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								
VC3_0.0-0.2,	VC3_0.5-0.6,	**14-JUL-2009**	**----**	----	----	**20-JUL-2009**	21-JUL-2009	✓
VC3_1.2-1.3,	VC3_1.8-1.9,							
VC5_0.0-0.2,	VC5_0.5-0.6,							
VC5_1.6-1.7,	VC5_2.5-2.6,							
VC1_0.0-0.2,	VC1_0.5-0.6,							
VC1_1.3-1.4,	VC1_2.4-2.5,							
DUP25								
Soil Glass Jar - Unpreserved								
VC2_0.3-0.4,	VC2_0.7-0.8,	**15-JUL-2009**	**----**	----	----	**20-JUL-2009**	22-JUL-2009	✓
VC2_2.7-2.8,	VC2_3.7-3.8,							
VC11_0.2-0.3,	VC11_0.5-0.6,							
VC11_1.1-1.2,	VC11_2.5-2.6,							
VC12_0.2-0.3,	VC12_1.0-1.1,							
VC12_2.1-2.2,	VC12_3.2-3.3,							
VC9_0.3-0.4,	VC9_0.7-0.8,							
VC9_2.8-2.9,	VC9_3.5-3.6,							
DUP21,	DUP29							
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC6_0.2-0.3,	**16-JUL-2009**	**----**	----	----	**20-JUL-2009**	23-JUL-2009	✓
VC6_0.5-0.6,	VC6_0.7-0.8,							
VC8_0.2-0.3,	VC8_0.5-0.6,							
VC8_2.3-2.4,	VC8_2.7-2.8,							
VC7_0.1-0.2,	VC7_0.2-0.3,							
VC7_0.7-0.8,	VC7_0.9-1.0,							
VC7_0.3-0.4,	VC4_0.2-0.3,							
VC4_0.7-0.8,	VC4_1.2-1.3,							
VC4_1.7-1.8,	DUP28,							
DUP27								

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 - Continued								
Soil Glass Jar - Unpreserved								
PC13_0.0-0.07,	PC23_0.0-0.06,	**17-JUL-2009**	**----**	----	----	**20-JUL-2009**	24-JUL-2009	✓
SG23_0.0-0.03,	SG24_0.0-0.01,							
SG26_0.0-0.02								
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
VC9_0.7-0.8,	VC4_1.2-1.3	**21-JUL-2009**	**21-JUL-2009**	17-JAN-2010	✓	**21-JUL-2009**	17-JAN-2010	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered								
VC8_0.5-0.6,	VC7_0.7-0.8	**21-JUL-2009**	**22-JUL-2009**	17-JAN-2010	✓	**22-JUL-2009**	17-JAN-2010	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered								
VC6_0.5-0.6		**22-JUL-2009**	**22-JUL-2009**	18-JAN-2010	✓	**22-JUL-2009**	18-JAN-2010	✓

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
EG020-SD: Total Metals in Sediments by ICPMS								
Soil Glass Jar - Unpreserved								
VC3_0.0-0.2,	VC3_0.5-0.6,	**14-JUL-2009**	**21-JUL-2009**	11-AUG-2009	✓	**22-JUL-2009**	10-JAN-2010	✓
VC3_1.2-1.3,	VC3_1.8-1.9,							
VC5_0.0-0.2,	VC5_0.5-0.6,							
VC5_1.6-1.7,	VC5_2.5-2.6,							
VC1_0.0-0.2,	VC1_0.5-0.6,							
VC1_1.3-1.4,	VC1_2.4-2.5,							
DUP25								
Soil Glass Jar - Unpreserved								
VC2_0.3-0.4,	VC2_0.7-0.8,	**15-JUL-2009**	**21-JUL-2009**	12-AUG-2009	✓	**22-JUL-2009**	11-JAN-2010	✓
VC2_2.7-2.8,	VC2_3.7-3.8,							
VC11_0.2-0.3,	VC11_0.5-0.6,							
VC11_1.1-1.2,	VC11_2.5-2.6,							
VC12_0.2-0.3,	VC12_1.0-1.1,							
VC12_2.1-2.2,	VC12_3.2-3.3,							
VC9_0.3-0.4,	VC9_0.7-0.8,							
VC9_2.8-2.9,	VC9_3.5-3.6,							
DUP21,	DUP29							
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC6_0.2-0.3,	**16-JUL-2009**	**21-JUL-2009**	13-AUG-2009	✓	**22-JUL-2009**	12-JAN-2010	✓
VC6_0.5-0.6,	VC6_0.7-0.8,							
VC8_0.2-0.3,	VC8_0.5-0.6,							
VC8_2.3-2.4,	VC8_2.7-2.8,							
VC7_0.1-0.2,	VC7_0.2-0.3,							
VC7_0.7-0.8,	VC7_0.9-1.0,							
VC7_0.3-0.4,	VC4_0.2-0.3,							
VC4_0.7-0.8,	VC4_1.2-1.3,							
VC4_1.7-1.8,	DUP28,							
DUP27								
Soil Glass Jar - Unpreserved								
PC13_0.0-0.07,	PC23_0.0-0.06,	**17-JUL-2009**	**21-JUL-2009**	14-AUG-2009	✓	**22-JUL-2009**	13-JAN-2010	✓
SG23_0.0-0.03,	SG24_0.0-0.01,							
SG26_0.0-0.02								
EG035C: Leachable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
VC9_0.7-0.8,	VC8_0.5-0.6,	**21-JUL-2009**	**----**	----	----	**23-JUL-2009**	18-AUG-2009	✓
VC7_0.7-0.8,	VC4_1.2-1.3							
Clear Plastic Bottle - Nitric Acid; Unfiltered								
VC6_0.5-0.6		**22-JUL-2009**	**----**	----	----	**23-JUL-2009**	19-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
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
VC3_0.0-0.2,	VC3_0.5-0.6,	**14-JUL-2009**	**21-JUL-2009**	11-AUG-2009	✓	**22-JUL-2009**	11-AUG-2009	✓
VC3_1.2-1.3,	VC3_1.8-1.9,							
VC5_0.0-0.2,	VC5_0.5-0.6,							
VC5_1.6-1.7,	VC5_2.5-2.6,							
VC1_0.0-0.2,	VC1_0.5-0.6,							
VC1_1.3-1.4,	VC1_2.4-2.5,							
DUP25								
Soil Glass Jar - Unpreserved								
VC2_0.3-0.4,	VC2_0.7-0.8,	**15-JUL-2009**	**21-JUL-2009**	12-AUG-2009	✓	**22-JUL-2009**	12-AUG-2009	✓
VC2_2.7-2.8,	VC2_3.7-3.8,							
VC11_0.2-0.3,	VC11_0.5-0.6,							
VC11_1.1-1.2,	VC11_2.5-2.6,							
VC12_0.2-0.3,	VC12_1.0-1.1,							
VC12_2.1-2.2,	VC12_3.2-3.3,							
VC9_0.3-0.4,	VC9_0.7-0.8,							
VC9_2.8-2.9,	VC9_3.5-3.6,							
DUP21,	DUP29							
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC6_0.2-0.3,	**16-JUL-2009**	**21-JUL-2009**	13-AUG-2009	✓	**22-JUL-2009**	13-AUG-2009	✓
VC6_0.5-0.6,	VC6_0.7-0.8,							
VC8_0.2-0.3,	VC8_0.5-0.6,							
VC8_2.3-2.4,	VC8_2.7-2.8,							
VC7_0.1-0.2,	VC7_0.2-0.3,							
VC7_0.7-0.8,	VC7_0.9-1.0,							
VC7_0.3-0.4,	VC4_0.2-0.3,							
VC4_0.7-0.8,	VC4_1.2-1.3,							
VC4_1.7-1.8,	DUP28,							
DUP27								
Soil Glass Jar - Unpreserved								
PC13_0.0-0.07,	PC23_0.0-0.06,	**17-JUL-2009**	**21-JUL-2009**	14-AUG-2009	✓	**22-JUL-2009**	14-AUG-2009	✓
SG23_0.0-0.03,	SG24_0.0-0.01,							
SG26_0.0-0.02								
EK026G: Total Cyanide By Discrete Analyser								
Soil Glass Jar - Unpreserved								
SG24_0.0-0.01		**17-JUL-2009**	**20-JUL-2009**	24-JUL-2009	✓	**21-JUL-2009**	03-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
EN33: TCLP Leach							
Lab Split : Leach for Hg, Cr(VI) and other metal VC9_0.7-0.8	**15-JUL-2009**	**---**	---	----	**21-JUL-2009**	12-AUG-2009	✓
Lab Split : Leach for Hg, Cr(VI) and other metal VC6_0.7-0.8, VC8_0.5-0.6, VC8_2.3-2.4	**16-JUL-2009**	**---**	---	----	**21-JUL-2009**	13-AUG-2009	✓
Lab Split : Leach for Hg, Cr(VI) and other metal VC6_0.5-0.6	**16-JUL-2009**	**---**	---	----	**22-JUL-2009**	13-AUG-2009	✓
LabSplit: Leach for organics and other tests VC2_2.7-2.8, VC9_2.8-2.9	**15-JUL-2009**	**---**	---	----	**21-JUL-2009**	29-JUL-2009	✓
LabSplit: Leach for organics and other tests VC7_0.7-0.8, VC4_1.2-1.3	**16-JUL-2009**	**---**	---	----	**21-JUL-2009**	30-JUL-2009	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved VC3_1.2-1.3, VC5_1.6-1.7, VC1_0.0-0.2	**14-JUL-2009**	**21-JUL-2009**	28-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC12_2.1-2.2, VC9_0.3-0.4	**15-JUL-2009**	**21-JUL-2009**	29-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC8_0.2-0.3, VC7_0.7-0.8, DUP27	**16-JUL-2009**	**21-JUL-2009**	30-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved PC13_0.0-0.07, SG24_0.0-0.01, SG26_0.0-0.02	**17-JUL-2009**	**20-JUL-2009**	31-JUL-2009	✓	**21-JUL-2009**	29-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								
VC3_0.5-0.6,	VC3_1.8-1.9,	**14-JUL-2009**	**20-JUL-2009**	28-JUL-2009	✓	**21-JUL-2009**	28-JUL-2009	✓
VC5_0.5-0.6,	VC1_0.5-0.6,							
VC1_2.4-2.5,	DUP25							
Soil Glass Jar - Unpreserved								
VC3_0.5-0.6,	VC3_1.8-1.9,	**14-JUL-2009**	**21-JUL-2009**	28-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
VC5_0.5-0.6,	VC1_0.5-0.6,							
VC1_2.4-2.5,	DUP25							
Soil Glass Jar - Unpreserved								
VC9_2.8-2.9		**15-JUL-2009**	**20-JUL-2009**	29-JUL-2009	✓	**21-JUL-2009**	29-JUL-2009	✓
Soil Glass Jar - Unpreserved								
VC9_2.8-2.9		**15-JUL-2009**	**21-JUL-2009**	29-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC8_0.2-0.3,	**16-JUL-2009**	**20-JUL-2009**	30-JUL-2009	✓	**21-JUL-2009**	30-JUL-2009	✓
VC7_0.1-0.2,	VC7_0.3-0.4,							
VC4_0.2-0.3								
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC8_0.2-0.3,	**16-JUL-2009**	**21-JUL-2009**	30-JUL-2009	✓	**22-JUL-2009**	30-AUG-2009	✓
VC7_0.1-0.2,	VC7_0.3-0.4,							
VC4_0.2-0.3								
Soil Glass Jar - Unpreserved								
PC23_0.0-0.06,	SG24_0.0-0.01,	**17-JUL-2009**	**20-JUL-2009**	31-JUL-2009	✓	**21-JUL-2009**	29-AUG-2009	✓
SG26_0.0-0.02								
EP080: BTEX								
Soil Glass Jar - Unpreserved								
VC3_0.5-0.6,	VC3_1.8-1.9,	**14-JUL-2009**	**20-JUL-2009**	28-JUL-2009	✓	**21-JUL-2009**	28-JUL-2009	✓
VC5_0.5-0.6,	VC1_0.5-0.6,							
VC1_2.4-2.5,	DUP25							
Soil Glass Jar - Unpreserved								
VC9_2.8-2.9		**15-JUL-2009**	**20-JUL-2009**	29-JUL-2009	✓	**21-JUL-2009**	29-JUL-2009	✓
Soil Glass Jar - Unpreserved								
VC6_0.0-0.1,	VC8_0.2-0.3,	**16-JUL-2009**	**20-JUL-2009**	30-JUL-2009	✓	**21-JUL-2009**	30-JUL-2009	✓
VC7_0.1-0.2,	VC7_0.3-0.4,							
VC4_0.2-0.3								
Soil Glass Jar - Unpreserved								
PC23_0.0-0.06,	SG24_0.0-0.01,	**17-JUL-2009**	**20-JUL-2009**	31-JUL-2009	✓	**21-JUL-2009**	31-JUL-2009	✓
SG26_0.0-0.02								

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
EP131A: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved VC5_0.0-0.2	**14-JUL-2009**	**21-JUL-2009**	28-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC11_0.2-0.3	**15-JUL-2009**	**21-JUL-2009**	29-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC7_0.7-0.8, DUP27	**16-JUL-2009**	**21-JUL-2009**	30-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved PC13_0.0-0.07, SG24_0.0-0.01, SG26_0.0-0.02	**17-JUL-2009**	**21-JUL-2009**	31-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved VC3_1.2-1.3, VC5_0.0-0.2, VC1_0.0-0.2	**14-JUL-2009**	**21-JUL-2009**	28-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC11_0.2-0.3	**15-JUL-2009**	**21-JUL-2009**	29-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved VC6_0.5-0.6, VC8_0.2-0.3, VC7_0.7-0.8, DUP27	**16-JUL-2009**	**21-JUL-2009**	30-JUL-2009	✓	**27-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved PC13_0.0-0.07, SG24_0.0-0.01, SG26_0.0-0.02	**17-JUL-2009**	**21-JUL-2009**	31-JUL-2009	✓	**27-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
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
VC2_2.7-2.8, VC9_2.8-2.9, VC6_0.7-0.8, VC8_2.3-2.4, VC7_0.7-0.8, VC4_1.2-1.3	**21-JUL-2009**	**23-JUL-2009**	28-JUL-2009	✓	**24-JUL-2009**	01-SEP-2009	✓
Soil Glass Jar - Unpreserved							
VC3_1.2-1.3, VC5_0.5-0.6, VC5_1.6-1.7, VC5_2.5-2.6, VC1_1.3-1.4	**14-JUL-2009**	**20-JUL-2009**	28-JUL-2009	✓	**23-JUL-2009**	29-AUG-2009	✓
Soil Glass Jar - Unpreserved							
DUP25	**14-JUL-2009**	**21-JUL-2009**	28-JUL-2009	✓	**24-JUL-2009**	30-AUG-2009	✓
Soil Glass Jar - Unpreserved							
DUP21, DUP29	**15-JUL-2009**	**20-JUL-2009**	29-JUL-2009	✓	**22-JUL-2009**	29-AUG-2009	✓
Soil Glass Jar - Unpreserved							
VC2_0.7-0.8, VC2_2.7-2.8, VC2_3.7-3.8, VC11_0.5-0.6, VC11_1.1-1.2, VC11_2.5-2.6, VC12_1.0-1.1, VC12_2.1-2.2, VC12_3.2-3.3, VC9_0.3-0.4, VC9_0.7-0.8	**15-JUL-2009**	**20-JUL-2009**	29-JUL-2009	✓	**23-JUL-2009**	29-AUG-2009	✓
Soil Glass Jar - Unpreserved							
VC8_2.7-2.8, VC7_0.2-0.3, VC7_0.7-0.8, VC7_0.9-1.0, VC7_0.3-0.4, VC4_0.7-0.8, VC4_1.2-1.3, VC4_1.7-1.8, DUP28, DUP27	**16-JUL-2009**	**20-JUL-2009**	30-JUL-2009	✓	**22-JUL-2009**	29-AUG-2009	✓
Soil Glass Jar - Unpreserved							
VC6_0.5-0.6, VC6_0.7-0.8, VC8_0.5-0.6, VC8_2.3-2.4	**16-JUL-2009**	**20-JUL-2009**	30-JUL-2009	✓	**23-JUL-2009**	29-AUG-2009	✓
Soil Glass Jar - Unpreserved							
PC23_0.0-0.06, SG24_0.0-0.01, SG26_0.0-0.02	**17-JUL-2009**	**21-JUL-2009**	31-JUL-2009	✓	**24-JUL-2009**	30-AUG-2009	✓

