

Attachment C14(g)

**Proponent Phase I and Phase II
Environmental Site Assessment (7/8)**



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	Method	Count		Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected		
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	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							
Analytical Methods							
Method		Count		Rate (%)		Evaluation	
		QC	Regular	Actual	Expected		Quality Control Specification



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 Work Order : ES2002766
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected		
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 (SnCl ₂) (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 SnCl ₂ 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)



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 Project : 60623599_1.1

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 : ES2002766

Client : AECOM Australia Pty Ltd
Contact : MR ALEX LATHAM
Address : LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
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
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 : 29-Jan-2020 15:45
Issue Date : 31-Jan-2020
Client Requested Due Date : 06-Feb-2020
Scheduled Reporting Date : 06-Feb-2020

Delivery Details

Mode of Delivery : Carrier
Security Seal : Not intact.
No. of coolers/boxes : 2
Temperature : 6.3' C - Ice present
Receipt Detail :
No. of samples received / analysed : 19 / 8

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 an updated SRN which indicates samples 19 and 21-28 being transferred from this work order to work order ES2003147.
Samples 19 and 21-28 have been transferred to work order ES2003147, as per Alex Latham.
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	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - S-16 TRH/BTEXN/PAH/OC/OP/PCB/8Metals	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2002766-001	28-Jan-2020 00:00	BH109_0.3-0.4		☐	☐		☐
ES2002766-002	28-Jan-2020 00:00	BH109_0.6-0.7	☐				
ES2002766-003	28-Jan-2020 00:00	BH109_0.9-1.0		☐			☐
ES2002766-004	28-Jan-2020 00:00	BH109_1.5-1.6	☐				
ES2002766-005	28-Jan-2020 00:00	BH109_2.7-2.8	☐				
ES2002766-006	28-Jan-2020 00:00	BH109_4.5-4.6	☐				
ES2002766-007	28-Jan-2020 00:00	BH109_6.1-6.2	☐				
ES2002766-009	28-Jan-2020 00:00	BH107_0.2-0.3	☐				
ES2002766-010	28-Jan-2020 00:00	BH107_0.4-0.5			☐		
ES2002766-011	28-Jan-2020 00:00	BH107_0.5-0.6		☐			☐
ES2002766-012	28-Jan-2020 00:00	BH107_0.8-1.0	☐				
ES2002766-013	28-Jan-2020 00:00	BH107_1.5-1.7		☐			☐
ES2002766-014	29-Jan-2020 00:00	BH107_3.9-4.0	☐				
ES2002766-015	29-Jan-2020 00:00	BH107_4.8-5.0	☐				
ES2002766-016	29-Jan-2020 00:00	BH113_0.2-0.3		☐	☐	☐	
ES2002766-017	29-Jan-2020 00:00	BH113_0.4-0.5	☐				
ES2002766-018	29-Jan-2020 00:00	BH113_0.6-0.7		☐	☐		☐
ES2002766-020	29-Jan-2020 00:00	BH113_1.3-1.38	☐				

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2002766-008	28-Jan-2020 00:00	QC300 TB	☐



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 |
| - 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 |

30/1/20 13:40
 D

60623599 Burrows IE 1 of 2

UPDATED COC

CHAIN OF CUSTODY		Laboratory Details									
AECOM Australia Pty Ltd Sydney (420 George St) T: 02 8934 0451 M: 0400 973 821		Tel: 8784 8515 Fax: Preliminary Report by: Final Report by: Lab Quote No: EN/004/16 PO No. refer Project #									
AECOM Project Manager: Alex Latham AECOM Project Manager Email: Alex.Latham@aecom.com		Lab Name: ALS Lab Address: 277 Woodpark Rd, Smithfield Contact Name: Brenda Hong Lab. Ref.									
Sampled By: Kurtis Walthen / Rebekah Panozzo		Project Name: Burrows IE									
AECOM Project No: 60623599_1.1		Analysis Request									
<p>Specifications: All reports to be emailed to AECOM Project Manager ESDAT & Equis & XLS format also required</p> <p>1. Urgent TAT required? (please circle: 24hr 48hr 5...days)</p> <p>2. Fast TAT Guarantee Required?</p> <p>3. Is any sediment layer present in waters to be excluded from extractions?</p> <p>4. % extraneous material removed from samples to be reported as per NIEPM 5.1.1?</p> <p>5. Special storage requirements? (details:)</p>											
Lab. ID	Sample ID	Sampling Date	Matrix			Preservation			Container (No. & type)	Analysis Request	
			soil	water	other	fitted	acid	ice			other
1	BH109-0.3-0.4	28/1/20	X					X		TRH > C10-C40 (EP071)	
2	BH109-0.6-0.7								HOLD		
3	BH109-0.9-1.0										
4	QC102										
5	BH109-1.5-1.6										
6	BH109-2.7-2.8										
7	BH109-4.5-4.6										
8	BH109-6.1-6.2										
9	QC300										
10	BH107-0.2-0.3										
11	BH107-0.4-0.5										
12	BH107-0.5-0.6										
13	BH107-0.8-1.0										
14	BH107-1.5-1.7										
<p>*Metals: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn</p> <p>Comments:</p>											
Relinquished by: K. Walthen		Signed: <i>[Signature]</i>		Date: 29/1/11		Relinquished by: <i>[Signature]</i>		Signed: <i>[Signature]</i>		Date: 29/1/20	
Received by:		Signed:		Date:		Received by: <i>[Signature]</i>		Signed: <i>[Signature]</i>		Date: 29/1/20	

