Attachment C14(h)

Proponent Phase I and Phase II Environmental Site Assessment (8/8)

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
□□ □□□□□	□□ □□□ □□	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
□□ □□□□□	□□ □□□ □□	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: **ES2003481**	Page	: 1 of 12
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 31-Jan-2020
Order number	: 60623599_1.1	Date Analysis Commenced	: 05-Feb-2020
C-O-C number	: ----	Issue Date	: 10-Feb-2020
Sampler	: Kurtis Wathen, REBEKAH PANOZZO		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 23		
No. of samples analysed	: 10		

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

1269

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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

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

Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

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 insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

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 (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2847945)									
ES2003074-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES2003481-010	BH102_0.3-0.4	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	5	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	4	36.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	24	6.27	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	71	66	7.68	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	49	55	11.5	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2847951)									
ES2003074-003	Anonymous	EA055: Moisture Content	---	0.1	%	19.7	20.0	1.61	0% - 20%
ES2003518-001	Anonymous	EA055: Moisture Content	---	0.1	%	7.3	7.1	3.16	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2849180)									
ES2003337-012	Anonymous	EA055: Moisture Content	---	0.1	%	3.4	3.2	6.92	0% - 20%
ES2003518-011	Anonymous	EA055: Moisture Content	---	0.1	%	4.2	4.0	3.96	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2847946)									
ES2003074-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2003481-010	BH102_0.3-0.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2841944)									

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 (%)*
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2841944) - continued									
ES2003359-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2003360-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2841947)									
ES2003359-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES2003360-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

1271

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: 2841947) - continued									
ES2003360-001	Anonymous	EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2841947)									
ES2003359-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES2003360-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2841947) - continued									
ES2003360-001	Anonymous	EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2840428)									
ES2003455-042	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	---	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2003455-059	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	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: 2840428) - continued									
ES2003455-059	Anonymous	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2840427)									
ES2003455-042	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2003455-059	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2841489)									
ES2003425-003	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2003480-013	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2840427)									
ES2003455-042	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2003455-059	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2841489)									
ES2003425-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2003480-013	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2841489)									
ES2003425-003	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2003480-013	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 2841489) - continued									
ES2003480-013	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2845751)									
ES2003311-001	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.00	No Limit
ES2003311-007	Anonymous	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2845751)									
ES2003311-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2003311-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2845751)									
ES2003311-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2003311-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	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 Spike (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
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2847945)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	86.0	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.2	83.0	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	84.1	76.0	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.2	86.0	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.2	80.0	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.7	87.0	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	90.5	80.0	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2847946)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.3	70.0	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2841944)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	83.0	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2841947)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.1	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	103	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	102	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	108	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	100	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.4	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	102	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	104	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	97.6	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2841947)								

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: 2841947) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.2	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	102	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	74.8	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	84.5	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	87.0	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.7	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	101	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	92.9	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	99.4	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	104	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	78.2	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	101	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	62.6	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2840428)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.7	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.7	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	99.7	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	96.8	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	99.4	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	99.8	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	96.7	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.8	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	91.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.7	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	100	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.1	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	84.9	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	82.0	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2840427)								
EP071: C10 - C14 Fraction	---	50	mg/kg	<50	300 mg/kg	95.5	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2840427) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	97.5	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	91.1	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2841489)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.1	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2840427)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.3	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	92.1	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	76.9	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2841489)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.2	68.4	128
EP080: BTEXN (QCLot: 2841489)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.8	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.5	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.6	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	88.5	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	92.7	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	93.4	63.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2845751)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	83.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2845751)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	90.5	75.0	127
EP080: BTEXN (QCLot: 2845751)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	90.7	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	89.2	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.6	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	85.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.9	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	95.0	70.0	120

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	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2847945)							
ES2003074-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.2	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.5	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	103	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.8	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2847946)							
ES2003074-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.0	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2841944)							
ES2003359-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	85.0	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2841947)							
ES2003359-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	111	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	114	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	114	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	84.7	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	99.2	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	106	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2841947)							
ES2003359-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	98.6	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	104	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	92.3	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	79.9	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	74.6	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2840428)							
ES2003455-042	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.8	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2840427)							
ES2003455-042	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	98.3	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	113	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	125	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2841489)							
ES2003425-003	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.1	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2840427)							
ES2003455-042	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	106	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	116	53.0	131

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2840427) - continued							
ES2003455-042	Anonymous	EP071: >C34 - C40 Fraction	----	1058 mg/kg	118	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2841489)							
ES2003425-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.2	70.0	130
EP080: BTEXN (QCLot: 2841489)							
ES2003425-003	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	82.4	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	86.7	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	86.6	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	89.8	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.0	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2845751)							
ES2003311-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2845751)							
ES2003311-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	123	70.0	130
EP080: BTEXN (QCLot: 2845751)							
ES2003311-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.6	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	90.6	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	94.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	91.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.7	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	96.1	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2003481**	Page	: 1 of 8
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 31-Jan-2020
Site	: ----	Issue Date	: 10-Feb-2020
Sampler	: Kurtis Wathen, REBEKAH PANOZZO	No. of samples received	: 23
Order number	: 60623599_1.1	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

1281

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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 (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH105_0.4-0.5, BH105_0.85-0.95, BH105_1.7-1.8, BH102_0.3-0.4, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	**31-Jan-2020**	**----**	----	----	**07-Feb-2020**	14-Feb-2020	✓
Soil Glass Jar - Unpreserved (EA055)							
BH101_0.16-0.26	**31-Jan-2020**	**----**	----	----	**09-Feb-2020**	14-Feb-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200)							
BH105_0.4-0.5, BH102_0.5-0.6, BH101_1.3-1.4	**31-Jan-2020**	**----**	----	----	**05-Feb-2020**	29-Jul-2020	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag (EA200N)							
BH105_0.4-0.5, BH102_0.5-0.6, BH101_1.3-1.4	**31-Jan-2020**	**----**	----	----	**05-Feb-2020**	29-Jul-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH105_0.4-0.5, BH105_0.85-0.95, BH105_1.7-1.8, BH102_0.3-0.4, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	**31-Jan-2020**	**07-Feb-2020**	29-Jul-2020	✓	**07-Feb-2020**	29-Jul-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH105_0.4-0.5, BH105_0.85-0.95, BH105_1.7-1.8, BH102_0.3-0.4, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	**31-Jan-2020**	**07-Feb-2020**	28-Feb-2020	✓	**08-Feb-2020**	28-Feb-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH101_0.16-0.26	**31-Jan-2020**	**05-Feb-2020**	14-Feb-2020	✓	**06-Feb-2020**	16-Mar-2020	✓

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
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH101_0.16-0.26	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	06-Feb-2020	16-Mar-2020	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
BH101_0.16-0.26	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	06-Feb-2020	16-Mar-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH105_0.4-0.5, BH105_0.85-0.95, BH105_1.7-1.8, BH102_0.3-0.4, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	06-Feb-2020	16-Mar-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
BH105_0.4-0.5, BH105_0.85-0.95, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	06-Feb-2020	16-Mar-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH105_0.4-0.5, BH105_0.85-0.95, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	07-Feb-2020	14-Feb-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071)							
BH105_0.4-0.5, BH105_0.85-0.95, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	06-Feb-2020	16-Mar-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH105_0.4-0.5, BH105_0.85-0.95, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	07-Feb-2020	14-Feb-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH105_0.4-0.5, BH105_0.85-0.95, BH102_0.5-0.6, BH101_0.7-0.8, BH101_2.2-2.3	31-Jan-2020	05-Feb-2020	14-Feb-2020	✓	07-Feb-2020	14-Feb-2020	✓

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
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC303	31-Jan-2020	07-Feb-2020	14-Feb-2020	✓	07-Feb-2020	14-Feb-2020	✓