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

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
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved RB01	**13-JUL-2009**	**20-JUL-2009**	20-JUL-2009	✓	**21-JUL-2009**	29-AUG-2009	✓
Amber Glass Bottle - Unpreserved RB02	**14-JUL-2009**	**20-JUL-2009**	21-JUL-2009	✓	**21-JUL-2009**	29-AUG-2009	✓
Amber Glass Bottle - Unpreserved RB03	**15-JUL-2009**	**20-JUL-2009**	22-JUL-2009	✓	**21-JUL-2009**	29-AUG-2009	✓
Amber Glass Bottle - Unpreserved RB04	**16-JUL-2009**	**20-JUL-2009**	23-JUL-2009	✓	**21-JUL-2009**	29-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	9	72	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	2	7	**28.6**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	5	36	**13.9**	**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	EG035T	6	57	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	6	57	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	26	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	26	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	2	7	**28.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	36	**8.3**	**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	EG035T	3	57	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	57	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organochlorine Pesticides (Ultra-trace)	EP131A	2	7	**28.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	36	**8.3**	**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	EG035T	3	57	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	57	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organochlorine Pesticides (Ultra-trace)	EP131A	2	7	**28.6**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**5.0**	✓	ALS QCS3 requirement
PCB's (Ultra-trace)	EP131B	2	11	**18.2**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	36	**8.3**	**5.0**	✓	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*	
Matrix Spikes (MS) - Continued							
Total Cyanide By Discrete Analyser	EK026G	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	57	**5.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Sediments by ICPMS	EG020-SD	3	57	**5.3**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	26	**7.7**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	**7.7**	**5.0**	✓	ALS QCS3 requirement

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)							
Leachable Mercury by FIMS	EG035C	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	3	16	**18.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	2	16	**12.5**	**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)
Leachable Metals by ICPAES	EG005C	SOIL	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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.
Leachable Mercury by FIMS	EG035C	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. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the TCLP solution. 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 Mercury by FIMS	EG035T	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)
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)
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	USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
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)

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.
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	(USEPA SW846-1311, ALS QWI-EN/33) The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
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)
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	SOIL	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.
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.
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.

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
Method Blank (MB) Values							
EG020-SD: Total Metals in Sediments by ICPMS	1202139-001	----	**Silver**	7440-22-4	0.1 mg/kg	0.1 mg/kg	**Blank result exceeds permitted value**
Duplicate (DUP) RPDs							
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-011	VC1_1.3-1.4	**Cadmium**	7440-43-9	45.2 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-049	DUP28	**Chromium**	7440-47-3	25.9 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-011	VC1_1.3-1.4	**Chromium**	7440-47-3	21.9 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-001	VC3_0.0-0.2	**Chromium**	7440-47-3	24.1 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-001	VC3_0.0-0.2	**Copper**	7440-50-8	34.2 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-049	DUP28	**Vanadium**	7440-62-2	73.1 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-021	VC12_0.2-0.3	**Vanadium**	7440-62-2	22.8 %	0-20%	**RPD exceeds LOR based limits**
EG020-SD: Total Metals in Sediments by ICPMS	ES0910562-001	VC3_0.0-0.2	**Zinc**	7440-66-6	26.2 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	ES0910591-002	Anonymous	**C6 - C9 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910562-046	DUP25	**Chrysene**	218-01-9	54.4 %	55-122%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910562-046	DUP25	**Fluoranthene**	206-44-0	37.9 %	52-125%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910562-046	DUP25	**N-2-Fluorenyl Acetamide**	53-96-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910562-046	DUP25	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES0910562-046	DUP25	**Pyrene**	129-00-0	45.0 %	51-129%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	1200768-002	----	**Acenaphthylene**	208-96-8	112 %	72.4-112%	**Recovery greater than upper control limit**
EP132B: Polynuclear Aromatic Hydrocarbons	1200768-002	----	**Anthracene**	120-12-7	114 %	73.4-113%	**Recovery greater than upper control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	1200768-002	----	**Benz(a)anthracene**	56-55-3	114 %	73.6-114%	**Recovery greater than upper control limit**
EP132B: Polynuclear Aromatic Hydrocarbons	1200768-002	----	**Phenanthrene**	85-01-8	113 %	74.8-112%	**Recovery greater than upper control limit**

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	ES0910562-027	VC9_2.8-2.9	**Toluene-D8**	2037-26-5	120 %	81-117 %	**Recovery greater than upper 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.**

SYDNEY W/O.

Chain of Custody

AECOM

AECOM - Sydney
Level 5, 828 Pacific Highway
Tel: 61 2 8484 8999
Fax 61 2 8484 8989
E-mail: Christiaan.Donnelli@aecom.com; Kate.Param@aecom.com

Environmental Division
Sydney
Work Order
ES0910562
Telephone : +61-2-8784 8555

AECOM Project No: S3017805

FORMAT REQUIRED

24hr 48hr ______ days)

...ers to be excluded from extractions?

...samples to be reported as per NEPM 5.1.1?

...ils: ______

Yes (tick)

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW
Contact Name:
Lab. Ref:
Project Name: PAC - Outer Harbour
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No: SY/330/09
PO No. [illegible]

7. Report Format: ☐ Fax ☐ Hardcopy ☑ Email: SEE ABOVE

Analysis Request: METALS (M13), TOC, PAH (ultra-trace), BTEX/TPH, SPOCAS, Elutriate Metals, Elutriate PAHs, Cyanide, TBT, Phenols, BCP, Total PCBs, TCLP Metals, TCLP PAH; Other: HOLD

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	TBT	Phenols	BCP	Total PCBs	TCLP Metals	TCLP PAH		HOLD
1	VC3_0.0-0.2	14/07/09	X					X		Various combinations of: 1x 250mL soil jar; 2x 250mL soil jar; 1x 150mL soil jar; 1x plastic bag	X								X							
2	VC3_0.5-0.6	↓	↓					↓			X			X			X									
3	VC3_1.2-1.3										X	X	X		X	X				X		X				
4	VC3_1.8-1.9										X			X												
5	VC5_0.0-0.2										X					X			X		X	X				
6	VC5_0.5-0.6										X	X	X	X												
7	VC5_1.6-1.7										X		X		X		X		X	X						
8	VC5_2.5-2.6										X	X	X													
9	VC1_0.0-0.2										X					X			X	X		X				
10	VC1_0.5-0.6										X			X												
11	VC1_1.3-1.4										X	X	X		X		X									
12	VC1_2.4-2.5	↓	↓					↓			X			X												

CONTRACT WORK
WO: ES0910562
LAB: ALS Brisbane
DATE: in bla
SPLIT: TOC/TIC: ES0910566
elutriates: ES0910564
SPOCAS: ES0910563

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sb, Ag, Co, Se, V

Comments:

Lab Report No. Entry ID

Relinquished by:	Signed:	Date:	
Recieved by: Frank	Signed: [signature]	Date: 17/7/9 5:30	
Relinquished by: KATE PARAM	Signed: K Param	Date: 17/07/09	
Recieved by:	Signed:	Date:	

Chain of Custody

AECOM

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Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
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Sampled By: KATE PIGRAM
AECOM Project No: S20717805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:
Project Name: [illegible] - OUTER HARBOUR
PO No. 8833009

Specifications: ESCAT FORMAT REQUIRED

	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: SEE ABOVE	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filtred	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)
13	VC2_0.3-0.4	15/07/09	X					X		SEE PREVIOUS
14	VC2_0.7-0.8		↓					↓		
15	VC2_2.7-2.8									
16	VC2_3.7-3.8									
17	VC11_0.2-0.3									
18	VC11_0.5-0.6									
19	VC11_1.1-1.2									
20	VC11-2.5-2.6									
21	VC12_0.2-0.3									
22	VC12_1.0-1.1									
23	VC12_2.1-2.2									
24	VC12_3.2-3.3		↓					↓		

Analysis Request

Lab. ID	METALS (M13)	TOC	PAH (ultra-trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAHs	Cyanide	TBT	Phenols	BEP	Total PCBs	TCLP Metals	TCLP PAH		Other: HOLD
13	X								X							
14	X	X	X		X		X									
15	X		X						X					X		
16	X	X	X			X										
17	X								X		X	X				
18	X	X	X			X										
19	X		X						X							
20	X	X	X		X		X									
21	X					X			X							
22	X		X													
23	X	X	X				X			X						
24	X		X		X											

* 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: [signature] Date: 17/7/09 5:30pm

Relinquished by: KATE PIGRAM Signed: [signature] Date: 17/07/09
Recieved by: Signed: Date:

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Chain of Custody

AECOM

AECOM - Sydney	
Level 5, 828 Pacific Highway	Tel: 61 2 8484 8999
Pymble NSW 2073 Australia	Fax: 61 2 8484 8989
	E-mail: Christiaan.Connelli@aecom.com; Kate.Pigram@aecom.com
Sampled By: KATE PIGRAM	AECOM Project No: S20F805

Laboratory Details

Lab. Name: ALS
Lab. Address: 277-289 woodpark Rd, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:
Project Name: PPC-OUTER HARBOUR
PO No. 8933B089

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	Analysis Request: METALS (CM13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Elutriate Metals	Elutriate PAHs	Organotin	PSRT	Phenols	OCP	Total PCBs	HCLP Metals	TCLP PAHs	Other: HOLD
25	VC9_0.3-0.4	15/07/09	X					X		SEE PREVIOUS	X		X						X	X					
26	VC9_0.7-0.8	↓	↓					↓			X	X	X										X		
27	VC9_2.8-2.9										X	X		X		X								X	
28	VC9_3.5-3.6	↓									X						X								
29	VC6_0.0-0.1	16/07/09									X			X	X										
30	VC6_0.2-0.3										X														
31	VC6_0.5-0.6										X	X	X			X						X	X		
32	VC6_0.7-0.8										X		X		X		X		X					X	
33	VC8_0.2-0.3										X			X						X		X			
34	VC8_0.5-0.6										X	X	X										X		
35	VC8_2.3-2.4										X	X	X											X	
36	VC8_2.7-2.8	↓	↓					↓			X		X		X				X						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sb, Ag, Co, Se, V

Comments:

Lab Report No.

Entry ID

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

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AECOM

AECOM - Sydney	
Level 5, 828 Pacific Highway	Tel: 61 2 8484 8999
	Fax: 61 2 8484 8989
Pymble NSW 2073 Australia	E-mail: Christian.Kenneth@aecom.com; Kate.Pagram@aecom.com
Sampled By: KATE PAGRAM	AECOM Project No: 5207805

Laboratory Details

Lab. Name: ALS	Tel: (02) 8784 8555
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW	Fax: (02) 8784 8500
Contact Name:	Preliminary Report by:
Lab. Ref:	Final Report by:
Project Name: PEPC-OUTER HARBOUR	Lab Quote No:
	PO No. 88328089

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Lab ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	Analysis Request: METALS (M13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Eluviative Metals	Eluviative PAHs	Chloride	DBT	Phenols	BaP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
37	VC7_0.1-0.2	16/07/09	X					X			X		X												
38	VC7_0.2-0.3										X		X					X							
39	VC7_0.7-0.8										X	X	X						X	X	X	X	X		
40	VC7_0.9-1.0										X	X	X		X										
41	VC7_0.3-0.4										X		X	X											
42	VC4_0.2-0.3										X			X	X										
43	VC4_0.7-0.8										X	X	X												
44	VC4_1.2-1.3										X		X					X					X	X	
45	VC4_1.7-1.8	↓									X	X	X												
46	DUP25	14/07/09									X	X	X	X											
47	DUP21	15/07/09									X	X	X		X		X								
48	DUP29	↓	↓					↓			X	X	X												

SEE PREVIOUS

* 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 5:39	
Relinquished by: KATE PAGRAM	Signed:	Date: 17/07/09	
Recieved by:	Signed:	Date:	

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Chain of Custody

AECOM

AECOM - Sydney	**Laboratory Details**
Level 5, 828 Pacific Highway	Lab. Name: ALS
Pymble NSW 2073 Australia	Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Tel: 61 2 8484 8999	Contact Name:
Fax 61 2 8484 8989	Lab. Ref:
E-mail: Christian.Donneth@aecom.com; Kate.Ryan@aecom.com	Tel: (02) 8784 8555
Sampled By: KATE RYAN	Fax (02) 8784 8500
AECOM Project No: S2017805	Preliminary Report by:
Project Name: PKPC-OUTER HARBOUR	Final Report by:
PO No. 8833009	Lab Quote No:

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	Analysis Request: METALS (MI3)	TOC	BTEX/TPH (ultra-trace)	6 BTEX/TPH	SOCAS	Ethylene Metals	Ethylene Baths	Chloride	TBT	Phenols	PCB	TOTAL PCBs	TCLP Metals	TCLP PAH	Other: HOLD
49	DUP28	16/07/09	X					X		VARIOUS	X	X	X												
50	DUP27	16/07/09	X					X			X	X	X								X	X	X		
	TRIP17	14/07/09	↓					↓																	
	TRIP16	15/07/09																							
	TRIP15	16/07/09																							
51	RB01	13/07/09		X									PLEASE FORWARD TO ALS BRISBANE WITH SEPARATE COC →												
52	RB02	14/07/09		↓									X												
53	RB03	15/07/09											X												
54	RB04	16/07/09								1 x amber			X												
Extra samples: (55)	PC13_0-0-0.07																								
(56)	PC23_0-0-0.06																								
(57)	SG23_0-0-0.03																								

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg Sn, Ag, Co, Se, V

Comments:

Lab Report No.