send requested soil QC samples to Envirolab with crushed ice please

Environmental Division
 Sydney
 Work Order Reference
ES2002766



Telephone : + 61-2-8784 8555

Lab Report No: EskyID

30/1/20 13:40

60693599 Burrows IE 2 of 2

UPDATED COC

CHAIN OF CUSTODY		Laboratory Details				
AECOM Australia Pty Ltd Sydney (420 George St) T: 02 8934 0451 M: 0400 973 821		Tel: 8784 8515 Fax: Preliminary Report by: Final Report by: Lab Quote No: EN/004/16 PO No. refer Project #				
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		Lab Name: ALS Lab Address: 277 Woodpark Rd, Smithfield Contact Name: Brenda Hong Lab Ref:				
Project Name: Burrows IE		Analysis Request				
Specifications: All reports to be emailed to AECOM Project Manager ESDAT & Equis & XLS format also required		TRH C6-C40, BTEXN				
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)		PAH				
2. Fast TAT Guarantee Required?		8 Metals				
3. Is any sediment layer present in waters to be excluded from extractions?		OCP, OPP, PCB				
4. % extraneous material removed from samples to be reported as per NEPM 5.1.17		Asbestos (EA200N)				
5. Special storage requirements? (details:)		TRH > C10-C40 (EP071)				
		send requested soil QC samples to Envirolab with crushed ice please				
Lab. ID	Sample ID	Sampling Date	Matrix	Preservation	Container	Yes
			soil water other	filtered acid ice other	(No. & type)	
215	3A107-3.9-4.0	29/11	Y		370	
216	BH107-4.8-5.0				373	
217	BH113-0.2-0.3				373	
218	BH113-0.4-0.5				373	
219	BH113-0.6-0.7				373	
220	QC106				373	
221	BH113-0.8-1.0				373	
222	BH113-1.3-1.3B				373	
223	QC105				373	
224	QC104				373	
225	BH110-0.35-0.36				373	
226	" 0.40-0.40				373	
227	" 0.9-1.0				373	
228	" 1.2-1.3				373	
* Metals As, Cd, Cr, Cu, Hg, Ni, Pb, Zn						
Required: _____						
Relinquished by: <u>P. Panozzo</u> Signed: <u>29/11</u> Date: <u>29/11</u>						
Received by: <u>17A</u> Signed: <u>29/11/20</u> Date: <u>29/11</u>						

Field_Worksheet_FORM025_Dec04S-5.1 21. 6.1-6.2 BH108-4.1-4.2

CHAIN OF CUSTODY

AECOM Australia Pty Ltd

Sydney (420 George St)
 T: 02 8834 0451
 M: 0400 973 821

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

Laboratory Details

Lab Name: ALS
 Lab Address: 277 Woodpark Rd, Smithfield
 Contact Name: Brenda Hong
 Lab. Ref: EN/004/16
 Tel: 8784 8515
 Fax:
 Preliminary Report by:
 Final Report by:

Project Name: Burrows IE
 Project No. refer Project #

AECOM Project No: 60623599_1.1

Specifications: All reports to be emailed to AECOM Project Manager

ESDAT & Equis & XLS format also required

1. Urgent TAT required? (please circle: 24hr 48hr 5 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 NIEPM 5.1.1?

5. Special storage requirements? (details:)

Analysis Request

TRH C6-C40, BTEXN	
PAH	
8 Metals	
OCP, OPP, PCB	
Asbestos (EA200N)	
TRH > C10-C40 (EP071)	

send requested soil QC samples to Envirolab with crushed ice please

Lab. ID	Sample ID	Sampling Date	Matrix			Preservation			Container (No. & type)	Yes
			soil	water	other	filled	acid	ice		
1	BH109-0.3-0.4	28/1/10	X					X	1 Jar 1 Bag	
2	BH109-0.6-0.7									
3	BH109-0.9-1.0								1 Jar	
4	QC102								1 Jar 1 Bag	
5	BH109-1.5-1.6								1 Jar	
6	BH109-2.7-2.8								1 Jar 1 Bag	
7	BH109-4.5-4.6								1 Jar	
8	BH109-6.1-6.2								1 Jar	
9	QC300				X				2 vials Subson / Forward Lab / Split WO	
10	BH107-0.2-0.3									
11	BH107-0.4-0.5									
12	BH107-0.5-0.6									
13	BH107-0.8-1.0									
14	BH107-1.5-1.7									

Comments:

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

Relinquished by: K. Wathen

Received by: K. Wathen

Signed: *K. Wathen*

Signed: *K. Wathen*

Date: 29/1/10

Date: 29/1/10

Relinquished by: *[Signature]*

Received by: *[Signature]*

Signed: *[Signature]*

Signed: *[Signature]*

Date: 29/1/10

Date: 29/1/10

Lab Report No.

Easy ID



CERTIFICATE OF ANALYSIS

Work Order : **ES2002807**

Client : **AECOM Australia Pty Ltd**

Contact : **MIR ALEX LATHAM**

Address : **PO BOX Q410 QVB POST OFFICE
SYDNEY NSW, AUSTRALIA 2000**

Telephone : **+61 02 8934 0000**

Project : **60623599_1.1**

Order number : **60623599_1.1**

C-O-C number : **----**

Sampler : **Kurtis Wathen, REBEKAH PANOZZO**

Site : **----**

Quote number : **EN/004/16**

No. of samples received : **21**

No. of samples analysed : **8**

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Laboratory : Environmental Division Sydney

Contact : Brenda Hong

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 2 8784 8555

Date Samples Received : 28-Jan-2020 17:00

Date Analysis Commenced : 31-Jan-2020

Issue Date : 05-Feb-2020 20:53



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
- Descriptive 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.

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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.