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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC303	**31-Jan-2020**	**07-Feb-2020**	14-Feb-2020	✓	**07-Feb-2020**	14-Feb-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC303	**31-Jan-2020**	**07-Feb-2020**	14-Feb-2020	✓	**07-Feb-2020**	14-Feb-2020	✓

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(were) 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	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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*	

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)							
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 6.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. 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 (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 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 (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D 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 (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D 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 (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. 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 (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to 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. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. 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 (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to 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	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2003481**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: alex.latham@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60623599_1.1-Burrows IE	Page	: 1 of 3
Order number	: 60623599_1.1	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Kurtis Wathen, REBEKAH PANOZZO		

Dates

Date Samples Received	: 31-Jan-2020 18:00	Issue Date	: 04-Feb-2020
Client Requested Due Date	: 10-Feb-2020	Scheduled Reporting Date	: **10-Feb-2020**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 1.2'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 23 / 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample No: 19- BH101_1.5-1.6 received as BH101_1.3-1.4.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Classification and Quantitation per NEPM 2013 : EA200N		
BH105_0.4-0.5	- Snap Lock Bag	- Snap Lock Bag: Separate bag received
BH102_0.5-0.6	- Snap Lock Bag	- Snap Lock Bag: Separate bag received
BH101_1.5-1.6 Received as BH101_1.3-1.4	- Snap Lock Bag	- Snap Lock Bag: Separate bag received

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2003481-019 : [31-Jan-2020] : BH101_1.5-1.6 - Received as BH101_1.3-1.4

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary 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.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-13 OC/OP/PCB	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2003481-001	31-Jan-2020 00:00	BH105_0.15-0.2	☐						
ES2003481-002	31-Jan-2020 00:00	BH105_0.4-0.5		☐	☐				☐
ES2003481-003	31-Jan-2020 00:00	BH105_0.65-0.75	☐						
ES2003481-004	31-Jan-2020 00:00	BH105_0.85-0.95		☐					☐
ES2003481-005	31-Jan-2020 00:00	BH105_1.7-1.8		☐		☐	☐		
ES2003481-006	31-Jan-2020 00:00	BH105_3.5-3.6	☐						
ES2003481-007	31-Jan-2020 00:00	BH105_4.4-4.9	☐						
ES2003481-008	31-Jan-2020 00:00	QC108	☐						
ES2003481-009	31-Jan-2020 00:00	BH102_0.135-0.2	☐						
ES2003481-010	31-Jan-2020 00:00	BH102_0.3-0.4		☐		☐	☐		
ES2003481-011	31-Jan-2020 00:00	BH102_0.5-0.6		☐	☐				☐
ES2003481-012	31-Jan-2020 00:00	BH102_0.9-1.0	☐						
ES2003481-013	31-Jan-2020 00:00	BH102_1.3-1.4	☐						
ES2003481-014	31-Jan-2020 00:00	BH102_3.4-3.5	☐						
ES2003481-015	31-Jan-2020 00:00	BH101_0.16-0.26		☐				☐	
ES2003481-016	31-Jan-2020 00:00	BH101_0.3-0.4	☐						
ES2003481-017	31-Jan-2020 00:00	BH101_0.7-0.8		☐					☐
ES2003481-018	31-Jan-2020 00:00	QC109	☐						
ES2003481-019	31-Jan-2020 00:00	BH101_1.5-1.6 Recei...			☐				
ES2003481-020	31-Jan-2020 00:00	BH101_2.2-2.3		☐					☐
ES2003481-021	31-Jan-2020 00:00	BH101_3.4-3.3	☐						
ES2003481-023	31-Jan-2020 00:00	BH102_4.4-4.5	☐						

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2003481-022	31-Jan-2020 00:00	QC303	☐

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

ALEX LATHAM

- *AU Certificate of Analysis - NATA (COA)	Email	alex.latham@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alex.latham@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alex.latham@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alex.latham@aecom.com
- Chain of Custody (CoC) (COC)	Email	alex.latham@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	alex.latham@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	alex.latham@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	alex.latham@aecom.com
- EDI Format - XTab (XTAB)	Email	alex.latham@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	alex.latham@aecom.com

updated CoC

2/2

CHAIN OF CUSTODY

AECOM Australia Pty Ltd
Sydney (420 George St) T: 02 8934 0451
AECOM Project Manager: Alex Latham
AECOM Project Manager Email: Alex.Latham@aecom.com

Laboratory Details
Lab Name: ~~Eurofins~~ ALS
Lab Address: ~~12 Ashley St, Chatswood~~
Contact Name: ~~D Sesinger~~
Lab. Ref:
Tel: 9910 6200
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Sampled By: Kurtis Wathen / Rebekah Panozzo | AECOM Project No: 60623599_1.1 | Project Name: Burrows IE | PO No. see project #

Specifications: All reports to be emailed to AECOM Project Manager
ESDAT & Equis format also required

	Yes
1. Urgent TAT required? (please circle: 24hr 48hr __5__ days)	3 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: _____)	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	Analysis Request: TRH C6-C40, BTEXN	PAH	8 Metals	OCP, OPP, PCB	Asbestos (EA200)	Hold	Other
1	BH105_0.15-0.2	3/11/20	X					X	J B							X	
2	BH105_0.4-0.5								J B		X	X	X		X		
3	BH105_0.65-0.75								J B								
4	BH105_0.95-0.95								J B		X	X	X				
5	BH105_1.7-1.8								(J) B			X	X				
6	BH105_3.5-3.6								(J) -								
7	BH105_4.4-4.9								(J) -								
8	QC106								(J) -								
9	BH102_0.135-0.2								J B								
10	BH102_0.3-0.4								J B			X	X				
11	BH102_0.5-0.6								J B		X	X	X		X		
12	BH102_0.9-1.0								J B								
13	BH102_1.3-1.4								J B								
14	BH102_3.4-3.5								(J) -								

Subcon / Forward Lab / Split WO
Lab / Analysis: ALS Newcastle
Organised By / Date: Sample 2/11/19
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By:

* Metals Required: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn

Comments: 3/11/20

Relinquished by: R. Panozzo | Signed: | Date: ~~19/07/2019~~
Recieved by: | Signed: | Date:

Relinquished by: | Signed:
Recieved by: JUSTIN | Signed: | Date: 3/11/20

Environmental Division
Sydney
Work Order Reference
ES2003481

Telephone : + 61-2-8784 8555

1292

QC303
BH102_4.4-4.5

Field_Worksheet_FORM025_Dec04

X Y 24V

cc: Fax 3/12/20 3:45pm

6pm

12

CHAIN OF CUSTODY

AECOM Australia Pty Ltd
Sydney (420 George St) T: 02 8934 0451
AECOM Project Manager: Alex Latham
AECOM Project Manager Email: **Alex.Latham@aecom.com**
Sampled By: Kurtis Wathen / Rebekah Panozzo AECOM Project No: **60623599_1.1**

Laboratory Details Tel: 9910 6200
Lab Name: Envirolab Fax:
Lab Address: 12 Ashley St, Chatswood Preliminary Report by:
Contact Name: D Springer Final Report by:
Lab. Ref: Lab Quote No:
Project Name: Burrows IE PO No. see project #

Specifications: All reports to be emailed to AECOM Project Manager
ESDAT & Equis format also required

1. Urgent TAT required? (please circle: 24hr 48hr __5__days) — Yes / 3 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: _____)

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	other	Preservation: filt'ed	acid	ice	other	Container (No. & type)	TRH C6-C40, BTEXN	PAH	8 Metals	OCP, OPP, PCB	Asbestos (EA200N)	TRH >C10 - C40	Hold	Other
15	BH101 _0.16-0.26	31/1	X					Y		1 B				X			XX	
16	BH101 _0.3-0.4									1 A								
17	BH101 _0.7-0.9									1 B	X	X	X		(X)			
18	QC104									~~1 J~~ = 1 J	~~X~~							
19	BH101 _ 1.5-1.6 Void BW01 1.3-1.4									1 A					( )			
20	BH101 _ 2.2-2.3									1 B	X	X	X					
21	BH101 _ 3.4-3.5									1 J								
22	QC303		W							2x Vials						X		
23	BH102 _ 4.4-4.5		S							1 J								