Eskyl ID

Relinquished by:	Signed:	Date:	Relinquished by: KATE RYAN Signed: Date: 17/07/09
Recieved by: Frank	Signed:	Date: 17/7/09 5:30	Recieved by: Signed: Date:

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Extra samples (cont.)
(58) SG24_0-0-0.01

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910562**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 5
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: PRAC-OUTER HARBOUR		
Sampler	: KP	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 17-JUL-2009	Issue Date	: 20-JUL-2009 11:06
Client Requested Due Date	: 27-JUL-2009	Scheduled Reporting Date	: **27-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.2'C - Ice present
No. of coolers/boxes	: 6 HARD	No. of samples received	: 59
Sercurity Seal	: Intact.	No. of samples analysed	: 54

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(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Samples TRIP 17, TRIP 16 & TRIP 15 will be forwarded to ALS Brisbane as per COC.**
- **This work order split into ES0910561 (TBT/TOC), ES0910563 (SPOCAS), ES0910564 (ELUTRIATE)**
- **Samples PC13_0.0-0.07, PC23_0.0-0.06, SG23_0.0-0.03, SG24_0.0-0.01 and SG26_0.0-0.02 were received extra and placed on hold.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at 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	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP131B PCB's (Ultratrace)	SOIL - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds	SOIL - EP132B Ultratrace PAH's
ES0910562-001	14-JUL-2009 15:00	VC3_0.0-0.2		✓	✓	✓				
ES0910562-002	14-JUL-2009 15:00	VC3_0.5-0.6		✓	✓	✓				
ES0910562-003	14-JUL-2009 15:00	VC3_1.2-1.3		✓	✓	✓	✓	✓		✓
ES0910562-004	14-JUL-2009 15:00	_1.8-1.9		✓	✓	✓				
ES0910562-005	14-JUL-2009 15:00	VC5_0.0-0.2		✓	✓	✓				
ES0910562-006	14-JUL-2009 15:00	VC5_0.5-0.6		✓	✓	✓				✓
ES0910562-007	14-JUL-2009 15:00	VC5_1.6-1.7		✓	✓	✓	✓			✓
ES0910562-008	14-JUL-2009 15:00	VC5_2.5-2.6		✓	✓	✓				✓
ES0910562-009	14-JUL-2009 15:00	VC1_0.0-0.2		✓	✓	✓	✓	✓		
ES0910562-010	14-JUL-2009 15:00	VC1_0.5-0.6		✓	✓	✓				
ES0910562-011	14-JUL-2009 15:00	VC1_1.3-1.4		✓	✓	✓				✓
ES0910562-012	14-JUL-2009 15:00	VC1_2.4-2.5		✓	✓	✓				
ES0910562-013	15-JUL-2009 15:00	VC2_0.3-0.4		✓	✓	✓				
ES0910562-014	15-JUL-2009 15:00	VC2_0.7-0.8		✓	✓	✓				✓
ES0910562-015	15-JUL-2009 10:00	VC2_2.7-2.8							✓	
	15-JUL-2009 15:00	VC2_2.7-2.8		✓	✓	✓				✓
ES0910562-016	15-JUL-2009 15:00	VC2_3.7-3.8		✓	✓	✓				✓
ES0910562-017	15-JUL-2009 15:00	VC11_0.2-0.3		✓	✓	✓				
ES0910562-018	15-JUL-2009 15:00	VC11_0.5-0.6		✓	✓	✓				✓
ES0910562-019	15-JUL-2009 15:00	VC11_1.1-1.2		✓	✓	✓				✓
ES0910562-020	15-JUL-2009 15:00	VC11_2.5-2.6		✓	✓	✓				✓
ES0910562-021	15-JUL-2009 15:00	VC12_0.2-0.3		✓	✓	✓				
ES0910562-022	15-JUL-2009 15:00	VC12_1.0-1.1		✓	✓	✓				✓
ES0910562-023	15-JUL-2009 15:00	VC12_2.1-2.2		✓	✓	✓	✓			✓
ES0910562-024	15-JUL-2009 15:00	VC12_3.2-3.3		✓	✓	✓				✓
ES0910562-025	15-JUL-2009 15:00	VC9_0.3-0.4		✓	✓	✓	✓			✓
ES0910562-026	15-JUL-2009 15:00	VC9_0.7-0.8		✓	✓	✓				✓
ES0910562-027	15-JUL-2009 10:00	VC9_2.8-2.9							✓	
	15-JUL-2009 15:00	VC9_2.8-2.9		✓	✓	✓				
ES0910562-028	15-JUL-2009 15:00	VC9_3.5-3.6		✓	✓	✓				
ES0910562-029	16-JUL-2009 15:00	VC6_0.0-0.1		✓	✓	✓				
ES0910562-030	16-JUL-2009 15:00	VC6_0.2-0.3		✓	✓	✓				
ES0910562-031	16-JUL-2009 15:00	VC6_0.5-0.6		✓	✓	✓		✓		✓
ES0910562-032	16-JUL-2009 10:00	VC6_0.7-0.8							✓	
	16-JUL-2009 15:00	VC6_0.7-0.8		✓	✓	✓				✓

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP075 SIM Phenols only SIM - Phenols only	SOIL - EP131B PCB's (Ultratrace)	SOIL - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds	SOIL - EP132B Ultratrace PAH's
ES0910562-033	16-JUL-2009 15:00	VC8_0.2-0.3		✓	✓	✓	✓	✓		
ES0910562-034	16-JUL-2009 15:00	VC8_0.5-0.6		✓	✓	✓				✓
ES0910562-035	16-JUL-2009 10:00	VC8_2.3-2.4							✓	
	16-JUL-2009 15:00	VC8_2.3-2.4		✓	✓	✓				✓
ES0910562-036	16-JUL-2009 15:00	VC8_2.7-2.8		✓	✓	✓				✓
ES0910562-037	16-JUL-2009 15:00	VC7_0.1-0.2		✓	✓	✓				
ES0910562-038	16-JUL-2009 15:00	VC7_0.2-0.3		✓	✓	✓				✓
ES0910562-039	16-JUL-2009 10:00	VC7_0.7-0.8							✓	
	16-JUL-2009 15:00	VC7_0.7-0.8		✓	✓	✓	✓			✓
ES0910562-040	16-JUL-2009 15:00	VC7_0.9-1.0		✓	✓	✓				✓
ES0910562-041	16-JUL-2009 15:00	VC7_0.3-0.4		✓	✓	✓				✓
ES0910562-042	16-JUL-2009 15:00	VC4_0.2-0.3		✓	✓	✓				
ES0910562-043	16-JUL-2009 15:00	VC4_0.7-0.8		✓	✓	✓				✓
ES0910562-044	16-JUL-2009 10:00	VC4_1.2-1.3							✓	
	16-JUL-2009 15:00	VC4_1.2-1.3		✓	✓	✓				✓
ES0910562-045	16-JUL-2009 15:00	VC4_1.7-1.8		✓	✓	✓				✓
ES0910562-046	14-JUL-2009 15:00	DUP25		✓	✓	✓				✓
ES0910562-047	15-JUL-2009 15:00	DUP21		✓	✓	✓				✓
ES0910562-048	15-JUL-2009 15:00	DUP29		✓	✓	✓				✓
ES0910562-049	16-JUL-2009 15:00	DUP28		✓	✓	✓				✓
ES0910562-050	16-JUL-2009 15:00	DUP27		✓	✓	✓	✓			✓
ES0910562-055	[17-JUL-2009]	PC13_0.0-0.07	✓							
ES0910562-056	[17-JUL-2009]	PC23_0.0-0.06	✓							
ES0910562-057	[17-JUL-2009]	SG23_0.0-0.03	✓							
ES0910562-058	[17-JUL-2009]	SG24_0.0-0.01	✓							
ES0910562-059	[17-JUL-2009]	SG26_0.0-0.02	✓							

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-04 TPH/BTEX	SOIL - UTO-2S Ultratrace OC PCB Pesticides	SOIL - W-02L 8 metals (TCLP)
ES0910562-002	14-JUL-2009 15:00	VC3_0.5-0.6	✓		
ES0910562-004	14-JUL-2009 15:00	_1.8-1.9	✓		
ES0910562-005	14-JUL-2009 15:00	VC5_0.0-0.2		✓	
ES0910562-006	14-JUL-2009 15:00	VC5_0.5-0.6	✓		

			SOIL - S-04 TPH/BTEX	SOIL - UTO-2S Ultratrace OC PCB Pesticides	SOIL - W-02L 8 metals (TCLP)
ES0910562-010	14-JUL-2009 15:00	VC1_0.5-0.6	✓		
ES0910562-012	14-JUL-2009 15:00	VC1_2.4-2.5	✓		
ES0910562-017	15-JUL-2009 15:00	VC11_0.2-0.3		✓	
ES0910562-026	15-JUL-2009 10:00	VC9_0.7-0.8			✓
ES0910562-027	15-JUL-2009 15:00	VC9_2.8-2.9	✓		
ES0910562-029	16-JUL-2009 15:00	VC6_0.0-0.1	✓		
ES0910562-031	16-JUL-2009 10:00	VC6_0.5-0.6			✓
ES0910562-033	16-JUL-2009 15:00	VC8_0.2-0.3	✓		
ES0910562-034	16-JUL-2009 10:00	VC8_0.5-0.6			✓
ES0910562-037	16-JUL-2009 15:00	VC7_0.1-0.2	✓		
ES0910562-039	16-JUL-2009 10:00	VC7_0.7-0.8			✓
	16-JUL-2009 15:00	VC7_0.7-0.8		✓	
ES0910562-041	16-JUL-2009 15:00	VC7_0.3-0.4	✓		
ES0910562-042	16-JUL-2009 15:00	VC4_0.2-0.3	✓		
ES0910562-044	16-JUL-2009 10:00	VC4_1.2-1.3			✓
ES0910562-046	14-JUL-2009 15:00	DUP25	✓		
ES0910562-050	16-JUL-2009 15:00	DUP27		✓	

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds
ES0910562-051	13-JUL-2009 15:00	RB01	✓
ES0910562-052	14-JUL-2009 15:00	RB02	✓
ES0910562-053	15-JUL-2009 15:00	RB03	✓
ES0910562-054	16-JUL-2009 15:00	RB04	✓

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com

MR CHRISTIANN 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 - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MS KATE PIGRAM

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

THE RESULTS ADDRESS

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

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910563**	Page	: 1 of 8
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 28-JUL-2009
Site	: ----		
		No. of samples received	: 15
Quote number	: SY/330/09 V3	No. of samples analysed	: 12

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

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*
Kim McCabe	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

- **Analysis conducted by ALS Brisbane, NATA Site No. 818.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: VC3_1.2-1.3	VC5_1.6-1.7	VC1_1.3-1.4	VC2_0.7-0.8	VC11_2.5-2.6
				Client sampling date / time: 14-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00
				ES0910563-001	ES0910563-002	ES0910563-003	ES0910563-004	ES0910563-005
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	8.9	11.4	11.1	9.2	9.8
pH OX (23B)	----	0.1	pH Unit	8.1	10.7	8.6	8.1	8.5
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	<2	<2	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.14	0.27	0.21	0.07	0.08
Peroxide Sulfur (23De)	----	0.02	% S	0.57	0.50	0.66	0.27	0.22
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.43	0.23	0.45	0.20	0.14
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	270	141	280	123	91
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.27	0.81	0.73	0.19	0.17
Peroxide Calcium (23Wh)	----	0.02	% Ca	3.89	4.87	2.79	0.90	14.8
Acid Reacted Calcium (23X)	----	0.02	% Ca	3.62	4.06	2.06	0.70	14.7
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	1810	2030	1030	352	7320
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	2.90	3.25	1.65	0.56	11.7
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.09	<0.02	<0.02	0.06	0.07
Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.49	1.49	0.40	0.13	0.87
Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.40	1.49	0.40	0.07	0.80
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	325	1220	326	57	662
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.52	1.96	0.52	0.09	1.06
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	11.0	17.8	7.09	1.73	44.5
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	2190	3560	1420	345	8890
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	3.51	5.70	2.27	0.55	14.2
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	VC3_1.2-1.3	VC5_1.6-1.7	VC1_1.3-1.4	VC2_0.7-0.8	VC11_2.5-2.6
			Client sampling date / time	14-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910563-001	ES0910563-002	ES0910563-003	ES0910563-004	ES0910563-005
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: VC12_3.2-3.3	VC6_0.0-0.1	VC8_2.7-2.8	VC7_0.9-1.0	DUP 21
				Client sampling date / time: 15-JUL-2009 15:00	16-JUL-2009 15:00	16-JUL-2009 15:00	16-JUL-2009 15:00	15-JUL-2009 15:00
				ES0910563-006	ES0910563-007	ES0910563-009	ES0910563-010	ES0910563-011
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	9.7	11.0	11.6	8.2	9.2
pH OX (23B)	----	0.1	pH Unit	8.4	10.3	10.5	3.9	7.9
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	<2	340	<2
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	<2	340	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	0.54	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	0.54	<0.02
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.07	0.12	0.17	0.10	0.05
Peroxide Sulfur (23De)	----	0.02	% S	0.17	0.10	0.25	1.96	0.15
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.11	<0.02	0.08	1.86	0.10
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	66	<10	51	1160	60
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.17	0.57	0.65	0.25	0.18
Peroxide Calcium (23Wh)	----	0.02	% Ca	11.4	2.12	5.63	1.60	0.41
Acid Reacted Calcium (23X)	----	0.02	% Ca	11.2	1.55	4.97	1.35	0.23
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	5610	776	2480	672	117
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	8.99	1.24	3.98	1.08	0.19
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.05	<0.02	<0.02	0.10	0.05
Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.59	1.00	0.54	0.21	0.07
Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.54	1.00	0.54	0.11	0.02
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	449	826	448	87	20
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.72	1.32	0.72	0.14	0.03
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	29.7	9.70	17.4	----	0.66
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	5930	1940	3480	----	133
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	9.50	3.10	5.57	----	0.21
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: SOIL			Client sample ID	VC12_3.2-3.3	VC6_0.0-0.1	VC8_2.7-2.8	VC7_0.9-1.0	DUP 21
			Client sampling date / time	15-JUL-2009 15:00	16-JUL-2009 15:00	16-JUL-2009 15:00	16-JUL-2009 15:00	15-JUL-2009 15:00
Compound	*CAS Number*	*LOR*	*Unit*	ES0910563-006	ES0910563-007	ES0910563-009	ES0910563-010	ES0910563-011
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	**0.98**	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	**614**	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	**46**	<1

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC23_0.0-0.06	SG26_0.0-0.02	----	----	----
			Client sampling date / time	14-JUL-2009 15:00	14-JUL-2009 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES0910563-014	ES0910563-016	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	----	0.1	pH Unit	9.3	9.8	----	----	----
pH OX (23B)	----	0.1	pH Unit	8.1	8.8	----	----	----
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	<2	----	----	----
Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	0.14	0.05	----	----	----
Peroxide Sulfur (23De)	----	0.02	% S	0.35	0.05	----	----	----
Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	0.21	<0.02	----	----	----
acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	132	<10	----	----	----
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	----	0.02	% Ca	0.33	0.16	----	----	----
Peroxide Calcium (23Wh)	----	0.02	% Ca	4.58	2.08	----	----	----
Acid Reacted Calcium (23X)	----	0.02	% Ca	4.24	1.92	----	----	----
acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	2120	959	----	----	----
sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	3.40	1.54	----	----	----
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	0.15	0.04	----	----	----
Peroxide Magnesium (23Tm)	----	0.02	% Mg	0.55	0.17	----	----	----
Acid Reacted Magnesium (23U)	----	0.02	% Mg	0.40	0.13	----	----	----
Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	332	110	----	----	----
sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	0.53	0.18	----	----	----
EA029-F: Excess Acid Neutralising Capacity								
Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	13.0	4.98	----	----	----
acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	2600	995	----	----	----
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	4.16	1.59	----	----	----
EA029-H: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	----	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	PC23_0.0-0.06	SG26_0.0-0.02	----	----	----
			Client sampling date / time	14-JUL-2009 15:00	14-JUL-2009 15:00	----	----	----
Compound	CAS Number	LOR	Unit	ES0910563-014	ES0910563-016	----	----	----
EA029-H: Acid Base Accounting - Continued								
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	----	----

QUALITY CONTROL REPORT

Work Order	: **ES0910563**	Page	: 1 of 6
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 15
Quote number	: SY/330/09 V3	No. of samples analysed	: 12