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Newcastle - Asbestos, Mayfield West, NSW
Sydney Inorganics, Smithfield, NSW
Sydney Organics, Smithfield, NSW
Sydney Inorganics, 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 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+i) & Benzo(k)fluoranthene (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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
- Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
- The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
- Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
- All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH106_0.2-0.3	BH106_4.0-4.1	BH108_0.15-0.25	BH108_0.35-0.45	BH108_1.3-1.4
	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00
	ES2002807-001	ES2002807-006	ES2002807-008	ES2002807-009	ES2002807-013
	Result	Result	Result	Result	Result
	22.6	46.0	31.0	15.8	
EA055: Moisture Content (Dried @ 105-110°C)					
Moisture Content	1.0	%			
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	1332-21-4	0.1	g/kg	No	No
Asbestos Type	1332-21-4	-	--	-	-
Asbestos (Trace)	1332-21-4	5	Fibres	No	No
Sample weight (dry)		0.01	g	221	82.6
Synthetic Mineral Fibre		0.1	g/kg	No	No
Organic Fibre		0.1	g/kg	No	No
APPROVED IDENTIFIER:		-	--	A. SMYLYE	A. SMYLYE
EA200N: Asbestos Quantification (non-NATA)					
Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	1332-21-4	0.0004	g	<math><0.0004</math>	<math><0.0004</math>
Asbestos (Fines and Fibrous FA+AF)		0.001	% (w/w)	<math><0.001</math>	<math><0.001</math>
Asbestos Containing Material	1332-21-4	0.1	g	<math><0.1</math>	<math><0.1</math>
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<math><0.01</math>	<math><0.01</math>
Weight Used for % Calculation		0.0001	kg	0.314	0.0826
Fibrous Asbestos >7mm		0.0004	g	<math><0.0004</math>	<math><0.0004</math>
EG005(ED093): Total Metals by ICP-AES					
Arsenic	7440-38-2	5	mg/kg	8	30
Cadmium	7440-43-9	1	mg/kg	<math><1</math>	96
Chromium	7440-47-3	2	mg/kg	6	320
Copper	7440-50-8	5	mg/kg	7	15500
Lead	7439-92-1	5	mg/kg	18	3160
Nickel	7440-02-0	2	mg/kg	3	823
Zinc	7440-66-6	5	mg/kg	111	23400
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	0.1	mg/kg	0.3	<math><0.1</math>
EP066: Polychlorinated Biphenyls (PCB)					
Total Polychlorinated biphenyls		0.1	mg/kg	<math><0.1</math>	****
EP068A: Organochlorine Pesticides (OC)					
alpha-BHC	319-84-6	0.05	mg/kg	<math><0.05</math>	****
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<math><0.05</math>	****
beta-BHC	319-85-7	0.05	mg/kg	<math><0.05</math>	****



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH106_0.2-0.3 28-Jan-2020 00:00 ES2002807-001 Result	BH106_4.0-4.1 28-Jan-2020 00:00 ES2002807-006 Result	BH108_0.15-0.25 28-Jan-2020 00:00 ES2002807-008 Result	BH108_0.35-0.45 28-Jan-2020 00:00 ES2002807-009 Result	BH108_1.3-1.4 28-Jan-2020 00:00 ES2002807-013 Result
EP068A: Organochlorine Pesticides (OC) - Continued					
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	****
delta-BHC	319-86-8	0.05	mg/kg	<0.05	****
Heptachlor	76-44-8	0.05	mg/kg	<0.05	****
Aldrin	309-00-2	0.05	mg/kg	<0.05	****
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	****
^ Total Chlordane (sum)	****	0.05	mg/kg	<0.05	****
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	****
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	****
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	****
Dieldrin	60-57-1	0.05	mg/kg	<0.05	****
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	****
Endrin	72-20-8	0.05	mg/kg	<0.05	****
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	****
gamma-Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	****
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	****
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	****
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	****
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	****
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	****
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	****
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	****
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	****
EP068B: Organophosphorus Pesticides (OP)					
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	****
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	****
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	****
Dimethoate	60-51-5	0.05	mg/kg	<0.05	****
Diazinon	333-41-5	0.05	mg/kg	<0.05	****
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	****
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	****
Malathion	121-75-5	0.05	mg/kg	<0.05	****
Fenthion	55-38-9	0.05	mg/kg	<0.05	****
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	****
Parathion	56-38-2	0.2	mg/kg	<0.2	****



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH106_0.2-0.3 28-Jan-2020 00:00 ES2002807-001 Result	BH106_4.0-4.1 28-Jan-2020 00:00 ES2002807-006 Result	BH108_0.15-0.25 28-Jan-2020 00:00 ES2002807-008 Result	BH108_0.35-0.45 28-Jan-2020 00:00 ES2002807-009 Result	BH108_1.3-1.4 28-Jan-2020 00:00 ES2002807-013 Result
EP068B: Organophosphorus Pesticides (OP) - Continued					
Pirimphos-ethyl	0.05	<0.05	*****	*****	*****
Chlorfenvinphos	0.05	<0.05	*****	*****	*****
Bromophos-ethyl	0.05	<0.05	*****	*****	*****
Fenamiphos	0.05	<0.05	*****	*****	*****
Prothiofos	0.05	<0.05	*****	*****	*****
Ethion	0.05	<0.05	*****	*****	*****
Carbophenothion	0.05	<0.05	*****	*****	*****
Azinphos Methyl	0.05	<0.05	*****	*****	*****
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	0.5	<0.5	*****	<0.5	<0.5
Acenaphthylene	0.5	<0.5	*****	<0.5	<0.5
Acenaphthene	0.5	<0.5	*****	<0.5	<0.5
Fluorene	0.5	<0.5	*****	<0.5	<0.5
Phenanthrene	0.5	0.6	*****	<0.5	<0.5
Anthracene	0.5	<0.5	*****	<0.5	<0.5
Fluoranthene	0.5	2.1	*****	<0.5	<0.5
Pyrene	0.5	2.2	*****	<0.5	<0.5
Benz(a)anthracene	0.5	1.1	*****	<0.5	<0.5
Chrysene	0.5	1.2	*****	<0.5	<0.5
Benzo(b+)fluoranthene	0.5	2.1	*****	<0.5	<0.5
Benzo(k)fluoranthene	0.5	0.8	*****	<0.5	<0.5
Benzo(a)pyrene	0.5	1.9	*****	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	0.5	1.2	*****	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	<0.5	*****	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	1.6	*****	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	0.5	14.8	*****	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	0.5	2.4	*****	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	0.5	2.7	*****	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	0.5	2.9	*****	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	10	<10	*****	*****	<10
C10 - C14 Fraction	50	<50	*****	*****	<50
C15 - C28 Fraction	100	<100	*****	*****	<100
C29 - C36 Fraction	100	120	*****	*****	<100