* Metals Required: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn
Comments: 3/11
Lab Report No. Esky ID

Relinquished by: R. Panozzo Signed: Date: ~~19/07/2019~~
Recieved by: Signed: Date:
Relinquished by: Signed: Date:
Recieved by: Justin Signed: Date: 2/11/20

6pm

1293

Angus Harding

From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Monday, 3 February 2020 3:51 PM
To: Angus Harding; Wathen, Kurtis
Cc: Tyler Cachia
Subject: RE: [EXTERNAL] - Re: Next week - sample pick up

Angus
No asbestos analysis for BH101_0.7-0.8.
Please schedule BH101_1.5-1.6 for EA200N only.
Regards,

Alex Latham
Associate Director
D +61 2 8934 0451 M +61 400 973 821
Alex.Latham@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

From: Angus Harding <angus.harding@ALSGlobal.com>
Sent: Monday, 3 February 2020 3:32 PM
To: Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Cc: Tyler Cachia <tyler.cachia@ALSGlobal.com>; Latham, Alex <Alex.Latham@aecom.com>
Subject: RE: [EXTERNAL] - Re: Next week - sample pick up

Hi Kurtis,

The samples that appear to have become contaminated are BH102_0.9-1.0, BH101_0.7-0.8, and BH101_2.2-2.3. So BH101_0.7-0.8 will be impacted, we would be able to sub sample from the jar, however it would be non-NATA and we will need to take volatiles volume before subsampling to ensure these results.

Let me know what you think.

Cheers.

Kind Regards,

Angus Harding

Client Services Officer, Environmental
Sydney

T +61 2 8784 8555
F +61 2 8784 8500
D +61 2 8784 8503
angus.harding@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

CHAIN OF CUSTODY

AECOM Australia Pty Ltd
Sydney (420 George St) T: 02 8934 0451

AECOM Project Manager: Alex Latham
AECOM Project Manager Email: **Alex.Latham@aecom.com**

Laboratory Details
Lab Name: ~~Envirolab~~ ALS
Lab Address: ~~12 Ashley St, Chatswood~~
Contact Name: ~~D Spriegel~~
Lab. Ref:

Tel: 9910 6200
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No:

Sampled By: Kurtis Wathen / Rebekah Panozzo
AECOM Project No: **60623599_1.1**
Project Name: Burrows IE
PO No. see project #

Specifications: All reports to be emailed to AECOM Project Manager
ESDAT & Equis format also required

	Yes
1. Urgent TAT required? (please circle: 24hr 48hr __5__days)	3 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: _____)	

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	Analysis Request: TRH C6-C40, BTEXN	PAH	8 Metals	OCP, OPP, PCB	Hold	Other
1	BH105 _0.15-0.2	31/1/20	X					X	J B						X	
2	BH105 _0.4-0.5								J B							
3	BH105 _0.65-0.75								J B							
4	BH105 _0.95-0.95								J B							
5	BH105 _1.7-1.8								J B							
6	BH105 _3.5-3.6								J –							
7	BH105 _4.4-4.5								J –							
8	QC108								J –							
9	BH102 _0.135-0.2								J B							
10	BH102_0.3-0.4								J B							
11	BH102_0.5-0.6								J B							
12	BH102_0.9-1.0								J B							
13	BH102 _1.3-1.4								J B							
14	BH102 _3.4-3.5								J –							

1295

* Metals Required: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn

Comments: 31/1/26

Relinquished by: R.Panozzo	Signed:	Date: ~~10/07/2019~~	Relinquished by:	Signed:	Date:
Recieved by:	Signed:	Date:	Recieved by: JUSTIN	Signed:	Date: 31/1/20

Lab Report No.
Esky ID

QC303
BH102 _4.4-4.5

X
Y
24V
J
–

6pm

12

CHAIN OF CUSTODY

AECOM Australia Pty Ltd

Sydney (420 George St) T: 02 8934 0451

AECOM Project Manager: Alex Latham

AECOM Project Manager Email: **Alex.Latham@aecom.com**

Sampled By: Kurtis Wathen / Rebekah Panozzo AECOM Project No: **60623599_1.1**

Laboratory Details

Lab Name: Envirolab Tel: 9910 6200

Lab Address: 12 Ashley St, Chatswood Fax:

Contact Name: D Springer Preliminary Report by:

Lab. Ref: Final Report by:

Lab Quote No:

Project Name: Burrows IE PO No. see project #

Specifications: All reports to be emailed to AECOM Project Manager
ESDAT & Equis format also required

	Yes
1. Urgent TAT required? (please circle: 24hr 48hr __5__days)	3 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:)	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: other	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	TRH C6-C40, BTEXN	PAH	8 Metals	OCP, OPP, PCB	Hold	Other
15	BH101 – 0.16 – 0.26	31/11	Y					Y		J B					XX	
16	BH101 – 0.3 – 0.4									J B						
17	BH101 – 0.7 – 0.8									J B						
18	QC104									J =						
19	BH101 – 1.5 – 1.6									J B						
20	BH101 – 2.2 – 2.3									J B						
21	BH101 – 3.4 – 3.3									J ~						

1296

* Metals Required: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn

Comments: 3/11

Lab Report No. Esky ID

Relinquished by: M. Panozzo	Signed:	Date: ~~19/07/2019~~	Relinquished by:	Signed:	Date:
Recieved by:	Signed:	Date:	Recieved by: JUSTIN	Signed:	Date: 31/11/20

6pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2004680**	Page	: 1 of 7
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 29-Jan-2020 15:45
Order number	: 60623599_1.1	Date Analysis Commenced	: 13-Feb-2020
C-O-C number	: ----	Issue Date	: 18-Feb-2020 19:54
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1297

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 insufficient 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC100	BH108_1.3-1.4	BH107_1.5-1.7	BH109_0.9-1.0	BH111_0.65-0.75
			Client sampling date / time	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	30-Jan-2020 00:00
Compound	CAS Number	LOR	Unit	ES2004680-001	ES2004680-002	ES2004680-003	ES2004680-004	ES2004680-005
				Result	Result	Result	Result	Result
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**8.7**	**7.7**	**8.2**	**8.3**	**9.1**
After HCl pH	----	0.1	pH Unit	**1.5**	**4.1**	**4.1**	**1.8**	**5.2**
Extraction Fluid Number	----	1	-	**1**	**1**	**1**	**1**	**2**
Final pH	----	0.1	pH Unit	**5.2**	**5.7**	**5.8**	**5.8**	**4.7**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Client sample ID	**BH117_2.2-2.3**	**BH114_1.3-1.4**	**----**	**----**	**----**
			Client sampling date / time	30-Jan-2020 00:00	03-Feb-2020 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2004680-006**	**ES2004680-007**	**--------**	**--------**	**--------**
				Result	Result	----	----	----
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**8.8**	**8.1**	**----**	**----**	**----**
After HCl pH	----	0.1	pH Unit	**1.5**	**2.1**	**----**	**----**	**----**
Extraction Fluid Number	----	1	-	**1**	**1**	**----**	**----**	**----**
Final pH	----	0.1	pH Unit	**5.7**	**5.6**	**----**	**----**	**----**