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*
Kim McCabe	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 (%)*
EA029-A: pH Measurements (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: pH KCl (23A)	---	0.1	pH Unit	8.9	9.0	1.1	0% - 20%
		EA029: pH OX (23B)	---	0.1	pH Unit	8.1	8.1	0.0	0% - 20%
ES0910563-014	PC23_0.0-0.06	EA029: pH KCl (23A)	---	0.1	pH Unit	9.3	9.3	0.0	0% - 20%
		EA029: pH OX (23B)	---	0.1	pH Unit	8.1	8.1	0.0	0% - 20%
EA029-B: Acidity Trail (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	<2	<2	0.0	No Limit
ES0910563-014	PC23_0.0-0.06	EA029: sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA029: Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	<2	<2	0.0	No Limit
		EA029: Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	<2	<2	0.0	No Limit
EA029-C: Sulfur Trail (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: KCl Extractable Sulfur (23Ce)	---	0.02	% S	0.14	0.14	0.0	No Limit
		EA029: Peroxide Sulfur (23De)	---	0.02	% S	0.57	0.60	5.1	0% - 20%
		EA029: Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	0.43	0.46	5.4	0% - 20%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	270	285	5.4	0% - 20%
ES0910563-014	PC23_0.0-0.06	EA029: KCl Extractable Sulfur (23Ce)	---	0.02	% S	0.14	0.14	0.0	No Limit
		EA029: Peroxide Sulfur (23De)	---	0.02	% S	0.35	0.37	6.6	0% - 50%
		EA029: Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	0.21	0.23	8.6	0% - 50%
		EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	132	144	8.6	0% - 50%
EA029-D: Calcium Values (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: KCl Extractable Calcium (23Vh)	---	0.02	% Ca	0.27	0.28	0.0	0% - 50%
		EA029: Peroxide Calcium (23Wh)	---	0.02	% Ca	3.89	4.10	5.3	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 (%)*
EA029-D: Calcium Values (QC Lot: 1050743) - continued									
ES0910563-001	VC3_1.2-1.3	EA029: Acid Reacted Calcium (23X)	---	0.02	% Ca	3.62	3.82	5.4	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	2.90	3.06	5.4	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	1810	1910	5.4	0% - 20%
ES0910563-014	PC23_0.0-0.06	EA029: KCl Extractable Calcium (23Vh)	---	0.02	% Ca	0.33	0.34	0.0	0% - 50%
		EA029: Peroxide Calcium (23Wh)	---	0.02	% Ca	4.58	4.82	5.1	0% - 20%
		EA029: Acid Reacted Calcium (23X)	---	0.02	% Ca	4.24	4.48	5.3	0% - 20%
		EA029: sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	3.40	3.58	5.3	0% - 20%
		EA029: acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	2120	2230	5.3	0% - 20%
EA029-E: Magnesium Values (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	0.09	0.09	0.0	No Limit
		EA029: Peroxide Magnesium (23Tm)	---	0.02	% Mg	0.49	0.50	3.4	0% - 20%
		EA029: Acid Reacted Magnesium (23U)	---	0.02	% Mg	0.40	0.41	3.6	0% - 20%
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	0.52	0.54	3.6	0% - 20%
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	325	337	3.6	0% - 20%
ES0910563-014	PC23_0.0-0.06	EA029: KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	0.15	0.15	0.0	No Limit
		EA029: Peroxide Magnesium (23Tm)	---	0.02	% Mg	0.55	0.58	4.8	0% - 20%
		EA029: Acid Reacted Magnesium (23U)	---	0.02	% Mg	0.40	0.42	5.3	0% - 20%
		EA029: sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	0.53	0.56	5.3	0% - 20%
		EA029: Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	332	350	5.3	0% - 20%
EA029-F: Excess Acid Neutralising Capacity (QC Lot: 1050743)									
ES0910563-001	VC3_1.2-1.3	EA029: Excess Acid Neutralising Capacity (23Q)	---	0.02	% CaCO3	11.0	11.0	0.0	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	---	0.02	% S	3.51	3.51	0.0	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	---	10	mole H+ / t	2190	2190	0.0	0% - 20%
ES0910563-014	PC23_0.0-0.06	EA029: Excess Acid Neutralising Capacity (23Q)	---	0.02	% CaCO3	13.0	13.0	0.0	0% - 20%
		EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	---	0.02	% S	4.16	4.16	0.0	0% - 20%
		EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	---	10	mole H+ / t	2600	2600	0.0	0% - 20%

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
EA029-B: Acidity Trail (QCLot: 1050743)								
EA029: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA029: Titratable Peroxide Acidity (23G)	----	2	mole H+ / t	<2	----	----	----	----
EA029: Titratable Sulfidic Acidity (23H)	----	2	mole H+ / t	<2	----	----	----	----
EA029: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029: sulfidic - Titratable Peroxide Acidity (s-23G)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029: sulfidic - Titratable Sulfidic Acidity (s-23H)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA029-C: Sulfur Trail (QCLot: 1050743)								
EA029: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	----	----	----	----
EA029: Peroxide Sulfur (23De)	----	0.02	% S	<0.02	----	----	----	----
EA029: Peroxide Oxidisable Sulfur (23E)	----	0.02	% S	<0.02	----	----	----	----
EA029: acidity - Peroxide Oxidisable Sulfur (a-23E)	----	10	mole H+ / t	<10	----	----	----	----
EA029-D: Calcium Values (QCLot: 1050743)								
EA029: KCl Extractable Calcium (23Vh)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: Peroxide Calcium (23Wh)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: Acid Reacted Calcium (23X)	----	0.02	% Ca	<0.02	----	----	----	----
EA029: acidity - Acid Reacted Calcium (a-23X)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Calcium (s-23X)	----	0.02	% S	<0.02	----	----	----	----
EA029-E: Magnesium Values (QCLot: 1050743)								
EA029: KCl Extractable Magnesium (23Sm)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Peroxide Magnesium (23Tm)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Acid Reacted Magnesium (23U)	----	0.02	% Mg	<0.02	----	----	----	----
EA029: Acidity - Acid Reacted Magnesium (a-23U)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Acid Reacted Magnesium (s-23U)	----	0.02	% S	<0.02	----	----	----	----
EA029-F: Excess Acid Neutralising Capacity (QCLot: 1050743)								
EA029: Excess Acid Neutralising Capacity (23Q)	----	0.02	% CaCO3	<0.02	----	----	----	----
EA029: acidity - Excess Acid Neutralising Capacity (a-23Q)	----	10	mole H+ / t	<10	----	----	----	----
EA029: sulfidic - Excess Acid Neutralising Capacity (s-23Q)	----	0.02	% S	<0.02	----	----	----	----

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.

- **No Matrix Spike (MS) Results are required to be reported.**

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910563**	Page	: 1 of 7
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 28-JUL-2009
Order number	: ----		
		No. of samples received	: 15
Quote number	: SY/330/09 V3	No. of samples analysed	: 12

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
EA029-A: pH Measurements							
Snap Lock Bag - frozen VC3_1.2-1.3, VC1_1.3-1.4, SG26_0.0-0.02, VC5_1.6-1.7, PC23_0.0-0.06,	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC12_3.2-3.3, VC11_2.5-2.6, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC7_0.9-1.0, VC8_2.7-2.8,	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
EA029-B: Acidity Trail							
Snap Lock Bag - frozen VC3_1.2-1.3, VC1_1.3-1.4, SG26_0.0-0.02, VC5_1.6-1.7, PC23_0.0-0.06,	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC12_3.2-3.3, VC11_2.5-2.6, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC7_0.9-1.0, VC8_2.7-2.8,	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-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
EA029-C: Sulfur Trail							
Snap Lock Bag - frozen VC3_1.2-1.3, VC1_1.3-1.4, SG26_0.0-0.02 VC5_1.6-1.7, PC23_0.0-0.06,	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC12_3.2-3.3, VC11_2.5-2.6, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC7_0.9-1.0 VC8_2.7-2.8,	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
EA029-D: Calcium Values							
Snap Lock Bag - frozen VC3_1.2-1.3, VC1_1.3-1.4, SG26_0.0-0.02 VC5_1.6-1.7, PC23_0.0-0.06,	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC12_3.2-3.3, VC11_2.5-2.6, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC7_0.9-1.0 VC8_2.7-2.8,	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
EA029-E: Magnesium Values							
Snap Lock Bag - frozen VC3_1.2-1.3, VC1_1.3-1.4, SG26_0.0-0.02 VC5_1.6-1.7, PC23_0.0-0.06,	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC12_3.2-3.3, VC11_2.5-2.6, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC7_0.9-1.0 VC8_2.7-2.8,	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-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
EA029-F: Excess Acid Neutralising Capacity							
Snap Lock Bag - frozen VC3_1.2-1.3, VC5_1.6-1.7, VC1_1.3-1.4, PC23_0.0-0.06, SG26_0.0-0.02	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC11_2.5-2.6, VC12_3.2-3.3, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC8_2.7-2.8, VC7_0.9-1.0	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
EA029-G: Retained Acidity							
Snap Lock Bag - frozen VC3_1.2-1.3, VC5_1.6-1.7, VC1_1.3-1.4, PC23_0.0-0.06, SG26_0.0-0.02	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC11_2.5-2.6, VC12_3.2-3.3, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC8_2.7-2.8, VC7_0.9-1.0	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
EA029-H: Acid Base Accounting							
Snap Lock Bag - frozen VC3_1.2-1.3, VC5_1.6-1.7, VC1_1.3-1.4, PC23_0.0-0.06, SG26_0.0-0.02	**14-JUL-2009**	**17-JUL-2009**	14-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC2_0.7-0.8, VC11_2.5-2.6, VC12_3.2-3.3, DUP 21	**15-JUL-2009**	**17-JUL-2009**	15-JUL-2010	✓	**28-JUL-2009**	26-OCT-2009	✓
Snap Lock Bag - frozen VC6_0.0-0.1, VC8_2.7-2.8, VC7_0.9-1.0	**16-JUL-2009**	**17-JUL-2009**	16-JUL-2010	✓	**28-JUL-2009**	26-OCT-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)							
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and 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
Suspension Peroxide Oxidation-Combined Acidity and Sulphate	EA029	SOIL	Ahern et al 2004 - a suspension peroxide oxidation method following the 'sulfur trail' by determining the level of 1M KCL extractable sulfur and the sulfur level after oxidation of soil sulphides. The 'acidity trail' is followed by measurement of TAA, TPA and TSA. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

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

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

SPOCAS only

Chain of Custody

AECOM

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

Environmental Division
Sydney
Work Order
ES0910563

Telephone : +61-2-8784 8555

AECOM Project No: S2017805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW
Contact Name:
Lab. Ref:
Project Name: [illegible]
Tel: (02) 8784 8555
Fax: (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No: SY/330/09
PO No: [crossed out]

Format required: FORMAT REQUIRED (24hr 48hr ______ days) — Yes (tick)
to be excluded from extractions?
amples to be reported as per NEPM 5.1.1?
Hardcopy ☑ Email: SEE ABOVE

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	TBT	Phenols	ECP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
	VC3_0.0-0.2	14/07/09	X					X		VARIOUS COMBINATIONS OF: 1x 250mL soil jar; 2x 250mL soil jar; 1x 150mL soil jar; 1x plastic bag	X								X						
	VC3_0.5-0.6	↓	↓					↓			X			X			X								
1	VC3_1.2-1.3										X	X	X		X	X				X		X			
	VC3_1.8-1.9										X			X											
	VC5_0.0-0.2										X					X			X		X	X			
	VC5_0.5-0.6										X	X	X	X											
2	VC5_1.6-1.7										X		X		X		X		X	X					
	VC5_2.5-2.6										X	X	X												
	VC1_0.0-0.2										X					X			X	X		X			
	VC1_0.5-0.6										X			X											
3	VC1_1.3-1.4										X	X	X		X		X								
	VC1_2.4-2.5	↓	↓					↓			X			X											

CONTRACT WORK
WO: ES0910563
ALS Brisbane
LAB:
DATE: 17/7/9
SPLIT: TBT/TOC: ES0910561
Elutriate: ES0910564
ALS BATCH ES0910562

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sb, Ag, Co, Se, V
Comments:

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:
Lab Report No. | Entry ID

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: Christian.Donetti@aecom.com; Kate.Pigram@aecom.com

Sampled By: KATE PIGRAM
AECOM Project No: S2071805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: PIRC - OUTER HARBOUR
PO No. 8833009

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: iced	acid	ice	other	Container (No. & type)	Analysis Request: METALS (MM13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCCAS	Extractable Metals	Extractable PAHs	Chlordane	OPP	Phenols	OCP	Total PCBs	Metals TCLP	PAH TCLP	Other: HOLD
	VC2_0.3-0.4	15/07/09	X					X		SEE PREVIOUS	X							X							
4	VC2_0.7-0.8										X	X	X		X		X		X						
	VC2_2.7-2.8										X		X						X					X	
	VC2_3.7-3.8										X	X	X			X									
	VC11_0.2-0.3										X								X		X	X			
	VC11_0.5-0.6										X	X	X			X									
	VC11_1.1-1.2										X		X						X						
5	VC11_2.5-2.6										X	X	X		X		X								
	VC12_0.2-0.3										X					X			X						
	VC12_1.0-1.1										X		X												
	VC12_2.1-2.2										X	X	X				X			X					
6	VC12_3.2-3.3										X		X		X										

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg Sn, Ag, Co, Se, V

Comments:

Lab Report No.

Esky ID

Relinquished by:		Signed:		Date:	Relinquished by: KATE PIGRAM	Signed:	Date: 17/7/09
Recieved by: Frank		Signed:		Date: 17/7/09 5:30pm	Recieved by:	Signed:	Date:

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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: Christiaan.Donnelli@aecom.com; Kate.Pigram@aecom.com

Sampled By: KATE PIGRAM
AECOM Project No: S20T805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax: (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: PYE-OUTER HARBOUR
PO No. 8933009

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtred	acid	ice	other	Container [No. & type]	METALS (CM13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Elutriate Metals	Elutriate PAHs	Cyanide	OPP	Phenols	BCP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
(12)	VC9_0.3-0.4	15/07/09	X					X		SEE PREVIOUS	X		X						X	X					
	VC9_0.7-0.8	↓	↓					↓			X	X	X										X		
	VC9_2.8-2.9										X	X		X		X								X	
	VC9_3.5-3.6	↓									X						X								
7	VC6_0.0-0.1	16/07/09									X			X	X										
	VC6_0.2-0.3										X														
(13)	VC6_0.5-0.6										X	X	X			X						X	X		
NO SPOCAS as too acid.	VC6_0.7-0.8										X		X	X	X		X		X					X	
	VC8_0.2-0.3										X			X						X		X			
	VC8_0.5-0.6										X	X	X										X		
	VC8_2.3-2.4										X	X	X											X	
9	VC8_2.7-2.8	↓	↓					↓			X		X		X				X						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sn, Ag, Co, Se, V

Comments:

Lab Report No: Esky ID:

Relinquished by:		Signed:		Date:	Relinquished by: KATE PIGRAM	Signed:	Date: 17/07/09
Recieved by: Frank		Signed:		Date: 17/7/09 5:20	Recieved by:	Signed:	Date:

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Revision: Jun 08

17-07-09, 04:48PM, ENSH AV

+61 2 8484 8989

3/6

2

Chain of Custody

AECOM

AECOM - Sydney
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Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail: Christian.Kenneth@aecom.com; Kate.Pagram@aecom.com

Sampled By: KATE PAGRAM
AECOM Project No: S2077805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 woodpark Rd, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax: (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:
Project Name: PLPC - OUTER HARBOUR
PO No. 8932009

Specifications: ESDAT FORMAT REQUIRED

	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 : SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	Metals (CMS)	TOC	PAH (ultra-trace)	BTEX/TPH	SPOCAS	Eliminate Metals	Eliminate PAHs	Organotins	OPP	Phenols	OCP	Total PCBs	HCLP Metals	TCLP PAH	Other: HOLD
	VC7_0.1-0.2	16/07/09	X					X			X			X											
	VC7_0.2-0.3									PREVIOUS	X		X					X							
	VC7_0.7-0.8										X	X	X							X	X	X	X	X	
10	VC7_0.9-1.0										X	X	X		X										
	VC7_0.3-0.4										X		X	X											
No bag reqd for SPOCAS	VC4_0.2-0.3										X			X	X										
	VC4_0.7-0.8										X	X	X												
	VC4_1.2-1.3									SEE	X		X					X					X	X	
	VC4_1.7-1.8	↓									X	X	X												
	DUP25	14/07/09									X	X	X	X											
11	DUP21	15/07/09									X	X	X		X		X								
	DUP29	↓	↓					↓			X	X	X												

* 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:	Relinquished by: KATE PAGRAM Signed: Date: 17/07/09
Recieved by: Frank	Signed:	Date: 17/7/9 5:39	Recieved by: Signed: Date:

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Chain of Custody

AECOM

AECOM - Sydney
Level 5, 826 Pacific Highway
Pymble NSW 2073 Australia
Tel: 61 2 8484 8999
Fax: 61 2 8484 8989
E-mail: Christian.Connelli@aecom.com; Kate.Pagram@aecom.com

Sampled By: KATE PAGRAM
AECOM Project No: S2071805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: PCPC - OUTER HARBOUR
PO No. SQ336009

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	METALS (CM13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Estuarine Metals	Estuarine PAHs	Organo OPST	Phenols	DEP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
	DUP28	16/07/09	X					X		VARIOUS	X	X	X											
	DUP27	16/07/09	X					X			X	X	X						X	X	X			
	TRIP17	14/07/09	↓					↓			PLEASE FORWARD TO ALS BRISBANE WITH SEPARATE COC →													
	TRIP16	15/07/09	↓					↓																
	TRIP15	16/07/09	↓					↓																
	RB01	13/07/09		X				↓					X											
	RB02	14/07/09		↓				↓					X											
	RB03	15/07/09		↓				↓					X											
	RB04	16/07/09		↓				↓		1x amber bottle			X											
Extra samples:	PC13_0-0-0.07																							
(14)	PC23_0-0-0.06																							
	SG23_0-0-0.03																							

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sn, Ag, Co, Se, V

Comments:

Lab Report No.