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH106_0.2-0.3	BH106_4.0-4.1	BH108_0.15-0.25	BH108_0.35-0.45	BH108_1.3-1.4
	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00	28-Jan-2020 00:00
	ES2002807-001	ES2002807-006	ES2002807-008	ES2002807-009	ES2002807-013
	Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued					
^ C10 - C36 Fraction (sum)	120	<50	*****	*****	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction					
^ C6 - C10 Fraction minus BTEX (F1)	<10	<10	*****	*****	<10
>C10 - C16 Fraction	<10	<10	*****	*****	<10
>C16 - C34 Fraction	180	<100	*****	*****	<50
>C34 - C40 Fraction	<100	<100	*****	*****	<100
^ >C10 - C40 Fraction (sum)	180	<50	*****	*****	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	<50	<50	*****	*****	<50
EP080: BTEXN					
3 Benzene	<0.2	<0.2	*****	*****	<0.2
4 Toluene	<0.5	<0.5	*****	*****	<0.5
Ethylbenzene	<0.5	<0.5	*****	*****	<0.5
meta- & para-Xylene	<0.5	<0.5	*****	*****	<0.5
ortho-Xylene	<0.5	<0.5	*****	*****	<0.5
^ Sum of BTEX	<0.2	<0.2	*****	*****	<0.2
^ Total Xylenes	<0.5	<0.5	*****	*****	<0.5
Naphthalene	<1	<1	*****	*****	<1
EP066S: PCB Surrogate					
Decachlorobiphenyl	84.6	*****	*****	*****	*****
EP068S: Organochlorine Pesticide Surrogate					
Dibromo-DDE	88.0	*****	*****	*****	*****
EP068T: Organophosphorus Pesticide Surrogate					
DEF	68.8	*****	*****	*****	*****
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	74.4	69.3	*****	68.6	71.9
2-Chlorophenol-D4	82.0	80.0	*****	80.6	84.1
2,4,6-Tribromophenol	60.0	45.3	*****	43.9	42.2
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	94.4	94.3	*****	104	102
Anthracene-d10	90.8	93.4	*****	101	99.8
4-Terphenyl-d14	93.3	95.3	*****	104	104



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH108_2.3-2.4 28-Jan-2020 00:00 ES2002807-014 Result	BH108_4.1-4.2 28-Jan-2020 00:00 ES2002807-017 Result	QC100 28-Jan-2020 00:00 ES2002807-020 Result
EA055: Moisture Content (Dried @ 105-110°C)			
Moisture Content	0.1	34.5	
Moisture Content	1.0	9.8	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils			
Asbestos Detected	No		
Asbestos Type	-		
Asbestos (Trace)	No		
Sample weight (dry)	65.1		
Synthetic Mineral Fibre	No		
Organic Fibre	No		
APPROVED IDENTIFIER:	A. SMYLYE		
EA200N: Asbestos Quantification (non-NATA)			
Asbestos (Fines and Fibrous >7mm)	1332-21-4 0.0004		
Asbestos (Fines and Fibrous FA+AF)	1332-21-4 0.001		
Asbestos Containing Material	1332-21-4 0.1		
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4 0.01		
Weight Used for % Calculation	0.0001		
Fibrous Asbestos >7mm	0.0004		
EG005(ED093)T: Total Metals by ICP-AES			
Arsenic	7440-38-2 5	48	6
Cadmium	7440-43-9 1		<1
Chromium	7440-47-3 2	300	8
Copper	7440-50-8 5	5050	46
Lead	7439-92-1 5	3880	113
Nickel	7440-02-0 2	65	10
Zinc	7440-66-6 5	4280	106
EG035T: Total Recoverable Mercury by FIMS			
Mercury	7439-97-6 0.1		<0.1
EP066: Polychlorinated Biphenyls (PCB)			
Total Polychlorinated biphenyls	0.1		<0.1
EP068A: Organochlorine Pesticides (OC)			
alpha-BHC	319-84-6 0.05		<0.05
Hexachlorobenzene (HCB)	118-74-1 0.05		<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		BH108_2.3-2.4 28-Jan-2020 00:00 ES2002807-014 Result		BH108_4.1-4.2 28-Jan-2020 00:00 ES2002807-017 Result		QC100 28-Jan-2020 00:00 ES2002807-020 Result	
EP068A: Organochlorine Pesticides (OC) - Continued							
beta-BHC	319-85-7	0.05	mg/kg			<0.05	
gamma-BHC	58-89-9	0.05	mg/kg			<0.05	
delta-BHC	319-86-8	0.05	mg/kg			<0.05	
Heptachlor	76-44-8	0.05	mg/kg			<0.05	
Aldrin	309-00-2	0.05	mg/kg			<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg			<0.05	
^ Total Chlordane (sum)		0.05	mg/kg			<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg			<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg			<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg			<0.05	
Dieldrin	60-57-1	0.05	mg/kg			<0.05	
4,4'-DDE	72-55-9	0.05	mg/kg			<0.05	
Endrin	72-20-8	0.05	mg/kg			<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg			<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg			<0.05	
4,4'-DDD	72-54-8	0.05	mg/kg			<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg			<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg			<0.05	
4,4'-DDT	50-29-3	0.2	mg/kg			<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg			<0.05	
Methoxychlor	72-43-5	0.2	mg/kg			<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg			<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg			<0.05	
EP068B: Organophosphorus Pesticides (OP)							
Dichlorvos	62-73-7	0.05	mg/kg			<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg			<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg			<0.2	
Dimethoate	60-51-5	0.05	mg/kg			<0.05	
Diazinon	333-41-5	0.05	mg/kg			<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg			<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg			<0.2	
Malathion	121-75-5	0.05	mg/kg			<0.05	
Fenthion	55-38-9	0.05	mg/kg			<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg			<0.05	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH108_2.3-2.4 28-Jan-2020 00:00 ES2002807-014 Result	BH108_4.1-4.2 28-Jan-2020 00:00 ES2002807-017 Result	QC100 28-Jan-2020 00:00 ES2002807-020 Result
EP068B: Organophosphorus Pesticides (OP) - Continued			
Parathion	56-38-2 0.2 mg/kg	<0.5	<0.2
Pirimphos-ethyl	23505-41-1 0.05 mg/kg	<0.5	<0.05
Chlorfenvinphos	470-90-6 0.05 mg/kg	<0.5	<0.05
Bromophos-ethyl	4824-78-6 0.05 mg/kg	<0.5	<0.05
Fenamiphos	22224-92-6 0.05 mg/kg	<0.5	<0.05
Prothiofos	34643-46-4 0.05 mg/kg	<0.5	<0.05
Ethion	563-12-2 0.05 mg/kg	<0.5	<0.05
Carbophenothion	786-19-6 0.05 mg/kg	<0.5	<0.05
Azinphos Methyl	86-50-0 0.05 mg/kg	<0.5	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons			
Naphthalene	91-20-3 0.5 mg/kg	<0.5	<0.5
Acenaphthylene	208-96-8 0.5 mg/kg	<0.5	<0.5
Acenaphthene	83-32-9 0.5 mg/kg	<0.5	<0.5
Fluorene	86-73-7 0.5 mg/kg	<0.5	<0.5
Phenanthrene	85-01-8 0.5 mg/kg	<0.5	1.8
Anthracene	120-12-7 0.5 mg/kg	<0.5	0.7
Fluoranthene	206-44-0 0.5 mg/kg	<0.5	5.3
Pyrene	129-00-0 0.5 mg/kg	<0.5	5.0
Benz(a)anthracene	56-55-3 0.5 mg/kg	<0.5	2.3
Chrysene	218-01-9 0.5 mg/kg	<0.5	2.3
Benzo(b+)fluoranthene	205-99-2 0.5 mg/kg	<0.5	3.3
Benzo(k)fluoranthene	207-08-9 0.5 mg/kg	<0.5	1.2
Benzo(a)pyrene	50-32-8 0.5 mg/kg	<0.5	3.1
Indeno(1,2,3-cd)pyrene	193-39-5 0.5 mg/kg	<0.5	1.7
Dibenz(a,h)anthracene	53-70-3 0.5 mg/kg	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2 0.5 mg/kg	<0.5	2.2
^ Sum of polycyclic aromatic hydrocarbons	0.5 mg/kg	<0.5	28.9
^ Benzo(a)pyrene TEQ (zero)	0.5 mg/kg	<0.5	4.0
^ Benzo(a)pyrene TEQ (half LOR)	0.5 mg/kg	0.6	4.2
^ Benzo(a)pyrene TEQ (LOR)	0.5 mg/kg	1.2	4.5
EP080/071: Total Petroleum Hydrocarbons			
C6 - C9 Fraction	10 mg/kg	<10	<10
C10 - C14 Fraction	50 mg/kg	<50	<50
C15 - C28 Fraction	100 mg/kg	<100	<100