1300

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)				Client sample ID	QC100	BH108_1.3-1.4	BH107_1.5-1.7	BH109_0.9-1.0	BH111_0.65-0.75
				Client sampling date / time	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	30-Jan-2020 00:00
Compound	CAS Number	LOR	Unit		ES2004680-001	ES2004680-002	ES2004680-003	ES2004680-004	ES2004680-005
					Result	Result	Result	Result	Result
EG005(ED093)C: Leachable Metals by ICPAES									
Cadmium	7440-43-9	0.05	mg/L		----	**1.73**	----	----	----
Chromium	7440-47-3	0.1	mg/L		----	<0.1	<0.1	<0.1	----
Lead	7439-92-1	0.1	mg/L		**0.2**	**33.7**	**8.7**	**2.3**	**32.9**
Nickel	7440-02-0	0.1	mg/L		----	**2.0**	<0.1	**0.6**	----
EG050G: Hexavalent Chromium by Discrete Analyser									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	**0.02**	<0.01	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**22.0**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**50.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**46.5**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**61.6**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**78.2**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**84.3**	----	----	----	----

To Table 3

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)				Client sample ID	BH117_2.2-2.3	BH114_1.3-1.4	-----	-----	-----
				Client sampling date / time	30-Jan-2020 00:00	03-Feb-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2004680-006	ES2004680-007	--------	--------	--------
					Result	Result	----	----	----
EG050G: Hexavalent Chromium by Discrete Analyser									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**26.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**55.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**64.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**80.9**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**86.0**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**86.6**	----	----	----	----

1302

Surrogate Control Limits

Sub-Matrix: **TCLP LEACHATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2004680**	Page	: 1 of 4
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 29-Jan-2020
Order number	: 60623599_1.1	Date Analysis Commenced	: 13-Feb-2020
C-O-C number	: ----	Issue Date	: 18-Feb-2020
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 7		
No. of samples analysed	: 7		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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

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

Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1304

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 insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

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 (%)
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2862670)									
ES2003946-001	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
ES2004680-004	BH109_0.9-1.0	EG005C: Cadmium	7440-43-9	0.05	mg/L	0.05	0.05	0.00	No Limit
		EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	2.3	2.3	0.00	0% - 20%
		EG005C: Nickel	7440-02-0	0.1	mg/L	0.6	0.6	0.00	No Limit
EG050G: Hexavalent Chromium by Discrete Analyser (QC Lot: 2862888)									
ES2004594-001	Anonymous	EG050G-C: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG050G: Hexavalent Chromium by Discrete Analyser (QC Lot: 2864907)									
ES2004680-002	BH108_1.3-1.4	EG050G-C: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	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 Spike (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
EN33: TCLP Leach (QCLot: 2857446)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33: TCLP Leach (QCLot: 2861763)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----

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
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2862670)								
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	0.1 mg/L	95.9	80.0	118
EG005C: Chromium	7440-47-3	0.1	mg/L	<0.1	0.1 mg/L	95.6	88.0	114
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	113	80.0	118
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	94.2	83.0	115
EG050G: Hexavalent Chromium by Discrete Analyser (QCLot: 2862888)								
EG050G-C: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	102	83.0	117
EG050G: Hexavalent Chromium by Discrete Analyser (QCLot: 2864907)								
EG050G-C: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	102	83.0	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2862115)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	75.8	63.3	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2862604)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	84.8	63.3	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	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2862670)							
ES2004488-001	Anonymous	EG005C: Cadmium	7440-43-9	0.25 mg/L	79.0	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2862670) - continued							
ES2004488-001	Anonymous	EG005C: Chromium	7440-47-3	1 mg/L	81.4	70.0	130
		EG005C: Lead	7439-92-1	1 mg/L	93.7	70.0	130
		EG005C: Nickel	7440-02-0	1 mg/L	77.5	70.0	130
EG050G: Hexavalent Chromium by Discrete Analyser (QCLot: 2862888)							
ES2004594-001	Anonymous	EG050G-C: Hexavalent Chromium	18540-29-9	0.05 mg/L	78.0	70.0	130
EG050G: Hexavalent Chromium by Discrete Analyser (QCLot: 2864907)							
ES2004680-002	BH108_1.3-1.4	EG050G-C: Hexavalent Chromium	18540-29-9	0.05 mg/L	71.8	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2004680**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 29-Jan-2020
Site	: ----	Issue Date	: 18-Feb-2020
Sampler	: ----	No. of samples received	: 7
Order number	: 60623599_1.1	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

1308

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EN33: TCLP Leach						
Non-Volatile Leach: 14 day HT(e.g. SV organics)						
QC100	15-Feb-2020	11-Feb-2020	**4**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	12	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	12	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a)							
QC100	**28-Jan-2020**	**15-Feb-2020**	11-Feb-2020	×	**----**	----	----
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a)							
BH117_2.2-2.3	**30-Jan-2020**	**13-Feb-2020**	13-Feb-2020	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a)							
BH111_0.65-0.75	**30-Jan-2020**	**15-Feb-2020**	28-Jul-2020	✓	**----**	----	----
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN33a)							
BH114_1.3-1.4	**03-Feb-2020**	**15-Feb-2020**	02-Mar-2020	✓	**----**	----	----
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN33a)							
BH108_1.3-1.4, BH107_1.5-1.7, BH109_0.9-1.0	**28-Jan-2020**	**15-Feb-2020**	25-Feb-2020	✓	**----**	----	----

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
EG005(ED093)C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)							
QC100, BH107_1.5-1.7, BH111_0.65-0.75, BH108_1.3-1.4, BH109_0.9-1.0,	**15-Feb-2020**	**17-Feb-2020**	13-Aug-2020	✓	**17-Feb-2020**	13-Aug-2020	✓
EG050G: Hexavalent Chromium by Discrete Analyser							
Clear Plastic Bottle - NaOH (EG050G-C)							
BH108_1.3-1.4, BH109_0.9-1.0, BH107_1.5-1.7, BH114_1.3-1.4	**15-Feb-2020**	**----**	----	----	**17-Feb-2020**	14-Mar-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
BH117_2.2-2.3	**13-Feb-2020**	**15-Feb-2020**	20-Feb-2020	✓	**17-Feb-2020**	26-Mar-2020	✓
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC100	**15-Feb-2020**	**17-Feb-2020**	22-Feb-2020	✓	**17-Feb-2020**	28-Mar-2020	✓

1310

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(were) 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*	
Method Blanks (MB)							
TCLP for Non & Semivolatile Analytes	EN33a	2	21	**9.52**	**9.09**	✓	NEPM 2013 B3 & ALS QC Standard

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)							
Hexavalent Chromium by Discrete Analyser - Leachable	EG050G-C	2	6	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	12	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Discrete Analyser - Leachable	EG050G-C	2	6	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Discrete Analyser - Leachable	EG050G-C	2	6	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	12	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Discrete Analyser - Leachable	EG050G-C	2	6	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	12	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

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
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 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 (2013) Schedule B(3)
Hexavalent Chromium by Discrete Analyser - Leachable	EG050G-C	SOIL	In house: Referenced to APHA 3500 Cr-A & B. Hexavalent chromium is determined directly on leachate samples by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to 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 (2013) Schedule B(3)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: 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.
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

1311

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2004680**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: alex.latham@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60623599_1.1-Burrows IE	Page	: 1 of 2
Order number	: 60623599_1.1	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 29-Jan-2020 15:45	Issue Date	: 12-Feb-2020
Client Requested Due Date	: 18-Feb-2020	Scheduled Reporting Date	: **18-Feb-2020**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 4.1
Receipt Detail	:	No. of samples received / analysed	: 7 / 7