Esky ID

Relinquished by: Frank Signed: Date:
Recieved by: Frank Signed: Date: 17/7/09 5:30

Relinquished by: KATE PAGRAM Signed: Date: 17/07/09
Recieved by: Signed: Date:

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Extra samples (cont'): (15) SG24_0-0-0.01, (16) SG26_0-0-0.02

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910563**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: KP	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 17-JUL-2009	Issue Date	: 28-JUL-2009 11:29
Client Requested Due Date	: 31-JUL-2009	Scheduled Reporting Date	: **31-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.2'C - Ice present
No. of coolers/boxes	: 6 HARD	No. of samples received	: 15
Sercurity Seal	: Intact.	No. of samples analysed	: 12

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.
- SPOCAS analysis to be conducted by ALS Brisbane.
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Samples PC23_0.0-0.06, SG23_0.0-0.03, SG24_0.0-0.01 and SG26_0.0-0.02 were received extra and placed on hold.**
- **This work order for SPOCAS only and split into ES0910562 , ES0910561 (TBT/TOC) & ES0910564 (ELUTRIATE)**
- **SPOCAS could not be conducted for samples VC6_0.7-0.8 and VC4_0.2-0.3 due to bags not supplied.**
- **Samples PC23_0.0-0.06 and SG26_0.0-0.02 will be analysed for SPOCAS as per email from Kate Pigram 20/7/09.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at 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*	(On Hold) SOIL No analysis requested	SOIL - EA029 SPOCAS
ES0910563-001	14-JUL-2009 15:00	VC3_1.2-1.3		✓
ES0910563-002	14-JUL-2009 15:00	VC5_1.6-1.7		✓
ES0910563-003	14-JUL-2009 15:00	VC1_1.3-1.4		✓
ES0910563-004	15-JUL-2009 15:00	VC2_0.7-0.8		✓
ES0910563-005	15-JUL-2009 15:00	VC11_2.5-2.6		✓
ES0910563-006	15-JUL-2009 15:00	VC12_3.2-3.3		✓
ES0910563-007	16-JUL-2009 15:00	VC6_0.0-0.1		✓
ES0910563-009	16-JUL-2009 15:00	VC8_2.7-2.8		✓
ES0910563-010	16-JUL-2009 15:00	VC7_0.9-1.0		✓
ES0910563-011	15-JUL-2009 15:00	DUP 21		✓
ES0910563-012	15-JUL-2009 15:00	VC9_0.3-0.4	✓	
ES0910563-013	16-JUL-2009 15:00	VC6_0.5-0.6	✓	
ES0910563-014	14-JUL-2009 15:00	PC23_0.0-0.06		✓
ES0910563-015	14-JUL-2009 15:00	SG24_0.0-0.01	✓	
ES0910563-016	14-JUL-2009 15:00	SG26_0.0-0.02		✓

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com

MR CHRISTIANN 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 - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MS KATE PIGRAM

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

THE RESULTS ADDRESS

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0910564**	Page	: 1 of 17
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 30-JUL-2009
Site	: ----		
		No. of samples received	: 21
Quote number	: SY/330/09 V3	No. of samples analysed	: 21

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
Phyu Phyu Lwin	Inorganic Chemist	Inorganics
Victor Kedicioglu	Business Manager - NSW	Inorganics
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.**
- **EP132: Sample VC6-07-0.8 contains large rock and therefore could not be done elutriate testing procudure and not reported for standard analysis.**

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	Client sample ID: VC3_0.5-0.6	VC3_1.2-1.3	VC5_0.0-0.2	VC5_1.6-1.7	VC1_0.0-0.2
				Client sampling date / time: 21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00
				ES0910564-001	ES0910564-002	ES0910564-003	ES0910564-004	ES0910564-005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	<0.0001
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Selenium	7782-49-2	2	µg/L	----	**2**	<2	----	<2
Antimony	7440-36-0	0.5	µg/L	----	**6.0**	**2.1**	----	**3.7**
Arsenic	7440-38-2	0.5	µg/L	----	**7.8**	**16.7**	----	**3.2**
Cadmium	7440-43-9	0.2	µg/L	----	<0.2	<0.2	----	<0.2
Chromium	7440-47-3	0.5	µg/L	----	<0.5	<0.5	----	<0.5
Cobalt	7440-48-4	0.2	µg/L	----	<0.2	<0.2	----	<0.2
Copper	7440-50-8	1	µg/L	----	<1	<1	----	**2**
Lead	7439-92-1	0.2	µg/L	----	**0.2**	**0.4**	----	<0.2
Nickel	7440-02-0	0.5	µg/L	----	**2.4**	**1.1**	----	**1.0**
Silver	7440-22-4	0.1	µg/L	----	<0.1	<0.1	----	<0.1
Vanadium	7440-62-2	0.5	µg/L	----	**2.0**	**87.6**	----	**74.7**
Zinc	7440-66-6	5	µg/L	----	<5	<5	----	<5
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	----	----	<0.1	----
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	----	----	<0.1	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	----	----	<0.1	----
Acenaphthene	83-32-9	0.1	µg/L	<0.1	----	----	<0.1	----
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	----	----	<0.1	----
Anthracene	120-12-7	0.1	µg/L	<0.1	----	----	<0.1	----
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	----	----	<0.1	----
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	----	----	<0.05	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	----	----	<0.1	----
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	----	----	<0.1	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	<0.1	----	----	<0.1	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	----	----	<0.1	----
Chrysene	218-01-9	0.1	µg/L	<0.1	----	----	<0.1	----
Coronene	191-07-1	0.1	µg/L	<0.1	----	----	<0.1	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	<0.1	----	----	<0.1	----
Fluoranthene	206-44-0	0.1	µg/L	<0.1	----	----	<0.1	----
Fluorene	86-73-7	0.1	µg/L	<0.1	----	----	<0.1	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	----	----	<0.1	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	----	----	<0.1	----
Naphthalene	91-20-3	0.1	µg/L	<0.1	----	----	<0.1	----
Perylene	198-55-0	0.1	µg/L	<0.1	----	----	<0.1	----
Phenanthrene	85-01-8	0.1	µg/L	<0.1	----	----	<0.1	----
Pyrene	129-00-0	0.1	µg/L	<0.1	----	----	<0.1	----

Analytical Results

Sub-Matrix: **ELUTRIATE**				Client sample ID	VC3_0.5-0.6	VC3_1.2-1.3	VC5_0.0-0.2	VC5_1.6-1.7	VC1_0.0-0.2
				Client sampling date / time	21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00	21-JUL-2009 12:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES0910564-001**	**ES0910564-002**	**ES0910564-003**	**ES0910564-004**	**ES0910564-005**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**94.4**	----	----	**92.2**	----
Anthracene-d10	1719-06-8	0.1	%		**110**	----	----	**116**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**105**	----	----	**115**	----

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	VC1_1.3-1.4	VC2_0.7-0.8	VC2_3.7-3.8	VC11_0.5-0.6	VC11_2.5-2.6
Client sample ID				VC1_1.3-1.4	VC2_0.7-0.8	VC2_3.7-3.8	VC11_0.5-0.6	VC11_2.5-2.6
Client sampling date / time				22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00
				ES0910564-006	ES0910564-007	ES0910564-008	ES0910564-009	ES0910564-010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	<0.0001	<0.0001	----
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Selenium	7782-49-2	2	µg/L	----	----	<2	<2	----
Antimony	7440-36-0	0.5	µg/L	----	----	**0.9**	**3.7**	----
Arsenic	7440-38-2	0.5	µg/L	----	----	**0.6**	**4.0**	----
Cadmium	7440-43-9	0.2	µg/L	----	----	<0.2	<0.2	----
Chromium	7440-47-3	0.5	µg/L	----	----	<0.5	<0.5	----
Cobalt	7440-48-4	0.2	µg/L	----	----	<0.2	<0.2	----
Copper	7440-50-8	1	µg/L	----	----	<1	<1	----
Lead	7439-92-1	0.2	µg/L	----	----	<0.2	<0.2	----
Nickel	7440-02-0	0.5	µg/L	----	----	**0.7**	**1.4**	----
Silver	7440-22-4	0.1	µg/L	----	----	<0.1	<0.1	----
Vanadium	7440-62-2	0.5	µg/L	----	----	**2.7**	**272**	----
Zinc	7440-66-6	5	µg/L	----	----	<5	**7**	----
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	<0.1	----	----	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	<0.1	----	----	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Acenaphthene	83-32-9	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Acenaphthylene	208-96-8	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Anthracene	120-12-7	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	<0.05	----	----	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Chrysene	218-01-9	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Coronene	191-07-1	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Fluoranthene	206-44-0	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Fluorene	86-73-7	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	<0.1	----	----	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Naphthalene	91-20-3	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Perylene	198-55-0	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Phenanthrene	85-01-8	0.1	µg/L	<0.1	<0.1	----	----	<0.1
Pyrene	129-00-0	0.1	µg/L	<0.1	<0.1	----	----	<0.1

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	VC1_1.3-1.4	VC2_0.7-0.8	VC2_3.7-3.8	VC11_0.5-0.6	VC11_2.5-2.6
				Client sampling date / time	22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00	22-JUL-2009 12:00
Compound	CAS Number	LOR	Unit		ES0910564-006	ES0910564-007	ES0910564-008	ES0910564-009	ES0910564-010
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**87.2**	**100**	----	----	**93.9**
Anthracene-d10	1719-06-8	0.1	%		**110**	**125**	----	----	**122**
4-Terphenyl-d14	1718-51-0	0.1	%		**110**	**125**	----	----	**120**

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	Client sample ID: VC12_0.2-0.3	VC12_2.1-2.2	VC9_2.8-2.9	VC9_3.5-3.6	VC6_0.5-0.6
				Client sampling date / time: 22-JUL-2009 12:00	22-JUL-2009 12:00	23-JUL-2009 12:00	23-JUL-2009 12:00	24-JUL-2009 12:00
				ES0910564-011	ES0910564-012	ES0910564-013	ES0910564-014	ES0910564-015
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	----	<0.0001
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Selenium	7782-49-2	2	µg/L	<2	----	<2	----	<2
Antimony	7440-36-0	0.5	µg/L	**2.8**	----	**2.9**	----	<0.5
Arsenic	7440-38-2	0.5	µg/L	**5.9**	----	**3.9**	----	**1.1**
Cadmium	7440-43-9	0.2	µg/L	**0.6**	----	<0.2	----	<0.2
Chromium	7440-47-3	0.5	µg/L	<0.5	----	<0.5	----	<0.5
Cobalt	7440-48-4	0.2	µg/L	<0.2	----	**0.2**	----	<0.2
Copper	7440-50-8	1	µg/L	**5**	----	<1	----	<1
Lead	7439-92-1	0.2	µg/L	**2.0**	----	**0.2**	----	<0.2
Nickel	7440-02-0	0.5	µg/L	**2.4**	----	**2.2**	----	<0.5
Silver	7440-22-4	0.1	µg/L	<0.1	----	<0.1	----	<0.1
Vanadium	7440-62-2	0.5	µg/L	**10.2**	----	**8.1**	----	**45.8**
Zinc	7440-66-6	5	µg/L	**18**	----	**5**	----	<5
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	0.1	µg/L	----	<0.1	----	<0.1	----
2-Methylnaphthalene	91-57-6	0.1	µg/L	----	<0.1	----	<0.1	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	----	<0.1	----	<0.1	----
Acenaphthene	83-32-9	0.1	µg/L	----	<0.1	----	<0.1	----
Acenaphthylene	208-96-8	0.1	µg/L	----	<0.1	----	<0.1	----
Anthracene	120-12-7	0.1	µg/L	----	<0.1	----	<0.1	----
Benz(a)anthracene	56-55-3	0.1	µg/L	----	<0.1	----	<0.1	----
Benzo(a)pyrene	50-32-8	0.05	µg/L	----	<0.05	----	<0.05	----
Benzo(b)fluoranthene	205-99-2	0.1	µg/L	----	<0.1	----	<0.1	----
Benzo(e)pyrene	192-97-2	0.1	µg/L	----	<0.1	----	<0.1	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	----	<0.1	----	<0.1	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L	----	<0.1	----	<0.1	----
Chrysene	218-01-9	0.1	µg/L	----	<0.1	----	<0.1	----
Coronene	191-07-1	0.1	µg/L	----	<0.1	----	<0.1	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	----	<0.1	----	<0.1	----
Fluoranthene	206-44-0	0.1	µg/L	----	<0.1	----	<0.1	----
Fluorene	86-73-7	0.1	µg/L	----	<0.1	----	<0.1	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	----	<0.1	----	<0.1	----
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L	----	<0.1	----	<0.1	----
Naphthalene	91-20-3	0.1	µg/L	----	<0.1	----	<0.1	----
Perylene	198-55-0	0.1	µg/L	----	<0.1	----	<0.1	----
Phenanthrene	85-01-8	0.1	µg/L	----	<0.1	----	<0.1	----
Pyrene	129-00-0	0.1	µg/L	----	<0.1	----	<0.1	----

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	VC12_0.2-0.3	VC12_2.1-2.2	VC9_2.8-2.9	VC9_3.5-3.6	VC6_0.5-0.6
				Client sampling date / time	22-JUL-2009 12:00	22-JUL-2009 12:00	23-JUL-2009 12:00	23-JUL-2009 12:00	24-JUL-2009 12:00
Compound	CAS Number	LOR	Unit		ES0910564-011	ES0910564-012	ES0910564-013	ES0910564-014	ES0910564-015
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		---	**85.2**	---	**97.1**	---
Anthracene-d10	1719-06-8	0.1	%		---	**91.1**	---	**107**	---
4-Terphenyl-d14	1718-51-0	0.1	%		---	**98.5**	---	**110**	---

Analytical Results

Sub-Matrix: **ELUTRIATE**

Compound	CAS Number	LOR	Unit	Client sample ID	DUP21	PC23_0.0-0.06	SG23_0.0-0.03	ELUTRIATE WATER 080709	ELUTRIATE WATER 130709
				Client sampling date / time	24-JUL-2009 12:00	23-JUL-2009 12:00	23-JUL-2009 12:00	21-JUL-2009 12:00	23-JUL-2009 12:00
					ES0910564-017	ES0910564-018	ES0910564-019	ES0910564-020	ES0910564-021
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		---	<0.0001	<0.0001	<0.0001	<0.0001
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Selenium	7782-49-2	2	µg/L		---	<2	<2	<2	<2
Antimony	7440-36-0	0.5	µg/L		---	<0.5	**0.9**	<0.5	<0.5
Arsenic	7440-38-2	0.5	µg/L		---	**9.5**	**10.0**	**2.0**	**2.0**
Cadmium	7440-43-9	0.2	µg/L		---	<0.2	<0.2	<0.2	<0.2
Chromium	7440-47-3	0.5	µg/L		---	<0.5	<0.5	<0.5	**0.7**
Cobalt	7440-48-4	0.2	µg/L		---	**0.2**	**0.6**	<0.2	<0.2
Copper	7440-50-8	1	µg/L		---	<1	**2**	<1	<1
Lead	7439-92-1	0.2	µg/L		---	**0.5**	**0.6**	<0.2	**2.2**
Nickel	7440-02-0	0.5	µg/L		---	**0.8**	**1.8**	<0.5	<0.5
Silver	7440-22-4	0.1	µg/L		---	<0.1	<0.1	<0.1	<0.1
Vanadium	7440-62-2	0.5	µg/L		---	**2.0**	**9.6**	**2.1**	**1.8**
Zinc	7440-66-6	5	µg/L		---	<5	**6**	**9**	**5**
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	83-32-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	205-99-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	206-44-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	86-73-7	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
N-2-Fluorenyl Acetamide	53-96-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	91-20-3	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	85-01-8	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1