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH108_2.3-2.4 28-Jan-2020 00:00 ES2002807-014 Result	BH108_4.1-4.2 28-Jan-2020 00:00 ES2002807-017 Result	QC100 28-Jan-2020 00:00 ES2002807-020 Result
EP080/071: Total Petroleum Hydrocarbons - Continued			
C29 - C36 Fraction	<100 mg/kg	<100	110
^ C10 - C36 Fraction (sum)	<50 mg/kg	<50	110
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions			
C6 - C10 Fraction	<10 mg/kg	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	<10 mg/kg	<10	<10
>C10 - C16 Fraction	<50 mg/kg	<50	<50
>C16 - C34 Fraction	<100 mg/kg	<100	170
>C34 - C40 Fraction	<100 mg/kg	<100	<100
^ >C10 - C40 Fraction (sum)	<50 mg/kg	<50	170
^ >C10 - C16 Fraction minus Naphthalene (F2)	<50 mg/kg	<50	<50
EP080: BTEXN			
Toluene	<0.2 mg/kg	<0.2	<0.2
Ethylbenzene	<0.5 mg/kg	<0.5	<0.5
meta- & para-Xylene	<0.5 mg/kg	<0.5	<0.5
ortho-Xylene	<0.5 mg/kg	<0.5	<0.5
^ Sum of BTEX	<0.2 mg/kg	<0.2	<0.2
^ Total Xylenes	<0.5 mg/kg	<0.5	<0.5
Naphthalene	<1 mg/kg	<1	<1
EP066S: PCB Surrogate			
Decachlorobiphenyl	102		
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	90.1		
EP068T: Organophosphorus Pesticide Surrogate			
DEF	80.9		
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	76.3		
2-Chlorophenol-D4	81.0		
2,4,6-Tribromophenol	62.4		
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	96.7		
Anthracene-d10	91.6		



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH108_2.3-2.4 28-Jan-2020 00:00 ES2002807-014 Result	BH108_4.1-4.2 28-Jan-2020 00:00 ES2002807-017 Result	QC100 28-Jan-2020 00:00 ES2002807-020 Result
EP075(SIM)T: PAH Surrogates - Continued			
4-Terphenyl-d14	1718-51-0 0.5 %	95.0	94.3
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0 0.2 %	89.0	89.3
Toluene-D8	2037-26-5 0.2 %	83.0	97.4
4-Bromofluorobenzene	460-00-4 0.2 %	77.3	92.8

Analytical Results

Descriptive Results

Sub-Matrix: SOIL	EA200: AS 4964 - 2004 Identification of Asbestos in Soils
EA200: Description	BH106_0.2-0.3 - 28-Jan-2020 00:00 Mid brown soil.
EA200: Description	BH108_0.15-0.25 - 28-Jan-2020 00:00 Mid grey soil.
EA200: Description	BH108_0.35-0.45 - 28-Jan-2020 00:00 Mid grey soil.
EA200: Description	BH108_1.3-1.4 - 28-Jan-2020 00:00 Mid brown soil.
EA200: Description	BH108_2.3-2.4 - 28-Jan-2020 00:00 Mid brown soil.



