B: Contamination: Sediment Quality - Laboratory Results

Volume 4

Appendix C: Contamination: Soils and Groundwater Quality
Appendix D: Qualitative Human Health and Ecological Risk Assessment: InSitu Sediment and Groundwater Contamination

Volume 5

Appendix E: Preliminary Hazard Analysis
Appendix F: Coastal Hydrodynamic Processes
Appendix G: Aquatic Ecology

Volume 6

Appendix H: Terrestrial Ecology Supplementary Documentation
Appendix I: Traffic and Transport
Appendix J: Noise and Vibration
Appendix K: Air Quality

Volume 7

Appendix L: Landscape and Visual Amenity
Appendix M: Heritage
Appendix N: Climate Change