Analytical Results

Sub-Matrix: ELUTRIATE				Client sample ID	DUP21	PC23_0.0-0.06	SG23_0.0-0.03	ELUTRIATE WATER 080709	ELUTRIATE WATER 130709
				Client sampling date / time	24-JUL-2009 12:00	23-JUL-2009 12:00	23-JUL-2009 12:00	21-JUL-2009 12:00	23-JUL-2009 12:00
Compound	CAS Number	LOR	Unit		ES0910564-017	ES0910564-018	ES0910564-019	ES0910564-020	ES0910564-021
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
EP132S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	0.1	%		87.9	----	----	----	----
Phenol-d6	13127-88-3	0.1	%		75.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		106	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		112	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		99.9	77.8	74.4	97.8	84.4
Anthracene-d10	1719-06-8	0.1	%		101	87.3	78.8	104	97.9
4-Terphenyl-d14	1718-51-0	0.1	%		104	89.2	80.4	113	100

Analytical Results

Sub-Matrix: SOIL			Client sample ID	VC3_0.5-0.6	VC3_1.2-1.3	VC5_0.0-0.2	VC5_1.6-1.7	VC1_0.0-0.2
			Client sampling date / time	14-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00
Compound	CAS Number	LOR	Unit	ES0910564-001	ES0910564-002	ES0910564-003	ES0910564-004	ES0910564-005
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	0.1	--	**14/07/09**	**14/07/09**	**14/07/09**	**14/07/09**	**14/07/09**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	VC1_1.3-1.4	VC2_0.7-0.8	VC2_3.7-3.8	VC11_0.5-0.6	VC11_2.5-2.6
				Client sampling date / time	14-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910564-006	ES0910564-007	ES0910564-008	ES0910564-009	ES0910564-010
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	0.1	--		**14/07/09**	**15/07/09**	**15/07/09**	**15/07/09**	**15/07/09**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	VC12_0.2-0.3	VC12_2.1-2.2	VC9_2.8-2.9	VC9_3.5-3.6	VC6_0.5-0.6
				Client sampling date / time	15-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00	15-JUL-2009 15:00	16-JUL-2009 15:00
Compound	CAS Number	LOR	Unit		ES0910564-011	ES0910564-012	ES0910564-013	ES0910564-014	ES0910564-015
EN68: Seawater Elutriate Testing Procedure									
Seawater Sampling Date	----	0.1	--		**15/07/09**	**15/07/09**	**15/07/09**	**15/07/09**	**16/07/09**

Analytical Results

Sub-Matrix: SOIL	Client sample ID	VC6_0.7-0.8	DUP21	PC23_0.0-0.06	SG23_0.0-0.03	ELUTRIATE WATER 080709
	Client sampling date / time	16-JUL-2009 15:00	15-JUL-2009 15:00	14-JUL-2009 15:00	14-JUL-2009 15:00	08-JUL-2009 15:00
Compound / CAS Number	LOR / Unit	ES0910564-016	ES0910564-017	ES0910564-018	ES0910564-019	ES0910564-020
EN68: Seawater Elutriate Testing Procedure						
Seawater Sampling Date ----	0.1 --	**0**	**15/07/09**	**16/07/09**	**16/07/09**	**13/07/09**

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**ELUTRIATE WATER 130709**	----	----	----	----
			Client sampling date / time	13-JUL-2009 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES0910564-021**	**----**	**----**	**----**	**----**
EN68: Seawater Elutriate Testing Procedure								
Seawater Sampling Date	----	0.1	--	**13/07/09**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **ELUTRIATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
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	: **ES0910564**	Page	: 1 of 8
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 30-JUL-2009
Order number	: ----		
		No. of samples received	: 21
Quote number	: SY/330/09 V3	No. of samples analysed	: 21

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
Phyu Phyu Lwin	Inorganic Chemist	Inorganics
Victor Kedicioglu	Business Manager - NSW	Inorganics
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 (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1047852)									
EB0911300-001	Anonymous	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
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1049534)									
ES0910564-013	VC9_2.8-2.9	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES0910848-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0003	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1053293)									
ES0910564-015	VC6_0.5-0.6	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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	VC9_2.8-2.9	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	VC9_2.8-2.9	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1051790)									
ES0910564-015	VC6_0.5-0.6	EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	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 (%)*
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 1051790) - continued									
ES0910564-015	VC6_0.5-0.6	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	1.1	0.9	26.8	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	45.8	46.5	1.5	0% - 20%
		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: 1051791)									
ES0910564-015	VC6_0.5-0.6	EG093B-T: Selenium	7782-49-2	2	µg/L	<2	<2	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
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
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1049534)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	101	81	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1053293)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	99.2	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
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1051790)								
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	89.5	89	125
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	86.4	78	112
EG093A-T: Chromium	7440-47-3	0.5	µg/L	<0.5	10 µg/L	90.5	86	126
EG093A-T: Cobalt	7440-48-4	0.2	µg/L	<0.2	10 µg/L	92.2	90	126
EG093A-T: Copper	7440-50-8	1	µg/L	<1	10 µg/L	89.6	87	123
EG093A-T: Lead	7439-92-1	0.2	µg/L	<0.2	10 µg/L	98.9	89	121
EG093A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	93.8	85	125
EG093A-T: Silver	7440-22-4	0.1	µg/L	<0.1	1 µg/L	73.2	70	130
EG093A-T: Vanadium	7440-62-2	0.5	µg/L	<0.5	10 µg/L	96.5	87	121
EG093A-T: Zinc	7440-66-6	5	µg/L	<5	10 µg/L	104	82	128
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1051791)								
EG093B-T: Selenium	7782-49-2	2	µg/L	<2	10 µg/L	116	75	130

Sub-Matrix: **WATER**

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: 1047299)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	110	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	95.4	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	110	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	102	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	103	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	99.8	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	114	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	108	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	112	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	112	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	103	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	106	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	105	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	102	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	105	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	108	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	107	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	104	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	91.2	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	97.4	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	107	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	104	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	106	75.1	117
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1048184)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	85.4	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	78.9	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	89.2	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	83.7	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	83.2	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	85.9	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	88.2	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	84.8	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	93.8	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	86.6	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	82.2	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	80.1	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	84.5	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	79.4	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	83.4	71.5	117

Sub-Matrix: **WATER**

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: 1048184) - continued								
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	85.2	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	83.8	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	84.3	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	# 46.5	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	80.2	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	86.0	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	85.9	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	85.0	75.1	117
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 1049721)								
EP132: 3-Methylcholanthrene	56-49-5	0.10	µg/L	<0.1	2 µg/L	89.6	65.8	121
EP132: 2-Methylnaphthalene	91-57-6	0.10	µg/L	<0.1	2 µg/L	83.4	67.7	112
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.10	µg/L	<0.1	2 µg/L	92.4	11.6	146
EP132: Acenaphthene	83-32-9	0.10	µg/L	<0.1	2 µg/L	85.8	73.2	111
EP132: Acenaphthylene	208-96-8	0.10	µg/L	<0.1	2 µg/L	86.9	72.4	112
EP132: Anthracene	120-12-7	0.10	µg/L	<0.1	2 µg/L	74.9	73.4	113
EP132: Benz(a)anthracene	56-55-3	0.10	µg/L	<0.1	2 µg/L	93.3	73.6	114
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	88.9	75.2	117
EP132: Benzo(b)fluoranthene	205-99-2	0.10	µg/L	<0.1	2 µg/L	94.2	71.4	119
EP132: Benzo(e)pyrene	192-97-2	0.10	µg/L	<0.1	2 µg/L	89.9	75.3	118
EP132: Benzo(g.h.i)perylene	191-24-2	0.10	µg/L	<0.1	2 µg/L	89.0	66.6	121
EP132: Benzo(k)fluoranthene	207-08-9	0.10	µg/L	<0.1	2 µg/L	85.8	74.8	118
EP132: Chrysene	218-01-9	0.10	µg/L	<0.1	2 µg/L	83.8	69.6	120
EP132: Coronene	191-07-1	0.10	µg/L	<0.1	2 µg/L	85.6	47.4	131
EP132: Dibenz(a.h)anthracene	53-70-3	0.10	µg/L	<0.1	2 µg/L	87.6	71.5	117
EP132: Fluoranthene	206-44-0	0.10	µg/L	<0.1	2 µg/L	87.2	74.8	117
EP132: Fluorene	86-73-7	0.10	µg/L	<0.1	2 µg/L	90.3	72.9	114
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.10	µg/L	<0.1	2 µg/L	87.5	67.8	119
EP132: N-2-Fluorenyl Acetamide	53-96-3	0.10	µg/L	<0.1	20 µg/L	92.7	53.6	131
EP132: Naphthalene	91-20-3	0.10	µg/L	<0.1	2 µg/L	81.3	68.3	116
EP132: Perylene	198-55-0	0.10	µg/L	<0.1	2 µg/L	89.2	68	122
EP132: Phenanthrene	85-01-8	0.10	µg/L	<0.1	2 µg/L	87.0	74.8	112
EP132: Pyrene	129-00-0	0.10	µg/L	<0.1	2 µg/L	85.9	75.1	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	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	107	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1049534)							
ES0910564-013	VC9_2.8-2.9	EG035T: Mercury	7439-97-6	0.010 mg/L	86.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1053293)							
ES0910564-015	VC6_0.5-0.6	EG035T: Mercury	7439-97-6	0.010 mg/L	87.4	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
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 1051790)							
ES0910564-015	VC6_0.5-0.6	EG093A-T: Arsenic	7440-38-2	50 µg/L	91.8	70	130
		EG093A-T: Cadmium	7440-43-9	12.5 µg/L	82.8	70	130
		EG093A-T: Chromium	7440-47-3	50 µg/L	90.2	70	130
		EG093A-T: Cobalt	7440-48-4	50 µg/L	91.1	70	130
		EG093A-T: Copper	7440-50-8	50 µg/L	90.7	70	130
		EG093A-T: Lead	7439-92-1	50 µg/L	87.8	70	130
		EG093A-T: Nickel	7440-02-0	50 µg/L	91.2	70	130
		EG093A-T: Vanadium	7440-62-2	50 µg/L	82.3	70	130
		EG093A-T: Zinc	7440-66-6	50 µg/L	81.2	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0910564**	Page	: 1 of 7
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - PKOH	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 17-JUL-2009
Sampler	: KP	Issue Date	: 30-JUL-2009
Order number	: ----		
		No. of samples received	: 21
Quote number	: SY/330/09 V3	No. of samples analysed	: 21

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
EG035T: Total Recoverable Mercury by FIMS								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC3_1.2-1.3, VC1_0.0-0.2,	VC5_0.0-0.2, ELUTRIATE WATER - 080709	**21-JUL-2009**	**----**	----	----	**24-JUL-2009**	18-AUG-2009	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC2_3.7-3.8, VC12_0.2-0.3	VC11_0.5-0.6,	**22-JUL-2009**	**----**	----	----	**24-JUL-2009**	19-AUG-2009	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC9_2.8-2.9, SG23_0.0-0.03,	PC23_0.0-0.06, ELUTRIATE WATER - 130709	**23-JUL-2009**	**----**	----	----	**27-JUL-2009**	20-AUG-2009	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC6_0.5-0.6		**24-JUL-2009**	**----**	----	----	**29-JUL-2009**	21-AUG-2009	✓
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC3_1.2-1.3, VC1_0.0-0.2,	VC5_0.0-0.2, ELUTRIATE WATER - 080709	**21-JUL-2009**	**25-JUL-2009**	17-JAN-2010	✓	**25-JUL-2009**	17-JAN-2010	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC2_3.7-3.8, VC12_0.2-0.3	VC11_0.5-0.6,	**22-JUL-2009**	**25-JUL-2009**	18-JAN-2010	✓	**25-JUL-2009**	18-JAN-2010	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC9_2.8-2.9, SG23_0.0-0.03,	PC23_0.0-0.06, ELUTRIATE WATER - 130709	**23-JUL-2009**	**25-JUL-2009**	19-JAN-2010	✓	**25-JUL-2009**	19-JAN-2010	✓
Clear HDPE (U-T ORC) - UHP Nitric Acid; Unfiltered								
VC6_0.5-0.6		**24-JUL-2009**	**28-JUL-2009**	20-JAN-2010	✓	**28-JUL-2009**	20-JAN-2010	✓

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
EN68: Seawater Elutriate Testing Procedure							
Lab Split : Leach for Hg, Cr(VI) and other metal							
VC3_1.2-1.3, VC5_0.0-0.2, VC1_0.0-0.2	**14-JUL-2009**	**---**	---	----	**21-JUL-2009**	11-AUG-2009	✓
Lab Split : Leach for Hg, Cr(VI) and other metal							
VC2_3.7-3.8, VC11_0.5-0.6, VC12_0.2-0.3	**15-JUL-2009**	**---**	---	----	**22-JUL-2009**	12-AUG-2009	✓
Lab Split : Leach for Hg, Cr(VI) and other metal							
VC9_2.8-2.9	**15-JUL-2009**	**---**	---	----	**23-JUL-2009**	12-AUG-2009	✓
Lab Split : Leach for Hg, Cr(VI) and other metal							
VC6_0.5-0.6	**16-JUL-2009**	**---**	---	----	**24-JUL-2009**	13-AUG-2009	✓
LabSplit: Leach for organics and other tests							
ELUTRIATE WATER - 080709	**08-JUL-2009**	**---**	---	----	**21-JUL-2009**	22-JUL-2009	✓
LabSplit: Leach for organics and other tests							
ELUTRIATE WATER - 130709	**13-JUL-2009**	**---**	---	----	**23-JUL-2009**	27-JUL-2009	✓
LabSplit: Leach for organics and other tests							
VC3_0.5-0.6, VC5_1.6-1.7	**14-JUL-2009**	**---**	---	----	**21-JUL-2009**	28-JUL-2009	✓
LabSplit: Leach for organics and other tests							
VC1_1.3-1.4	**14-JUL-2009**	**---**	---	----	**22-JUL-2009**	28-JUL-2009	✓
LabSplit: Leach for organics and other tests							
PC23_0.0-0.06, SG23_0.0-0.03	**14-JUL-2009**	**---**	---	----	**23-JUL-2009**	28-JUL-2009	✓
LabSplit: Leach for organics and other tests							
VC2_0.7-0.8, VC11_2.5-2.6, VC12_2.1-2.2	**15-JUL-2009**	**---**	---	----	**22-JUL-2009**	29-JUL-2009	✓
LabSplit: Leach for organics and other tests							
VC9_3.5-3.6	**15-JUL-2009**	**---**	---	----	**23-JUL-2009**	29-JUL-2009	✓
LabSplit: Leach for organics and other tests							
DUP21	**15-JUL-2009**	**---**	---	----	**24-JUL-2009**	29-JUL-2009	✓
LabSplit: Leach for organics and other tests							
VC6_0.7-0.8	**16-JUL-2009**	**---**	---	----	**28-JUL-2009**	30-JUL-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
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved VC3_0.5-0.6, VC5_1.6-1.7, ELUTRIATE WATER - 080709	**21-JUL-2009**	**23-JUL-2009**	28-JUL-2009	✓	**24-JUL-2009**	01-SEP-2009	✓
Amber Glass Bottle - Unpreserved VC1_1.3-1.4, VC2_0.7-0.8, VC11_2.5-2.6, VC12_2.1-2.2	**22-JUL-2009**	**23-JUL-2009**	29-JUL-2009	✓	**24-JUL-2009**	01-SEP-2009	✓
Amber Glass Bottle - Unpreserved VC9_3.5-3.6, PC23_0.0-0.06, SG23_0.0-0.03, ELUTRIATE WATER - 130709	**23-JUL-2009**	**23-JUL-2009**	30-JUL-2009	✓	**24-JUL-2009**	01-SEP-2009	✓
Amber Glass Bottle - Unpreserved DUP21	**24-JUL-2009**	**27-JUL-2009**	31-JUL-2009	✓	**27-JUL-2009**	05-SEP-2009	✓
Amber Glass Bottle - Unpreserved VC6_0.7-0.8	**28-JUL-2009**	**28-JUL-2009**	04-AUG-2009	✓	**28-JUL-2009**	06-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: **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)							
Total Mercury by FIMS	EG035T	5	39	**12.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	3	20	**15.0**	**9.5**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	3	16	**18.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	31	**9.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	39	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	20	**10.0**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	3	31	**9.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	39	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	20	**10.0**	**4.8**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals in Saline Water -Suite B by ORC-ICPMS	EG093B-T	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	3	39	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	2	20	**10.0**	**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 Mercury by FIMS	EG035T	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. 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	SOIL	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	SOIL	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)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	SOIL	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)
Seawater Elutriate Testing Procedure	* EN68a	SOIL	USEPA Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Guide, 1991, EPA-503/8-91/001, USEPA and US Army Corps of Engineers. ANZECC Interim Ocean Disposal Guidelines, December, 1998 This Procedure outlines the preparation of leachate designed to simulate release of contaminants from sediment during the disposal of dredged material. Release can occur by physical processes or a variety of chemical changes such as oxidation of metal sulphides and release of contaminants adsorbed to particles or organic matter.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	SOIL	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.