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
1,2,4-Trichlorobenzene-D4	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130



QUALITY CONTROL REPORT

Work Order : ES2002807

Page : 1 of 11

Client : AECOM Australia Pty Ltd
 Contact : MR ALEX LATHAM
 Address : PO BOX Q410 QVB POST OFFICE
 SYDNEY NSW, AUSTRALIA 2000
 Telephone : +61 02 8934 0000
 Project : 60623599_1.1
 Order number : 60623599_1.1
 C-O-C number : ---
 Sampler : Kurtis Wathen, REBEKAH PANOZZO
 Site : ---
 Quote number : EN/004/16
 No. of samples received : 21
 No. of samples analysed : 8

Laboratory : Environmental Division Sydney
 Contact : Brenda Hong
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
 Telephone : +61 2 8784 8555
 Date Samples Received : 28-Jan-2020
 Date Analysis Commenced : 31-Jan-2020
 Issue Date : 05-Feb-2020



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

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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.

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Alana Smylie
 Edwandy Fadjar
 Edwandy Fadjar
 Ivan Taylor

Asbestos Identifier
 Organic Coordinator
 Organic Coordinator
 Analyst

Newcastle - Asbestos, Mayfield West, NSW
 Sydney Inorganics, Smithfield, NSW
 Sydney Organics, Smithfield, NSW
 Sydney Inorganics, Smithfield, NSW



Page : 2 of 11
 Work Order : ES2002807
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1

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 NEMP. 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 sample ID	Client sample ID	Method: Compound	Laboratory Duplicate (DUP) Report						
			CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2836485)									
ES2002719-001	Anonymous								
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	40	41	0.00	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	133	133	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	39	40	2.80	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	51	52	2.46	0% - 50%
ES2002807-006	BH106_4.0-4.1								
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	7	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	9	20.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	12	38.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	111	119	7.33	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2836488)									
ES2002719-002	Anonymous								
		EA055: Moisture Content	---	0.1	%	5.9	5.6	4.70	No Limit
ES2002807-013	BH108_1.3-1.4								
		EA055: Moisture Content	---	0.1	%	15.8	13.3	17.2	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2836601)									
ES2002645-001	Anonymous								
		EA055: Moisture Content	---	0.1	%	10.0	10.8	8.20	0% - 20%
ES2002856-003	Anonymous								
		EA055: Moisture Content	---	0.1	%	10.8	10.5	2.05	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2836486)									
ES2002719-001	Anonymous								
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2002807-006	BH106_4.0-4.1								
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2834945)									



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: 2834945) - continued									
ES2002729-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2834944)									
Anonymous									
ES2002729-001		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
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2834944)									
Anonymous									
ES2002729-001		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



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 (%)		
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2834944) - continued											
ES2002729-001	Anonymous	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: 2834942)											
ES2002807-014	BH108_2.3-2.4	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	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		
ES2002729-001	Anonymous	EP075(SIM): Benzo(a)pyrene TEQ (zero)	---	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		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	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		



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: 2834942) - continued									
ES2002729-001	Anonymous	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
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2834520)									
ES2002547-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
ES2002547-011	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2834894)									
ES2002719-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
ES2002901-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2834943)									
ES2002807-014	BH108_2.3-2.4	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
ES2002729-001	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
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2834520)									
ES2002547-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2002547-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2834894)									
ES2002719-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2002901-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2834943)									
ES2002807-014	BH108_2.3-2.4	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
ES2002729-001	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: BTEXN (QC Lot: 2834520)									
ES2002547-001	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
ES2002547-011	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	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 (%)		
EP080: BTEXN (QC Lot: 2834520) - continued											
ES2002547-011	Anonymous	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		
EP080: BTEXN (QC Lot: 2834894)											
ES2002719-001	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		
ES2002901-001	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		



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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
				Result	Concentration	Spike Recovery (%)	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2836485)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	102		86.0	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.2		83.0	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	111		76.0	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.9		86.0	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.7		80.0	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102		87.0	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102		80.0	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2836486)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.0		70.0	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2834945)									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	89.0		62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2834944)									
EP068: alpha-BHC	319-84-6	0.05	ng/kg	<0.05	0.5 mg/kg	102		69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	ng/kg	<0.05	0.5 mg/kg	102		65.0	117
EP068: beta-BHC	319-85-7	0.05	ng/kg	<0.05	0.5 mg/kg	90.3		67.0	119
EP068: gamma-BHC	58-89-9	0.05	ng/kg	<0.05	0.5 mg/kg	98.9		68.0	116
EP068: delta-BHC	319-86-8	0.05	ng/kg	<0.05	0.5 mg/kg	103		65.0	117
EP068: Heptachlor	76-44-8	0.05	ng/kg	<0.05	0.5 mg/kg	103		67.0	115
EP068: Aldrin	309-00-2	0.05	ng/kg	<0.05	0.5 mg/kg	103		69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	ng/kg	<0.05	0.5 mg/kg	106		62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	ng/kg	<0.05	0.5 mg/kg	107		63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	ng/kg	<0.05	0.5 mg/kg	91.5		66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	ng/kg	<0.05	0.5 mg/kg	104		64.0	116
EP068: Dieldrin	60-57-1	0.05	ng/kg	<0.05	0.5 mg/kg	101		66.0	116
EP068: 4,4'-DDE	72-55-9	0.05	ng/kg	<0.05	0.5 mg/kg	107		67.0	115
EP068: Endrin	72-20-8	0.05	ng/kg	<0.05	0.5 mg/kg	103		67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	ng/kg	<0.05	0.5 mg/kg	102		69.0	115
EP068: 4,4'-DDD	72-54-8	0.05	ng/kg	<0.05	0.5 mg/kg	98.4		69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	ng/kg	<0.05	0.5 mg/kg	87.5		56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	ng/kg	<0.05	0.5 mg/kg	98.8		62.0	124
EP068: 4,4'-DDT	50-29-3	0.2	ng/kg	<0.2	0.5 mg/kg	101		66.0	120
EP068: Endrin ketone	53494-70-5	0.05	ng/kg	<0.05	0.5 mg/kg	94.2		64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	93.1		54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2834944)									