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Rebatch of ES2002807, ES2002766, ES2003147 and ES2003366.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary 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.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EG050G-C Hexavalent Chromium in TCLP Leachate	SOIL - EN33a TCLP Leachate	SOIL - EP075 SIM PAH only SIM - PAH only
ES2004680-001	28-Jan-2020 00:00	QC100	☐		☐	☐
ES2004680-002	28-Jan-2020 00:00	BH108_1.3-1.4	☐	☐	☐	
ES2004680-003	28-Jan-2020 00:00	BH107_1.5-1.7	☐	☐	☐	
ES2004680-004	28-Jan-2020 00:00	BH109_0.9-1.0	☐	☐	☐	
ES2004680-005	30-Jan-2020 00:00	BH111_0.65-0.75	☐		☐	
ES2004680-006	30-Jan-2020 00:00	BH117_2.2-2.3			☐	☐
ES2004680-007	03-Feb-2020 00:00	BH114_1.3-1.4		☐	☐	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

ALEX LATHAM

- *AU Certificate of Analysis - NATA (COA)	Email	alex.latham@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alex.latham@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alex.latham@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alex.latham@aecom.com
- Chain of Custody (CoC) (COC)	Email	alex.latham@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	alex.latham@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	alex.latham@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	alex.latham@aecom.com
- EDI Format - XTab (XTAB)	Email	alex.latham@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	alex.latham@aecom.com

Vishal
11/02/2020
1635

Vishal Patel

From: Brenda Hong
Sent: Tuesday, 11 February 2020 4:33 PM
To: Vishal Patel
Subject: FW: [EXTERNAL] - 60623599_1.0 Burrows IE - additional analyses request

Hi Vishal, please rebatch as necessary below.

Best regards,

Brenda Hong
Client Services Manager, Environmental NSW

T +61 2 8784 8555 D +61 2 8784 8515
F +61 2 8784 8500 M +61 436 915 237
brenda.hong@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

1315

Environmental Division
Sydney
Work Order Reference
ES2004680

Telephone : +61-2-8784 8555

From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Tuesday, 11 February 2020 4:31 PM
To: Brenda Hong <Brenda.Hong@alsglobal.com>; Loren Schiavon <loren.schiavon@alsglobal.com>
Cc: Tyler Cachia <tyler.cachia@ALSGlobal.com>
Subject: [EXTERNAL] - 60623599_1.0 Burrows IE - additional analyses request

Hi Brenda,
Could you please re-analyse the following samples by the TCLP method for waste classification purposes:

ES2002807
1 QC100: B(a)P, Pb 28/11
2 BH108_1.3-1.4: Cd, Cr VI, Pb, Ni 28/11 #20, 13 S-728-729, S-743

ES2002766
3 BH107_1.5-1.7: Cr VI, Pb, Ni 28/11 #13, 3 S-734-736
4 BH109_0.9-1.0: Cr VI, Pb, Ni 28/11

ES2003147
5 BH11_0.65-0.75: Pb 30/11 #24 (16), 8 S-765, 769, 771
~~BH115_2.5-2.6~~: As
6 BH117_2.2-2.3: B(a)P 30/11

ES2003366
7 BH114_1.3-1.4: Cr VI 3/12 #23 S-862-864

Normal turnaround time is fine. Cr VI = hexavalent chromium.
Any Qs, pls contact me.
Regards,

Alex Latham
Associate Director
D +61 2 8934 0451 M +61 400 973 821
Alex.Latham@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2004682**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 03-Feb-2020 15:40
Order number	: 60623599_1.1	Date Analysis Commenced	: 15-Feb-2020
C-O-C number	: ----	Issue Date	: 18-Feb-2020 13:31
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1317

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 insufficient 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Client sample ID	**BH115_2.5-2.6**	**BH105_0.85-0.95**	**BH105_1.7-1.8**	**BH102_0.5-0.6**	**----**
			Client sampling date / time	29-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2004682-001**	**ES2004682-002**	**ES2004682-003**	**ES2004682-004**	**--------**
				Result	Result	Result	Result	----
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**8.6**	**8.5**	**8.8**	**8.6**	**----**
After HCl pH	----	0.1	pH Unit	**1.6**	**1.6**	**1.6**	**1.6**	**----**
Extraction Fluid Number	----	1	-	**1**	**1**	**1**	**1**	**----**
Final pH	----	0.1	pH Unit	**5.3**	**5.3**	**5.2**	**5.2**	**----**

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)				Client sample ID	BH115_2.5-2.6	BH105_0.85-0.95	BH105_1.7-1.8	BH102_0.5-0.6	----
				Client sampling date / time	29-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	----
Compound	CAS Number	LOR	Unit		ES2004682-001	ES2004682-002	ES2004682-003	ES2004682-004	--------
					Result	Result	Result	Result	----
EG005(ED093)C: Leachable Metals by ICPAES									
Arsenic	7440-38-2	0.1	mg/L		<0.1	----	----	----	----
Lead	7439-92-1	0.1	mg/L		**54.1**	**8.6**	**20.6**	**0.9**	----
Nickel	7440-02-0	0.1	mg/L		**0.2**	----	**0.2**	----	----
EG035C: Leachable Mercury by FIMS									
Mercury	7439-97-6	0.0010	mg/L		----	----	----	<0.0010	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	<0.5	----	<0.5	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	**23.8**	----	**25.5**	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	**53.7**	----	**54.9**	----
2.4.6-Tribromophenol	118-79-6	1.0	%		----	**50.7**	----	**61.5**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	**66.4**	----	**72.9**	----
Anthracene-d10	1719-06-8	1.0	%		----	**81.1**	----	**92.4**	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	**91.3**	----	**85.2**	----

320

Surrogate Control Limits

Sub-Matrix: **TCLP LEACHATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

QUALITY CONTROL REPORT

Work Order	: **ES2004682**	Page	: 1 of 3
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 03-Feb-2020
Order number	: 60623599_1.1	Date Analysis Commenced	: 15-Feb-2020
C-O-C number	: ----	Issue Date	: 18-Feb-2020
Sampler	: ----		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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

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

Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1322

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 insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

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 (%)*
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2862670)									
ES2003946-001	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
ES2004680-004	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	2.3	2.3	0.00	0% - 20%
		EG005C: Nickel	7440-02-0	0.1	mg/L	0.6	0.6	0.00	No Limit
EG035C: Leachable Mercury by FIMS (QC Lot: 2864781)									
ES2004594-001	Anonymous	EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	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 Spike (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
EN33: TCLP Leach (QCLot: 2861763)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----

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
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2862670)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	0.1 mg/L	102	80.0	124
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	113	80.0	118
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	94.2	83.0	115
EG035C: Leachable Mercury by FIMS (QCLot: 2864781)								
EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	105	79.0	109
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2862604)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	84.8	63.3	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	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2862670)							
ES2004488-001	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	87.0	70.0	130
		EG005C: Lead	7439-92-1	1 mg/L	93.7	70.0	130
		EG005C: Nickel	7440-02-0	1 mg/L	77.5	70.0	130
EG035C: Leachable Mercury by FIMS (QCLot: 2864781)							
ES2004594-002	Anonymous	EG035C: Mercury	7439-97-6	0.01 mg/L	70.0	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2004682**	Page	: 1 of 5
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1-Burrows IE	Date Samples Received	: 03-Feb-2020
Site	: ----	Issue Date	: 18-Feb-2020
Sampler	: ----	No. of samples received	: 4
Order number	: 60623599_1.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

1325

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EN33: TCLP Leach						
Non-Volatile Leach: 14 day HT(e.g. SV organics)						
BH105_0.85-0.95, BH102_0.5-0.6	15-Feb-2020	14-Feb-2020	1	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN33a)							
BH105_0.85-0.95, BH102_0.5-0.6	**31-Jan-2020**	**15-Feb-2020**	14-Feb-2020	×	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a)							
BH115_2.5-2.6	**29-Jan-2020**	**15-Feb-2020**	27-Jul-2020	✓	**----**	----	----
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a)							
BH105_1.7-1.8	**31-Jan-2020**	**15-Feb-2020**	29-Jul-2020	✓	**----**	----	----