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**
EP132B: Polynuclear Aromatic Hydrocarbons	1205006-002	----	**N-2-Fluorenyl Acetamide**	53-96-3	46.5 %	53.6-131%	**Recovery less than lower control limit**

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

Elutriates only.

Chain of Custody

AECOM

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AECOM Project No: S30718O5

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
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Preliminary Report by:
Final Report by: SY1330/09
Lab Quote No:
Project Name: PEAT - OUTER HARBOUR
PO No.

Environmental Division
Sydney
Work Order
ES0910564

Telephone : +61-2-8784 8555

DFT FORMAT REQUIRED

	Yes (tick)
e circle: 24hr 48hr ____days)	
il?	
t in waters to be excluded from extractions?	
ed from samples to be reported as per NEPM 5.1.1?	
s? (details: ____)	

☐ Hardcopy ☑ Email: SEE ABOVE

	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)
	VC3-0.0-0.2	14/07/09	X					X		
1	VC3_0.5-0.6									
2	VC3_1.2-1.3									
	VC3_1.8-1.9									
3	VC5_0.0-0.2									
	VC5_0.5-0.6									
4	VC5_1.6-1.7									
	VC5_2.5-2.6									
5	VC1_0.0-0.2									
	VC1_0.5-0.6									
6	VC1_1.3-1.4									
	VC1_2.4-2.5									

CONTRACT WORK ORDER: ES0910564
LAB: ALS
DATE: 17-7-09
SPLIT: SPOCAS: ES0910563
TBT/TOC: ES0910561
ALS BATCH: ES0910562

Analysis Request

	METALS (M13)	TOC	PAH (ultra-trace)	BTEX/TPH	SPOCAS	Elutriate Metals	Elutriate PAHs	Chloride	TBT	Phenols	BaP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
VC3-0.0-0.2	X								X						
VC3_0.5-0.6	X			X		X									
VC3_1.2-1.3	X	X	X		X	X				X		X			
VC3_1.8-1.9	X			X											
VC5_0.0-0.2	X					X			X		X	X			
VC5_0.5-0.6	X	X	X	X											
VC5_1.6-1.7	X		X		X		X		X	X					
VC5_2.5-2.6	X	X	X												
VC1_0.0-0.2	X					X			X	X		X			
VC1_0.5-0.6	X			X											
VC1_1.3-1.4	X	X	X		X		X								
VC1_2.4-2.5	X			X											

VARIOUS COMBINATIONS OF: 1x 250mL PLASTIC (NO PRESERVATIVE); 1x 125mL AMBER (NO PRESERVATIVE); 1x 250mL AMBER (NO PRESERVATIVE); 1x 40mL VOA (HCl); 1x 125mL PLASTIC (HNO3); 1x 250mL PLASTIC (H2SO4)

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Se, Ag, Co, B, V

Comments:

Relinquished by:		Signed:	Date:	Relinquished by: KATE PEARSON	Signed: Date: 17/07/09
Recieved by: Frank		Signed:	Date: 17/7/09 5:30	Recieved by:	Signed: Date:

Lab Report No. | Entry ID

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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: Christian.Lonneth@aecom.com; Kate.Pagram@aecom.com

Sampled By: KATE PAGRAM
AECOM Project No: S2017805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 woodpark Rd, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: RAC - OUTER HARBOUR
PO No. 8838009

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtred	acid	ice	other	Container (No. & type)	Metals (M13)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCCAS	Fluticone Metals	Fluticone PAHs	Cyanide	PBT	Phenols	OCP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
	VC2_0.3-0.4	15/07/09	X					X		SEE ABOVE	X								X						
7	VC2_0.7-0.8										X	X	X	X		X			X					X	
	VC2_2.7-2.8										X		X						X				X		
8	VC2_3.7-3.8										X	X	X		X										
	VC11_0.2-0.3										X								X	X	X				
9	VC11_0.5-0.6										X	X	X		X										
	VC11_1.1-1.2										X		X						X						
10	VC11_2.5-2.6										X	X	X	X		X									
11	VC12_0.2-0.3										X				X				X						
	VC12_1.0-1.1										X		X												
12	VC12_2.1-2.2										X	X	X			X			X						
	VC12_3.2-3.3										X		X	X											

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sn, Ag, Co, Se, V

Comments:

Lab Report No.

Esky ID

Relinquished by:
Signed:
Date:

Recieved by: Frank
Signed:
Date: 17/7/09 5:30pm

Relinquished by: KATE PAGRAM
Signed:
Date: 17/7/09

Recieved by:
Signed:
Date:

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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: Christian.Connell@aecom.com; Kate.Pagram@aecom.com

Sampled By: KATE PAGRAM
AECOM Project No: S2071805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 WOODPARK RD, SMITHFIELD NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax: (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: PKPC-OUTER HARBOUR
PO No. 88330089

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	METALS (MIS)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Elutriate Metals	Elutriate PAHs	Cyanide	TBT	Phenols	Bap	Total Pcbs	TCLP Metals	TCLP PAH	Other: HOLD
	VC9_0.3-0.4	15/07/09	X					X		SEE PREVIOUS	X		X						X	X					
	VC9_0.7-0.8	↓	↓					↓			X	X	X										X		
13	VC9_2.8-2.9										X	X		X		X								X	
14	VC9_3.5-3.6										X						X								
	VC6_0.0-0.1	16/07/09									X			X	X										
	VC6_0.2-0.3										X														
15	VC6_0.5-0.6										X	X	X			X						X	X		
16	VC6_0.7-0.8										X		X	X		X		X						X	
	VC8_0.2-0.3										X			X						X		X			
	VC8_0.5-0.6										X	X	X										X		
	VC8_2.3-2.4										X	X	X											X	
	VC8_2.7-2.8	↓	↓					↓			X		X		X				X						

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sn, Ag, Co, Se, V

Comments:

Lab Report No.

ESKY ID

Relinquished by: _____ Signed: _____ Date: _____
Recieved by: FRANK Signed: _____ Date: 17/7/09 5:30

Relinquished by: KATE PAGRAM Signed: _____ Date: 17/07/09
Recieved by: _____ Signed: _____ Date: _____

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: Christian.Connell@aecom.com; Kate.Pagram@aecom.com

Sampled By: KATE PAGRAM
AECOM Project No: S2077805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax: (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:
Project Name: PEPC - OUTER HARBOUR
PO No. S8338089

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	METALS (13)	TOC	PAH (ultra=trace)	BTEX/TPH	SOCAS	Fluoride	Cyanide	OPP	Phenols	OCP	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
	VC7_0.1-0.2	16/07/09	X					X		PREVIOUS	X			X										
	VC7_0.2-0.3	↓	↓					↓		↓	X		X					X						
	VC7_0.7-0.8										X		X						X	X	X	X	X	
	VC7_0.9-1.0										X		X		X									
	VC7_0.3-0.4										X		X	X										
	VC4_0.2-0.3										X			X	X									
	VC4_0.7-0.8										V	X	X											
	VC4_1.2-1.3									SEE	X		X					X				X	X	
	VC4_1.7-1.8	↓									X	X	X											
	DUP25	14/07/09									X	X	X	X										
17	DUP21	15/07/09									X	X	X		X	X								
	DUP29	↓	↓					↓			X	X	X											

* 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: 17/7/09 5:39

Relinquished by: KATE PAGRAM
Signed:
Date: 17/07/09

Recieved by:
Signed:
Date:

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: Christian.Kenneth@aecom.com; Kate.Pearson@aecom.com

Sampled By: KATE PEARSON
AECOM Project No: S2071805

Laboratory Details
Lab. Name: ALS
Lab. Address: 277-289 Woodpark Rd, Smithfield NSW
Contact Name:
Lab. Ref:
Tel: (02) 8784 8555
Fax (02) 8784 8500
Preliminary Report by:
Final Report by:
Lab Quote No:

Project Name: PEAC - OUTER HARBOUR
PO No. 84338089

Specifications: ESDAT FORMAT REQUIRED

	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: SEE ABOVE	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filtered	acid	ice	other	Container (No. & type)	METALS (MI3)	TOC	PAH (ultra-trace)	BTEX/TPH	SOCAS	Eluviate Metals	Eluviate PAHs	Sample Split	Phenols	Dep	Total PCBs	TCLP Metals	TCLP PAH	Other: HOLD
	DUP28	16/07/09	X					X		VARIOUS	X	X	X											
	DUP27	16/07/09	X					X			X	X	X							X	X	X		
	TRIP17	14/07/09	↓					↓			PLEASE FORWARD TO ALS BRISBANE WITH SEPARATE COC →													
	TRIP16	15/07/09	↓					↓																
	TRIP15	16/07/09	↓					↓																
	RB01	13/07/09		X				↓		1 x amber bottle		X												
	RB02	14/07/09		↓				↓				X												
	RB03	15/07/09		↓				↓				X												
	RB04	16/07/09		↓				↓				X												
Extra samples:	PC13_0.0-0.07																							
18	PC23_0.0-0.06																							
19	SC23_0.0-0.03																							

* Metals Required (Delete elements not required): As Cd Cr Cu Ni Pb Zn Hg, Sn, Ag, Co, Se, V

Comments:

Lab Report No.

Esky ID

Relinquished by: Signed: Date:

Recieved by: Frank Signed: Date: 17/7/09 5:30

Relinquished by: KATE PEARSON Signed: Date: 17/7/09

Recieved by: Signed: Date:

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Page 1

Extra samples (cont'):
SC24_0.0-0.01

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0910564**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 - Port Kembla Outer Harbour	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: KP	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 17-JUL-2009	Issue Date	: 20-JUL-2009 15:54
Client Requested Due Date	: 29-JUL-2009	Scheduled Reporting Date	: **29-JUL-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.2'C - Ice present
No. of coolers/boxes	: 6 HARD	No. of samples received	: 21
Sercurity Seal	: Intact.	No. of samples analysed	: 21

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.**
- **This work order for Elutriates only and split into ES0910562 , ES0910561 (TBT/TOC), ES0910563 (SPOCAS).**
- **Extra samples PC23_0.0-0.06 and SG23_0.0-0.03 will be analysed as per email from Kate Pigram 20/07/09.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at 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 - EG035T Total Mercury by FIMS	SOIL - EG093A-T Total metals in Saline Water Suite A by ORC-ICPMS	SOIL - EG093B-T Total Metals in Saline Water -Suite B by ORC-ICPMS	SOIL - EP132(PAH) Ultra Trace Polynuclear Aromatic Compounds
ES0910564-001	17-JUL-2009 10:00	VC3_0.5-0.6				✓
ES0910564-002	14-JUL-2009 10:00	VC3_1.2-1.3	✓	✓	✓	
ES0910564-003	14-JUL-2009 10:00	VC5_0.0-0.2	✓	✓	✓	
ES0910564-004	17-JUL-2009 10:00	VC5_1.6-1.7				✓
ES0910564-005	14-JUL-2009 10:00	VC1_0.0-0.2	✓	✓	✓	
ES0910564-006	17-JUL-2009 10:00	VC1_1.3-1.4				✓
ES0910564-007	17-JUL-2009 10:00	VC2_0.7-0.8				✓
ES0910564-008	15-JUL-2009 10:00	VC2_3.7-3.8	✓	✓	✓	
ES0910564-009	15-JUL-2009 10:00	VC11_0.5-0.6	✓	✓	✓	
ES0910564-010	17-JUL-2009 10:00	VC11_2.5-2.6				✓
ES0910564-011	15-JUL-2009 10:00	VC12_0.2-0.3	✓	✓	✓	
ES0910564-012	17-JUL-2009 10:00	VC12_2.1-2.2				✓
ES0910564-013	15-JUL-2009 10:00	VC9_2.8-2.9	✓	✓	✓	
ES0910564-014	17-JUL-2009 10:00	VC9_3.5-3.6				✓
ES0910564-015	16-JUL-2009 10:00	VC6_0.5-0.6	✓	✓	✓	
ES0910564-016	17-JUL-2009 10:00	VC6_0.7-0.8				✓
ES0910564-017	17-JUL-2009 10:00	DUP21				✓
ES0910564-018	14-JUL-2009 10:00	PC23_0.0-0.06	✓	✓	✓	✓
ES0910564-019	14-JUL-2009 10:00	SG23_0.0-0.03	✓	✓	✓	✓
ES0910564-020	17-JUL-2009 10:00	ELUTRIATE WATER 080	✓	✓	✓	✓
ES0910564-021	17-JUL-2009 10:00	ELUTRIATE WATER 130	✓	✓	✓	✓

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com
MR CHRISTIANN 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 - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com
MS KATE PIGRAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kpigram@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kpigram@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kpigram@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	kpigram@aecom.com
- A4 - AU Tax Invoice (INV)	Email	kpigram@aecom.com
- Default - Chain of Custody (COC)	Email	kpigram@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	kpigram@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	kpigram@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	kpigram@aecom.com
- EDI Format - XTab (XTAB)	Email	kpigram@aecom.com
THE RESULTS ADDRESS		
- *AU Certificate of Analysis - NATA (COA)	Email	sydney@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	sydney@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	sydney@aecom.com
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	sydney@aecom.com
- A4 - AU Tax Invoice (INV)	Email	sydney@aecom.com
- Default - Chain of Custody (COC)	Email	sydney@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	sydney@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	sydney@aecom.com
- EDI Format - HLAPro (HLAPro)	Email	sydney@aecom.com
- EDI Format - XTab (XTAB)	Email	sydney@aecom.com

CERTIFICATE OF ANALYSIS

Work Order	: **ES0911066**	Page	: 1 of 7
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 DKPC-DRILLING REBATCH OF ES0909983	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: REBATCH OF ES0909983		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2009
Sampler	: KD	Issue Date	: 04-AUG-2009
Site	: ----		
		No. of samples received	: 1
Quote number	: SY/330/09 V3	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*
Celine Conceicao	Spectroscopist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	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

- **EG005T: Poor precision was obtained for Nickel on sample ES0910969001 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH10_1.0-1.1	----	----	----	----
			Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES0911066-001	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**11.7**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**22**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	**3**	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**35**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**3300**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**1080**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**11**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**537**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	**0.23**	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH10_1.0-1.1	----	----	----	----
				Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0911066-001	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
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	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH10_1.0-1.1	----	----	----	----
				Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0911066-001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
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	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**119**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**121**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**124**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**102**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**111**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**119**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**88.9**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**83.0**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**95.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH10_1.0-1.1	----	----	----	----
				Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0911066-001	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.1	%		**105**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**97.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	136
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	122
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	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