Method: Compound		CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report		
					Result	Concentration	Spike Recovery (%)	LCS	Low
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2834944) - continued									
EP068: Dichlorvos		62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	105	59.0	119
EP068: Demeton-S-methyl		919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.1	62.0	128
EP068: Monocrotophos		6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	78.2	54.0	126
EP068: Dimethoate		60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	67.0	119
EP068: Diazinon		333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.9	70.0	120
EP068: Chlorpyrifos-methyl		5998-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	72.0	120
EP068: Parathion-methyl		298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	95.8	68.0	120
EP068: Malathion		121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	101	68.0	122
EP068: Fenthion		55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	69.0	117
EP068: Chlorpyrifos		2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.0	76.0	118
EP068: Parathion		56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	106	64.0	122
EP068: Pirimphos-ethyl		23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	70.0	116
EP068: Chlorfenvinphos		470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	69.0	121
EP068: Bromophos-ethyl		4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	100	66.0	118
EP068: Fenamiphos		22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	68.0	124
EP068: Prothiofos		34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	62.0	112
EP068: Ethion		563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	101	68.0	120
EP068: Carbofenthoion		786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	65.0	127
EP068: Azinphos Methyl		86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	66.3	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2834942)									
EP075(SIM): Naphthalene		91-20-3	0.5	mg/kg	<0.5	6 mg/kg	99.3	77.0	125
EP075(SIM): Acenaphthylene		208-96-8	0.5	mg/kg	<0.5	6 mg/kg	105	72.0	124
EP075(SIM): Acenaphthene		83-32-9	0.5	mg/kg	<0.5	6 mg/kg	101	73.0	127
EP075(SIM): Fluorene		86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene		85-01-8	0.5	mg/kg	<0.5	6 mg/kg	103	75.0	127
EP075(SIM): Anthracene		120-12-7	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	127
EP075(SIM): Fluoranthene		206-44-0	0.5	mg/kg	<0.5	6 mg/kg	109	73.0	127
EP075(SIM): Pyrene		129-00-0	0.5	mg/kg	<0.5	6 mg/kg	112	74.0	128
EP075(SIM): Benz(a)anthracene		56-55-3	0.5	mg/kg	<0.5	6 mg/kg	96.8	69.0	123
EP075(SIM): Chrysene		218-01-9	0.5	mg/kg	<0.5	6 mg/kg	99.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene		205-99-2	0.5	mg/kg	<0.5	6 mg/kg	93.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene		207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74.0	126
EP075(SIM): Benzo(a)pyrene		50-32-8	0.5	mg/kg	<0.5	6 mg/kg	104	70.0	126
EP075(SIM): Indeno(1,2,3-cd)pyrene		193-39-5	0.5	mg/kg	<0.5	6 mg/kg	97.8	61.0	121
EP075(SIM): Dibenzo(a,h)anthracene		53-70-3	0.5	mg/kg	<0.5	6 mg/kg	98.3	62.0	118
EP075(SIM): Benzo(g,h,i)perylene		191-24-2	0.5	mg/kg	<0.5	6 mg/kg	98.4	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2834520)									
EP080: C6 - C9 Fraction		----	10	mg/kg	<10	26 mg/kg	89.2	68.4	128



Sub-Matrix: SOIL		Method Blank (MB) Report		Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2834894)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	96.1	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2834943)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	93.6	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	94.2	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	89.7	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834520)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834894)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	96.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834943)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.6	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	92.0	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	78.3	63.0	131
EP080: BTEXN (QCLot: 2834520)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	108	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.7	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	95.2	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.8	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.7	63.0	119
EP080: BTEXN (QCLot: 2834894)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	96.9	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	103	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	105	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	113	63.0	119

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						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	MS	Recovery Limits (%)	
							Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2836485)								



Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
				MS	Low	High	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2836485) - continued							
ES2002719-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.6	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	80.7	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	101	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	90.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	81.6	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	84.7	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2836486)							
ES2002719-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	88.9	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2834945)							
ES2002729-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	102	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2834944)							
ES2002729-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	85.9	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	92.9	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	92.8	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	109	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	111	70.0	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	107	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2834944)							
ES2002729-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	96.7	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.7	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	76.9	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	93.0	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	104	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2834942)							
ES2002729-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	105	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	115	70.0	130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2834520)							
ES2002547-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.8	70.0	130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2834894)							
ES2002719-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	104	70.0	130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2834943)							
ES2002729-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	91.0	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	85.1	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	74.4	52.0	132
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834520)							



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 Work Order : ES2002807
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834520) - continued						
ES2002547-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	95.4	70.0
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834894)						
ES2002719-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	111	70.0
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2834943)						
ES2002729-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	100	73.0
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	79.7	53.0
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	54.8	52.0
EP080: BTEXN (QCLot: 2834520)						
ES2002547-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	106	70.0
		EP080: Toluene	108-88-3	2.5 mg/kg	99.7	70.0
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	102	70.0
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	100.0	70.0
			106-42-3			
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	70.0
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.2	70.0
EP080: BTEXN (QCLot: 2834894)						
ES2002719-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	93.0	70.0
		EP080: Toluene	108-88-3	2.5 mg/kg	92.2	70.0
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	109	70.0
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	106	70.0
			106-42-3			
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	111	70.0
		EP080: Naphthalene	91-20-3	2.5 mg/kg	121	70.0



Work Order	: ES2002807	Page	: 1 of 6
Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1	Date Samples Received	: 28-Jan-2020
Site	: ----	Issue Date	: 05-Feb-2020
Sampler	: Kurtis Wathen, REBEKAH PANOZZO	No. of samples received	: 21
Order number	: 60623599_1.1	No. of samples analysed	: 8

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.