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
EG005(ED093)C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)							
BH115_2.5-2.6, BH105_0.85-0.95, BH105_1.7-1.8, BH102_0.5-0.6	**15-Feb-2020**	**17-Feb-2020**	13-Aug-2020	✓	**17-Feb-2020**	13-Aug-2020	✓

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
EG035C: Leachable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035C)							
BH102_0.5-0.6	**15-Feb-2020**	**----**	----	----	**18-Feb-2020**	14-Mar-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
BH105_0.85-0.95, BH102_0.5-0.6	**15-Feb-2020**	**17-Feb-2020**	22-Feb-2020	✓	**17-Feb-2020**	28-Mar-2020	✓

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(were) 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	
Method Blanks (MB)							
TCLP for Non & Semivolatile Analytes	EN33a	1	11	**9.09**	**9.09**	✓	NEPM 2013 B3 & ALS QC Standard

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	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

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
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 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 (2013) Schedule B(3)
Leachable Mercury by FIMS	EG035C	SOIL	In house: Referenced to AS 3550, APHA 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 (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals & TCLP Leachate	EN25C	SOIL	In house: Referenced to 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 (2013) Schedule B(3)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: 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.
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2004682**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: alex.latham@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60623599_1.1-Burrows IE	Page	: 1 of 2
Order number	: 60623599_1.1	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 03-Feb-2020 15:40	Issue Date	: 12-Feb-2020
Client Requested Due Date	: 18-Feb-2020	Scheduled Reporting Date	: **18-Feb-2020**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 4.1
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of ES2003481 and ES2003147.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary 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.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EG035C Leachable Mercury	SOIL - EN33a TCLP Leachate	SOIL - EP075 SIM PAH only SIM - PAH only
ES2004682-001	29-Jan-2020 00:00	BH115_2.5-2.6	☐		☐	
ES2004682-002	31-Jan-2020 00:00	BH105_0.85-0.95	☐		☐	☐
ES2004682-003	31-Jan-2020 00:00	BH105_1.7-1.8	☐		☐	
ES2004682-004	31-Jan-2020 00:00	BH102_0.5-0.6	☐	☐	☐	☐

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

ALEX LATHAM

- *AU Certificate of Analysis - NATA (COA)	Email	alex.latham@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alex.latham@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alex.latham@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alex.latham@aecom.com
- Chain of Custody (CoC) (COC)	Email	alex.latham@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	alex.latham@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	alex.latham@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	alex.latham@aecom.com
- EDI Format - XTab (XTAB)	Email	alex.latham@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	alex.latham@aecom.com

Vishal
11/02/2020
1010

Vishal Patel

From: Brenda Hong
Sent: Tuesday, 11 February 2020 10:07 AM
To: Vishal Patel
Subject: FW: [EXTERNAL] - Burrows IE (60623599_1.0): additional analysis request

Hey Vishal, please rebatch for Alex as below. Thanks!

Best regards,

Brenda Hong
Client Services Manager, Environmental NSW

T +61 2 8784 8555 D +61 2 8784 8515
F +61 2 8784 8500 M +61 436 915 237
brenda.hong@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

1332

Environmental Division
Sydney
Work Order Reference
ES2004682

Telephone : +61-2-8784 8555

From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Tuesday, 11 February 2020 8:15 AM
To: Brenda Hong <Brenda.Hong@alsglobal.com>; Loren Schiavon <loren.schiavon@alsglobal.com>
Cc: Tyler Cachia <tyler.cachia@ALSGlobal.com>
Subject: [EXTERNAL] - Burrows IE (60623599_1.0): additional analysis request

Hi Brenda

Could you please undertake TCLP tests (for waste classification purposes) on the following samples:

ES2003147: BH115_2.5-2.6: As, Pb, Ni #16 - S-765, S769-771.
ES2003481: BH105_0.85-0.95: B(a)P, Pb #4
ES2003481: BH105_1.7-1.8: Pb, Ni #5 S-838-840
ES2003481: BH102_0.5-0.6: B(a)P, Pb, Hg #11

Regards,

Alex Latham
Associate Director
D +61 2 8934 0451 M +61 400 973 821
Alex.Latham@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2005113**	Page	: 1 of 9
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.0 Burrows IE	Date Samples Received	: 13-Feb-2020 15:30
Order number	: 60623599_1.0	Date Analysis Commenced	: 17-Feb-2020
C-O-C number	: ----	Issue Date	: 20-Feb-2020 14:02
Sampler	: Kurtis Wathen		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 10		
No. of samples analysed	: 10		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1334

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 insufficient 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 sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

1335

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW105_200212	MW16_200212	MW17_200212	MW11S_200212	MW21_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-001	ES2005113-002	ES2005113-003	ES2005113-004	ES2005113-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.003**	<0.001	<0.001	**0.018**	<0.001
Cadmium	7440-43-9	0.0001	mg/L		**0.0007**	**0.0026**	**0.0006**	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	**0.002**	<0.001	<0.001	**0.010**
Copper	7440-50-8	0.001	mg/L		<0.001	**0.231**	**0.032**	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		**0.029**	**0.045**	**0.039**	**0.023**	**0.002**
Lead	7439-92-1	0.001	mg/L		**0.003**	**0.008**	**0.001**	**0.004**	<0.001
Zinc	7440-66-6	0.005	mg/L		**1.76**	**2.56**	**1.28**	**0.455**	**0.059**
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E(SIM): Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	1	µg/L		<1	<1	<1	<1	<1
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW105_200212	MW16_200212	MW17_200212	MW11S_200212	MW21_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-001	ES2005113-002	ES2005113-003	ES2005113-004	ES2005113-005
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	<5	<5
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L		<5	<5	<5	<5	<5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW105_200212	MW16_200212	MW17_200212	MW11S_200212	MW21_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-001	ES2005113-002	ES2005113-003	ES2005113-004	ES2005113-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP074S(SIM) : VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	50	%		**104**	**99.8**	**105**	**114**	**111**
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		**97.1**	**93.9**	**87.9**	**96.1**	**88.8**
Toluene-D8	2037-26-5	5	%		**113**	**104**	**102**	**115**	**99.1**
4-Bromofluorobenzene	460-00-4	5	%		**102**	**94.8**	**93.9**	**100**	**90.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**114**	**111**	**104**	**113**	**104**
Toluene-D8	2037-26-5	2	%		**114**	**104**	**104**	**115**	**100**
4-Bromofluorobenzene	460-00-4	2	%		**110**	**105**	**105**	**110**	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW19_200212	MW01_200212	MW102_200212	QC304_200212	QC305_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-006	ES2005113-007	ES2005113-008	ES2005113-009	ES2005113-010
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.139**	**0.002**	**0.002**	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0042**	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		**0.004**	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L		**0.247**	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		**0.294**	**0.002**	**0.002**	----	----
Lead	7439-92-1	0.001	mg/L		**0.005**	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		**3.36**	**0.087**	**0.006**	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	----	----
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	----	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	----	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	----	----
EP074E(SIM): Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	1	µg/L		<1	<1	<1	----	----
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	----	----
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	----	----
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	----	----
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	----	----
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	----	----
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	----	----
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	----	----
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	----	----
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW19_200212	MW01_200212	MW102_200212	QC304_200212	QC305_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-006	ES2005113-007	ES2005113-008	ES2005113-009	ES2005113-010
					Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued									
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	----	----
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	----	----
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L		<5	<5	<5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW19_200212	MW01_200212	MW102_200212	QC304_200212	QC305_200212
				Client sampling date / time	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00	12-Feb-2020 00:00
Compound	CAS Number	LOR	Unit		ES2005113-006	ES2005113-007	ES2005113-008	ES2005113-009	ES2005113-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP074S(SIM) : VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	50	%		106	114	110	----	----
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		94.9	89.2	101	----	----
Toluene-D8	2037-26-5	5	%		108	103	120	----	----
4-Bromofluorobenzene	460-00-4	5	%		97.4	92.2	107	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		112	105	118	107	106
Toluene-D8	2037-26-5	2	%		109	103	121	110	100
4-Bromofluorobenzene	460-00-4	2	%		104	99.1	116	106	98.1