QUALITY CONTROL REPORT

Work Order	: **ES0911066**	Page	: 1 of 10
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 DKPC-DRILLING REBATCH OF ES0909983	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2009
Sampler	: KD	Issue Date	: 04-AUG-2009
Order number	: REBATCH OF ES0909983		
		No. of samples received	: 1
Quote number	: SY/330/09 V3	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*
Celine Conceicao	Spectroscopist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	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: 1052904)									
EP0904096-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	22.9	23.8	3.7	0% - 20%
ES0911023-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	---	1.0	%	7.8	7.8	0.0	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1054501)									
ES0910969-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	251	253	0.5	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	40	52	# 24.3	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	12	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	72	85	16.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	89	104	15.8	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	112	129	13.8	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1054502)									
ES0910969-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	87.7	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1052860)									
ES0911066-001	BH10_1.0-1.1	EP066: Total Polychlorinated biphenyls	---	0.10	mg/kg	0.23	0.25	9.5	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1052859)									
ES0911066-001	BH10_1.0-1.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	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 (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1052859) - continued									
ES0911066-001	BH10_1.0-1.1	EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1052859)									
ES0911066-001	BH10_1.0-1.1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1052895)									
ES0911066-001	BH10_1.0-1.1	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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1052895)									
ES0911066-001	BH10_1.0-1.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	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)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1052895) - continued									
ES0911066-001	BH10_1.0-1.1	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1052841)									
ES0911066-001	BH10_1.0-1.1	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1052894)									
ES0911066-001	BH10_1.0-1.1	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: 1052841)									
ES0911066-001	BH10_1.0-1.1	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

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
EG005T: Total Metals by ICP-AES (QCLot: 1054501)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.1 mg/kg	107	90.1	124
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	104	83.3	111
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	100	89.2	117
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.1	114
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.2 mg/kg	105	85.2	111
EG005T: Nickel	7440-02-0	2	mg/kg	<2	54.8 mg/kg	102	88.3	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	104 mg/kg	104	81.9	112
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1054502)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	83.1	67	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1052860)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	0.5 mg/kg	82.0	57.4	117
EP068A: Organochlorine Pesticides (OC) (QCLot: 1052859)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	80.6	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.25 mg/kg	91.5	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	82.5	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	80.1	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	83.4	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	93.3	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	84.8	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	100	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	# 118	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	78.8	65.8	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	88.4	57.3	120
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	88.3	67.4	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	85.4	67.5	114
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	91.0	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	79.2	66.1	117
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	88.8	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	95.9	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	81.5	63.6	119
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.25 mg/kg	80.2	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	93.1	63.6	117
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.25 mg/kg	89.7	50.4	132
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1052859)								

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
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1052859) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.25 mg/kg	69.6	25.5	124
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	73.9	10.1	159
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.25 mg/kg	77.9	2.88	149
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.25 mg/kg	81.0	48.6	126
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.25 mg/kg	92.7	64.9	111
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.25 mg/kg	88.7	65.1	111
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.25 mg/kg	85.9	61.4	113
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.25 mg/kg	90.3	60.4	127
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.25 mg/kg	98.7	64.7	110
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.25 mg/kg	85.8	64.2	111
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.25 mg/kg	84.0	60	116
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.25 mg/kg	109	64.8	111
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.25 mg/kg	79.5	61.4	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.25 mg/kg	94.8	64.3	114
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.25 mg/kg	91.8	45.5	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.25 mg/kg	91.4	65.4	111
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.25 mg/kg	104	62	116
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.25 mg/kg	77.2	59.5	119
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.25 mg/kg	78.2	29.8	137
EP075(SIM)A: Phenolic Compounds (QCLot: 1052895)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	100	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	92.6	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	95.5	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	8 mg/kg	106	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	94.0	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	90.7	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	86.6	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	86.0	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	97.4	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	77.1	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	73.9	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1.0	8 mg/kg	19.3	1.23	91.6
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1052895)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	90.1	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	84.7	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	# 79.5	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	80.1	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	82.9	81.1	112

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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1052895) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	82.5	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	86.6	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	# 76.5	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	84.0	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	75.0	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	91.3	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	105	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	# 70.9	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	77.1	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	# 71.5	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1052841)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.4	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1052894)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.0	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	89.0	75.3	113
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	80.0	72.6	117
EP080: BTEX (QCLot: 1052841)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.5	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.5	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.5	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.8	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.2	66.7	123

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
EG005T: Total Metals by ICP-AES (QCLot: 1054501)							
ES0910969-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	76.4	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	75.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	121	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	77.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	118	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1054502)							
ES0910969-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	72.9	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1052860)							
ES0911066-001	BH10_1.0-1.1	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	103	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1052859)							
ES0911066-001	BH10_1.0-1.1	EP068: gamma-BHC	58-89-9	0.25 mg/kg	83.3	75.65	110.44
		EP068: Heptachlor	76-44-8	0.25 mg/kg	99.6	72.2	106.71
		EP068: Aldrin	309-00-2	0.25 mg/kg	# 69.2	77.54	107.0
		EP068: Dieldrin	60-57-1	0.25 mg/kg	91.0	76.37	109.7
		EP068: Endrin	72-20-8	1 mg/kg	97.3	68.51	119.47
		EP068: 4.4`-DDT	50-29-3	1 mg/kg	# 65.9	67.12	118.10
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1052859)							
ES0911066-001	BH10_1.0-1.1	EP068: Diazinon	333-41-5	0.25 mg/kg	98.0	75.85	107.06
		EP068: Chlorpyrifos-methyl	5598-13-0	0.25 mg/kg	91.6	74.84	107.91
		EP068: Pirimphos-ethyl	23505-41-1	0.25 mg/kg	# 111	67.98	109.42
		EP068: Bromophos-ethyl	4824-78-6	0.25 mg/kg	# 111	74.94	107.37
		EP068: Prothiofos	34643-46-4	0.25 mg/kg	96.3	75.45	106.05
EP075(SIM)A: Phenolic Compounds (QCLot: 1052895)							
ES0911066-001	BH10_1.0-1.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.1	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	95.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	93.2	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	75.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	45.3	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1052895)							
ES0911066-001	BH10_1.0-1.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	73.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	# 65.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1052841)							

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*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1052841) - continued							
ES0911066-001	BH10_1.0-1.1	EP080: C6 - C9 Fraction	----	26 mg/kg	80.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1052894)							
ES0911066-001	BH10_1.0-1.1	EP071: C10 - C14 Fraction	----	640 mg/kg	97.2	70	130
		EP071: C15 - C28 Fraction	----	3140 mg/kg	96.4	70	130
		EP071: C29 - C36 Fraction	----	2860 mg/kg	89.5	70	130
EP080: BTEX (QCLot: 1052841)							
ES0911066-001	BH10_1.0-1.1	EP080: Benzene	71-43-2	2.5 mg/kg	74.9	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	82.7	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	84.4	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.8	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0911066**	Page	: 1 of 8
Client	: ENSR AUSTRALIA PTY LIMITED	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 DKPC-DRILLING REBATCH OF ES0909983	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2009
Sampler	: KD	Issue Date	: 04-AUG-2009
Order number	: REBATCH OF ES0909983		
		No. of samples received	: 1
Quote number	: SY/330/09 V3	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							
BH10_1.0-1.1	**06-JUL-2009**	**----**	----	----	**28-JUL-2009**	13-JUL-2009	×
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**30-JUL-2009**	03-AUG-2009	✓	**30-JUL-2009**	02-JAN-2010	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**30-JUL-2009**	03-AUG-2009	✓	**30-JUL-2009**	03-AUG-2009	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-2009	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-2009	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-2009	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-2009	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-2009	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**28-JUL-2009**	20-JUL-2009	×
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	×	**29-JUL-2009**	06-SEP-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: BTEX							
Soil Glass Jar - Unpreserved							
BH10_1.0-1.1	**06-JUL-2009**	**28-JUL-2009**	20-JUL-2009	✘	**28-JUL-2009**	20-JUL-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
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	1	**100.0**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	**100.0**	**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
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	1	**100.0**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	**100.0**	**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
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	1	**100.0**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	**100.0**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	1	**100.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	1	**100.0**	**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 by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) 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) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)
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)

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 (Option A - Concentrating)	ORG17A	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 the desired volume for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
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							
EG005T: Total Metals by ICP-AES	ES0910969-001	Anonymous	**Nickel**	7440-02-0	24.3 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	1210416-002	----	**trans-Chlordane**	5103-74-2	118 %	60.7-113%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	1210458-007	----	**Acenaphthene**	83-32-9	79.5 %	81.5-112%	**Recovery less than lower control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	1210458-007	----	**Benz(a)anthracene**	56-55-3	76.5 %	77.2-112%	**Recovery less than lower control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	1210458-007	----	**Indeno(1.2.3.cd)pyrene**	193-39-5	70.9 %	71-113%	**Recovery less than lower control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	1210458-007	----	**Benzo(g.h.i)perylene**	191-24-2	71.5 %	72.4-114%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES0910969-001	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP068A: Organochlorine Pesticides (OC)	ES0911066-001	BH10_1.0-1.1	**Aldrin**	309-00-2	69.2 %	77.54-107.0 %	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	ES0911066-001	BH10_1.0-1.1	**4.4`-DDT**	50-29-3	65.9 %	67.12-118.10 %	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	ES0911066-001	BH10_1.0-1.1	**Pirimphos-ethyl**	23505-41-1	111 %	67.98-109.42 %	**Recovery greater than upper data quality objective**
EP068B: Organophosphorus Pesticides (OP)	ES0911066-001	BH10_1.0-1.1	**Bromophos-ethyl**	4824-78-6	111 %	74.94-107.37 %	**Recovery greater than upper data quality objective**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES0911066-001	BH10_1.0-1.1	**Pyrene**	129-00-0	65.6 %	70-130%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value 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	Extraction / Preparation	Analysis

Matrix: **SOIL**

Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA055: Moisture Content						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	---	---	---	28-JUL-2009	13-JUL-2009	**15**
EP066: Polychlorinated Biphenyls (PCB)						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP068A: Organochlorine Pesticides (OC)						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP068B: Organophosphorus Pesticides (OP)						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP075(SIM)A: Phenolic Compounds						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	28-JUL-2009	20-JUL-2009	**8**
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	---	---	---
EP080: BTEX						
Soil Glass Jar - Unpreserved						
BH10_1.0-1.1	28-JUL-2009	20-JUL-2009	**8**	28-JUL-2009	20-JUL-2009	**8**

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.**

3447-451

Frank Ferraro

FAS: 28/7/09 4:20pm

From: Jennifer Cullen
Sent: Tuesday, 28 July 2009 3:58 PM
To: Jacob Waugh; Samples Sydney
Subject: FW: Additional sample analysis

Hi Fadi,

Could you please arrange for this sample to be re-batched today?

It is to be analysed as per the soil table in quote SY/330/09.

Thanks

Kind Regards

Environmental Division
Sydney
Work Order
ES0911066

Telephone : +61-2-8784 8555

Jennifer Cullen
Client Services Co-ordinator
ALS Laboratory Group
Environmental Division
Sydney, Australia
Phone: + 61 2 8784 8555
Direct: + 61 2 8784 8509
Fax: + 61 2 8784 8500
www.alsglobal.com.au

From: Donnetti, Christiaan [mailto:Christiaan.Donnetti@aecom.com]
Sent: Tuesday, 28 July 2009 3:14 PM
To: Jennifer Cullen
Cc: Pigram, Kate
Subject: Additional sample analysis

Hi Jenny,

Please could you analyse an additional sample for the soil samples from the Port Kembla Land based Investigation BH10_1.0-1.1 from work order ES0909983 (Sample number 042) which is currently on hold.

I think some of the analytes may be out of holding times but never the less please could you analyse for the following:

Metals M8
PCB
OC
OP
Phenols
PAH
TPH
BTEX

Many thanks

Regards

Christiaan Donnetti
Associate Environmental Scientist
Environment
D +61 2 8484 8915

christiaan.donnetti@aecom.com

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Gordon NSW 2072
PO Box 726 Pymble NSW 2073
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www.aecom.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **ES0911066**		
Client	: **ENSR AUSTRALIA PTY LIMITED**	Laboratory	: Environmental Division Sydney
Contact	: MR CHRISTIANN DONNETTI	Contact	: Charlie Pierce
Address	: LEVEL 5, 828 PACIFIC HIGHWAY GORDON NSW, AUSTRALIA 2072	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: christiaan.donnetti@aecom.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 02 8484 8999	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8484 8989	Facsimile	: +61-2-8784 8500
Project	: S3017805 DKPC-DRILLING REBATCH OF ES0909983	Page	: 1 of 2
Order number	: REBATCH OF ES0909983		
C-O-C number	: ----	Quote number	: ES2009HLAENV0352 (SY/330/09 V3)
Site	: ----		
Sampler	: KD	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 28-JUL-2009	Issue Date	: 28-JUL-2009 18:15
Client Requested Due Date	: 04-AUG-2009	Scheduled Reporting Date	: **04-AUG-2009**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.7'C
No. of coolers/boxes	: REBATCH	No. of samples received	: 1
Sercurity Seal	: Not 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) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Breaches in recommended extraction / analysis holding times may occur. Please contact ALS for further information (Nanthini Coilparampil).**
- **This is a rebatch of ES0909983.**
- **Holding times on Soil for moisture analysis is 7 days from sampling.**
- **Holding times on Soil for Semi-volatile and Volatile analysis is 14 days from sampling.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at 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 - EP075 SIM Phenols only SIM - Phenols only	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-07 TPH/BTEX/PAH (SIM)	SOIL - S-13 OC/OP/PCB
ES0911066-001	06-JUL-2009 15:00	BH10_1.0-1.1	✓	✓	✓	✓

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	accountsenv@aecom.com

MR CHRISTIANN 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 - HLAPro (HLAPro)	Email	christiaan.donnetti@aecom.com
- EDI Format - XTab (XTAB)	Email	christiaan.donnetti@aecom.com

MS KATE PIGRAM

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

THE RESULTS ADDRESS

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0910858**	Page	: 1 of 6
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
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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	: 09-JUL-2009
Sampler	: Richard Cole	Issue Date	: 28-JUL-2009
Site	: ----		
		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
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Sarah Ashworth	Organic Chemist	Organics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
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

- **EP132: Matrix spike recoveries could not be determined due to sample matrix interference.**
- **Semivolatile TPH: Sample TRIP01 shows raised LOR value due to high moisture content.**
- **This report has been amended to allow the distribution of an Electronic Data Deliverable (EDD) not previously provided. All analysis results are as per the previous report.**
- **Volatile TPH/BTEX: Sample TRIP01 shows poor surrogate recovery due to matrix interference. (High moisture content).**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP01	----	----	----	----
				Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0910858-001	----	----	----	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**46.2**	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg		**30.2**	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg		**0.2**	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg		**60.1**	----	----	----	----
Copper	7440-50-8	1.0	mg/kg		**233**	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg		**12.6**	----	----	----	----
Lead	7439-92-1	1.0	mg/kg		**217**	----	----	----	----
Nickel	7440-02-0	1.0	mg/kg		**14.5**	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**1.4**	----	----	----	----
Silver	7440-22-4	0.1	mg/kg		**0.3**	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**83.1**	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**554**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		**0.40**	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**4.25**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<70	----	----	----	----
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	----	----	----	----
2-Methylnaphthalene	91-57-6	10	µg/kg		**430**	----	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<10	----	----	----	----
Acenaphthene	83-32-9	10	µg/kg		**80**	----	----	----	----
Acenaphthylene	208-96-8	10	µg/kg		**380**	----	----	----	----
Anthracene	120-12-7	10	µg/kg		**400**	----	----	----	----
Benz(a)anthracene	56-55-3	10	µg/kg		**950**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TRIP01	----	----	----	----
				Client sampling date / time	06-JUL-2009 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0910858-001	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	10	µg/kg		1060	----	----	----	----
Benzo(b)fluoranthene	205-99-2	10	µg/kg		1340	----	----	----	----
Benzo(e)pyrene	192-97-2	10	µg/kg		670	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		780	----	----	----	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		430	----	----	----	----
Chrysene	218-01-9	10	µg/kg		950	----	----	----	----
Coronene	191-07-1	10	µg/kg		300	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		210	----	----	----	----
Fluoranthene	206-44-0	10	µg/kg		2080	----	----	----	----
Fluorene	86-73-7	10	µg/kg		300	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		690	----	----	----	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	----	----	----	----
Naphthalene	91-20-3	10	µg/kg		4580	----	----	----	----
Perylene	198-55-0	10	µg/kg		340	----	----	----	----
Phenanthrene	85-01-8	10	µg/kg		1330	----	----	----	----
Pyrene	129-00-0	10	µg/kg		1780	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		74.5	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		75.3	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		70.7	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		80.9	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		87.1	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		78.7	----	----	----	----

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