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP074S(SIM) : VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	75	125
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2005113**	Page	: 1 of 10
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: 60623599_1.0 Burrows IE	Date Samples Received	: 13-Feb-2020
Order number	: 60623599_1.0	Date Analysis Commenced	: 17-Feb-2020
C-O-C number	: ----	Issue Date	: 20-Feb-2020
Sampler	: Kurtis Wathen		
Site	: ----		
Quote number	: EN/004/16		
No. of samples received	: 10		
No. of samples analysed	: 10		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

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

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

Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

1343

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 insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

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 (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2864122)									
ES2004876-013	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES2004911-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2864126)									
ES2005113-004	MW11S_200212	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.018	0.018	0.00	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.023	0.024	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.455	0.462	1.40	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 2864123)									
ES2005113-004	MW11S_200212	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	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 (%)*
EG035F: Dissolved Mercury by FIMS (QC Lot: 2864123) - continued									
ES2004876-013	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP074D: Fumigants (QC Lot: 2861276)									
ES2004875-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
ES2005113-007	MW01_200212	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E(SIM): Halogenated Aliphatic Compounds (QC Lot: 2861277)									
ES2005113-001	MW105_200212	EP074E(SIM): Vinyl chloride	75-01-4	1	µg/L	<1	<1	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2861276)									
ES2004875-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 2861276) - continued									
ES2004875-001	Anonymous	EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
ES2005113-007	MW01_200212	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 2861276)									
ES2004875-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	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 (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 2861276) - continued									
ES2004875-001	Anonymous	EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
ES2005113-007	MW01_200212	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 2861276)									
ES2004875-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
ES2005113-007	MW01_200212	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2860528)									
ES2005113-005	MW21_200212	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2861275)									
ES2004875-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES2005113-007	MW01_200212	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2860528)									
ES2005113-005	MW21_200212	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2861275)									
ES2004875-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2005113-007	MW01_200212	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2861275)									
ES2004875-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit

1347

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 (%)*
EP080: BTEXN (QC Lot: 2861275) - continued									
ES2004875-001	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2005113-007	MW01_200212	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	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 Spike (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
EG020F: Dissolved Metals by ICP-MS (QCLot: 2864122)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.4	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.1	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.7	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.8	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.3	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.5	81.0	117
EG020F: Dissolved Metals by ICP-MS (QCLot: 2864126)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.9	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.6	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.3	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.1	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	107	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 2864123)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	103	83.0	105
EP074D: Fumigants (QCLot: 2861276)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	101	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	98.9	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	97.3	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	94.3	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	103	69.0	117
EP074E(SIM): Halogenated Aliphatic Compounds (QCLot: 2861277)								
EP074E(SIM): Vinyl chloride	75-01-4	1	µg/L	<1	10 µg/L	103	70.0	126
EP074E: Halogenated Aliphatic Compounds (QCLot: 2861276)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	71.0	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	81.9	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	89.4	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	93.3	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	93.0	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	91.3	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	94.0	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	70.7	70.2	128

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
EP074E: Halogenated Aliphatic Compounds (QCLot: 2861276) - continued								
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	93.0	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	93.8	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	96.1	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	96.5	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	96.3	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	95.4	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	95.7	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	99.1	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	97.8	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	94.2	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	96.5	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	90.4	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.7	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	85.8	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	99.7	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	97.3	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	100	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	102	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	93.2	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	91.6	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 2861276)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	100.0	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	97.2	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	97.7	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	94.0	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	93.4	75.0	117
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	98.4	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	94.1	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	94.3	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	97.1	67.0	123
EP074G: Trihalomethanes (QCLot: 2861276)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	94.1	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	88.9	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	92.8	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	87.3	73.5	126
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2860528)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	82.6	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	86.6	71.6	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2860528) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	74.4	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2861275)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	97.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2860528)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	70.5	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	65.9	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	72.6	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2861275)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.2	75.0	127
EP080: BTEXN (QCLot: 2861275)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	95.5	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	93.6	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	97.2	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.4	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70.0	120

1351

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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2864122)							
ES2004876-013	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	125	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	126	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	123	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	119	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	120	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	123	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	116	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2864126)							
ES2005113-005	MW21_200212	EG020A-F: Arsenic	7440-38-2	1 mg/L	118	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	113	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	110	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	109	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2864126) - continued							
ES2005113-005	MW21_200212	EG020A-F: Lead	7439-92-1	1 mg/L	107	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	112	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	105	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2864123)							
ES2004876-012	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	90.0	70.0	130
EP074E(SIM): Halogenated Aliphatic Compounds (QCLot: 2861277)							
ES2005113-001	MW105_200212	EP074E(SIM): Vinyl chloride	75-01-4	25 µg/L	123	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 2861276)							
ES2004875-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	79.3	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	90.0	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 2861276)							
ES2004875-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	106	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2860528)							
ES2005113-006	MW19_200212	EP071: C10 - C14 Fraction	----	200 µg/L	75.6	70.0	130
		EP071: C15 - C28 Fraction	----	250 µg/L	112	71.0	130
		EP071: C29 - C36 Fraction	----	200 µg/L	92.5	67.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2861275)							
ES2004875-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	84.8	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2860528)							
ES2005113-006	MW19_200212	EP071: >C10 - C16 Fraction	----	250 µg/L	92.0	70.0	130
		EP071: >C16 - C34 Fraction	----	350 µg/L	92.0	75.0	130
		EP071: >C34 - C40 Fraction	----	150 µg/L	98.8	67.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2861275)							
ES2004875-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	81.6	70.0	130
EP080: BTEXN (QCLot: 2861275)							
ES2004875-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	75.8	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	76.0	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	81.1	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	82.8	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	85.2	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2005113**	Page	: 1 of 6
Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.0 Burrows IE	Date Samples Received	: 13-Feb-2020
Site	: ----	Issue Date	: 20-Feb-2020
Sampler	: Kurtis Wathen	No. of samples received	: 10
Order number	: 60623599_1.0	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

1353

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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
EG020F: Dissolved Metals by ICP-MS							
Amber Glass Bottle - Unpreserved (EG020A-F)							
MW102_200212	**12-Feb-2020**	**----**	----	----	**17-Feb-2020**	10-Aug-2020	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
MW105_200212, MW16_200212, MW17_200212, MW11S_200212, MW21_200212, MW19_200212, MW01_200212	**12-Feb-2020**	**----**	----	----	**17-Feb-2020**	10-Aug-2020	✓
EG035F: Dissolved Mercury by FIMS							
Amber Glass Bottle - Unpreserved (EG035F)							
MW102_200212	**12-Feb-2020**	**----**	----	----	**18-Feb-2020**	26-Feb-2020	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
MW105_200212, MW16_200212, MW17_200212, MW11S_200212, MW21_200212, MW19_200212, MW01_200212	**12-Feb-2020**	**----**	----	----	**18-Feb-2020**	11-Mar-2020	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW105_200212, MW16_200212, MW17_200212, MW11S_200212, MW21_200212, MW19_200212, MW01_200212, MW102_200212	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
EP074E(SIM): Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074E(SIM))							
MW105_200212, MW16_200212, MW17_200212, MW11S_200212, MW21_200212, MW19_200212, MW01_200212, MW102_200212	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓

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
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212							
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212							
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212							
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	19-Feb-2020	✓	**19-Feb-2020**	28-Mar-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212							
Amber VOC Vial - Sulfuric Acid (EP080)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212,							
QC304_200212,	QC305_200212							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	19-Feb-2020	✓	**19-Feb-2020**	28-Mar-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212							
Amber VOC Vial - Sulfuric Acid (EP080)								
MW105_200212,	MW16_200212,	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓
MW17_200212,	MW11S_200212,							
MW21_200212,	MW19_200212,							
MW01_200212,	MW102_200212,							
QC304_200212,	QC305_200212							

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
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
MW105_200212, MW16_200212, MW17_200212, MW11S_200212, MW21_200212, MW19_200212, MW01_200212, MW102_200212, QC304_200212, QC305_200212	**12-Feb-2020**	**17-Feb-2020**	26-Feb-2020	✓	**17-Feb-2020**	26-Feb-2020	✓

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(were) 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)							
Dissolved Mercury by FIMS	EG035F	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	3	27	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Vinyl Chloride Low level	EP074E(SIM)	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Vinyl Chloride Low level	EP074E(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Vinyl Chloride Low level	EP074E(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	27	**7.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Vinyl Chloride Low level	EP074E(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. 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.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered 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 (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Vinyl Chloride Low level	EP074E(SIM)	WATER	In house ALS QWI-ORG/EP074: Referenced to USEPA SW 846 - 8260B Water samples are directly purged (ALSQWI-ORG/16) prior to analysis by Capillary GC/MS. Quantitation is achieved using internal standard and average response factor quantitation techniques against an established five point curve.
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2005113**

Client	: **AECOM Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Contact	: Brenda Hong
Address	: LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: alex.latham@aecom.com	E-mail	: Brenda.Hong@ALSGlobal.com
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60623599_1.0 Burrows IE	Page	: 1 of 2
Order number	: 60623599_1.0	Quote number	: EB2017AECOMAU0014 (EN/004/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Kurtis Wathen		

Dates

Date Samples Received	: 13-Feb-2020 15:30	Issue Date	: 18-Feb-2020
Client Requested Due Date	: 20-Feb-2020	Scheduled Reporting Date	: **20-Feb-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 0.2 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 10 / 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- This is an updated SRN which indicates the addition of 8 metals analysis for sample MW102_200212.
- **Dissolved metals analysis for sample MW102_200212 has not been added as both red metals bottles received were marked as 'unfiltered'. as requested, subsample from orange amber for filtered metals.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
MW102_200212	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
MW102_200212	- Amber Glass Bottle - Unpreserved	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary 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.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP074 Vinyl Chloride SIM VOC SIM Vinyl Chloride Only	WATER - EP074DEFG VOC - Fumigants, Hal Aliphatics, Hal Aromatics,	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2005113-001	12-Feb-2020 00:00	MW105_200212	☐	☐	☐	
ES2005113-002	12-Feb-2020 00:00	MW16_200212	☐	☐	☐	
ES2005113-003	12-Feb-2020 00:00	MW17_200212	☐	☐	☐	
ES2005113-004	12-Feb-2020 00:00	MW11S_200212	☐	☐	☐	
ES2005113-005	12-Feb-2020 00:00	MW21_200212	☐	☐	☐	
ES2005113-006	12-Feb-2020 00:00	MW19_200212	☐	☐	☐	
ES2005113-007	12-Feb-2020 00:00	MW01_200212	☐	☐	☐	
ES2005113-008	12-Feb-2020 00:00	MW102_200212	☐	☐	☐	
ES2005113-009	12-Feb-2020 00:00	QC304_200212				☐
ES2005113-010	12-Feb-2020 00:00	QC305_200212				☐

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
- Chain of Custody (CoC) (COC)	Email	AP_CustomerService.ANZ@aecom.com

ALEX LATHAM

- *AU Certificate of Analysis - NATA (COA)	Email	alex.latham@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alex.latham@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alex.latham@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alex.latham@aecom.com
- A4 - AU Tax Invoice (INV)	Email	alex.latham@aecom.com
- Chain of Custody (CoC) (COC)	Email	alex.latham@aecom.com
- Chromatogram (CHROM)	Email	alex.latham@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	alex.latham@aecom.com
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	alex.latham@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	alex.latham@aecom.com
- EDI Format - XTab (XTAB)	Email	alex.latham@aecom.com
- Electronic SRN for EQuIS (ESRN_EQUIS)	Email	alex.latham@aecom.com

Jessie Grealy

From: Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Sent: Monday, 17 February 2020 2:49 PM
To: Grace White
Cc: Latham, Alex; Helen Simpson
Subject: [EXTERNAL] - RE: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Hi Grace,

As discussed over the phone, could we please use the unpreserved sample provided for MW102 and lab filter it for dissolved metals.

Thanks for your help,

Kurtis Wathen
Environmental Engineer
D +61 2 8934 0840 M +61 447 224 684
Kurtis.Wathen@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Monday, 17 February 2020 2:34 PM
To: Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Subject: FW: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Mate,
Could you please advise.
Dissolved metals were one of the main Contams of concern..
cheers

Alex Latham
Associate Director
D +61 2 8934 0451 M +61 400 973 821
Alex.Latham@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

Latham, Alex

From: Grace White <grace.white@ALSGlobal.com>
Sent: Monday, 17 February 2020 3:17 PM
To: Wathen, Kurtis
Cc: Latham, Alex; Helen Simpson
Subject: RE: [EXTERNAL] - RE: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Hi Kurtis,

No problem, thanks for sending this! I believe this has now been updated.

Kind regards,

Grace White
Client Services Officer, Environmental
Sydney

T +61 2 8784 8555 D +61 2 8784 8531
F +61 2 8784 8500
grace.white@alsglobal.com
277-289 Woodpark Road
Smithfield, NSW, 2164

From: Wathen, Kurtis [mailto:Kurtis.Wathen@aecom.com]
Sent: Monday, 17 February 2020 2:49 PM
To: Grace White <grace.white@ALSGlobal.com>
Cc: Latham, Alex <Alex.Latham@aecom.com>; Helen Simpson <helen.simpson@alsglobal.com>
Subject: [EXTERNAL] - RE: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Hi Grace,

As discussed over the phone, could we please use the unpreserved sample provided for MW102 and lab filter it for dissolved metals.

Thanks for your help,

Kurtis Wathen
Environmental Engineer
D +61 2 8934 0840 M +61 447 224 684
Kurtis.Wathen@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Monday, 17 February 2020 2:34 PM
To: Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Subject: FW: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Mate,
Could you please advise.
Dissolved metals were one of the main Contams of concern..
cheers

Alex Latham
Associate Director
D +61 2 8934 0451 M +61 400 973 821
Alex.Latham@aecom.com

AECOM
Level 21, 420 George Street, Sydney, NSW 2000
PO Box Q410, QVB PO, Sydney, NSW, 1230
T +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com

From: Helen Simpson <helen.simpson@alsglobal.com>
Sent: Monday, 17 February 2020 2:24 PM
To: Latham, Alex <Alex.Latham@aecom.com>
Subject: ALS Workorder ES2005113, Client AECOMAU, Project 60623599_1.0 Burrows IE

Hi Alex,

For the attached COC, we have received 2 red bottles labelled MW102_200212. Unfortunately, both are marked as unfiltered. Since both filtered and total analysis is required, we think that one of the bottles has been miss-ticked and therefore have not added any metals analysis to this sample.

Please let me know if you need me to do anything.

Kind Regards,

Helen Simpson
Sample Admin, Environmental
Sydney

T +61 2 8784 8555
F +61 2 8784 8500
helen.simpson@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

Subscribe

We are keen for your feedback! Please click here for your 3 minute survey

EnviroMail™ 00 – All EnviroMails™ in one convenient library.
Recent releases (click to access directly):
EnviroMail™ 127 – Bacterial Diversity Profiling in NGS
EnviroMail™ 128 – Revised PFAS Bottle Requirements

See how ALS is making sampling easier! Register your interest here.

Right Solutions • Right Partner
www.alsglobal.com