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	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)							
BH106_0.2-0.3, BH108_0.35-0.45, BH108_2.3-2.4, QC100	28-Jan-2020	----	----	----	31-Jan-2020	11-Feb-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
BH106_0.2-0.3, BH108_0.35-0.45, BH108_2.3-2.4	28-Jan-2020	----	----	----	03-Feb-2020	26-Jul-2020	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
BH106_0.2-0.3, BH108_0.35-0.45, BH108_2.3-2.4	28-Jan-2020	----	----	----	03-Feb-2020	26-Jul-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH106_0.2-0.3, BH108_0.35-0.45, BH108_2.3-2.4,	28-Jan-2020	01-Feb-2020	26-Jul-2020	✓	03-Feb-2020	26-Jul-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH106_0.2-0.3, BH108_0.35-0.45, BH108_2.3-2.4,	28-Jan-2020	01-Feb-2020	25-Feb-2020	✓	03-Feb-2020	25-Feb-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH106_0.2-0.3,	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	03-Feb-2020	11-Mar-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH106_0.2-0.3,	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	03-Feb-2020	11-Mar-2020	✓



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

Method	Sample Date	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Evaluation	Due for analysis
EP068B: Organophosphorus Pesticides (EP068)					
Soil Glass Jar - Unpreserved (EP068)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Mar-2020
BH106_0.2-0.3, QC100					✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Soil Glass Jar - Unpreserved (EP075(SIM))	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Mar-2020
BH106_4.0-4.1, BH108_1.3-1.4, QC100					✓
EP080/071: Total Petroleum Hydrocarbons					
Soil Glass Jar - Unpreserved (EP071)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Mar-2020
BH106_4.0-4.1, BH108_2.3-2.4, QC100					✓
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
QC100					✓
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
BH106_0.2-0.3, BH108_1.3-1.4, QC100					✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
Soil Glass Jar - Unpreserved (EP071)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Mar-2020
BH106_4.0-4.1, BH108_2.3-2.4, QC100					✓
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
QC100					✓
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
BH106_0.2-0.3, BH108_1.3-1.4, QC100					✓
EP080: BTEXN					
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
QC100					✓
Soil Glass Jar - Unpreserved (EP080)	28-Jan-2020	31-Jan-2020	11-Feb-2020	✓	11-Feb-2020
BH106_0.2-0.3, BH108_1.3-1.4, QC100					✓



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	Method	Count		Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	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 (SnCl ₂) (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 SnCl ₂ 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.



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Work Order : ES2002807
Client : AECOM Australia Pty Ltd
Project : 60623599_1.1

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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2002807

Client : AECOM Australia Pty Ltd
Contact : MR ALEX LATHAM
Address : PO BOX Q410 QVB POST OFFICE SYDNEY NSW, AUSTRALIA 2000
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
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
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 : 28-Jan-2020 17:00
Issue Date : 31-Jan-2020
Client Requested Due Date : 05-Feb-2020
Scheduled Reporting Date : 05-Feb-2020

Delivery Details

Mode of Delivery : Undefined
Security Seal : Not Available
No. of coolers/boxes : 2
Temperature : 2.6
Receipt Detail :
No. of samples received / analysed : 21 / 8

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 an updated SRN which indicates the addition of samples QC100 and QC101 to this work order, as per Alex Latham.
Volatile organic compound analysis may be compromised as sample containers contained headspace. Please contact ALS for further information.
Please note that samples BH106_0.2-0.3 and BH108_2.3-2.4 contained water upon receipt. The laboratory suspects lids were not fully secure during transit.
Asbestos analysis will be conducted by ALS Newcastle.
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	(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
ES2002807-001	28-Jan-2020 00:00	BH106_0.2-0.3		☐	☐			☐	☐
ES2002807-002	28-Jan-2020 00:00	BH106_0.4-0.5	☐						
ES2002807-003	28-Jan-2020 00:00	BH106_0.8-0.9	☐						
ES2002807-004	28-Jan-2020 00:00	BH106_1.7-1.8	☐						
ES2002807-005	28-Jan-2020 00:00	BH106_2.7-2.8	☐						
ES2002807-006	28-Jan-2020 00:00	BH106_4.0-4.1		☐					☐
ES2002807-007	28-Jan-2020 00:00	BH106_6.0-6.1	☐						
ES2002807-008	28-Jan-2020 00:00	BH108_0.15-0.25			☐				
ES2002807-009	28-Jan-2020 00:00	BH108_0.35-0.45		☐	☐	☐	☐		
ES2002807-010	28-Jan-2020 00:00	BH108_0.5-0.6	☐						
ES2002807-011	28-Jan-2020 00:00	BH108_0.7-0.8	☐						
ES2002807-012	28-Jan-2020 00:00	BH108_0.85-0.9	☐						
ES2002807-013	28-Jan-2020 00:00	BH108_1.3-1.4		☐	☐				☐
ES2002807-014	28-Jan-2020 00:00	BH108_2.3-2.4		☐	☐				☐
ES2002807-015	28-Jan-2020 00:00	BH108_2.5-2.6	☐						
ES2002807-016	28-Jan-2020 00:00	BH108_2.8-2.9	☐						
ES2002807-017	28-Jan-2020 00:00	BH108_4.1-4.2		☐					
ES2002807-018	28-Jan-2020 00:00	BH108_4.3-4.4	☐						
ES2002807-019	28-Jan-2020 00:00	BH108_4.9-5.0	☐						
ES2002807-020	28-Jan-2020 00:00	QC100		☐				☐	☐
ES2002807-021	28-Jan-2020 00:00	QC101	☐						



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-04 TRH/BTEXN
ES2002807-017	28-Jan-2020 00:00	BH108_4.1-4.2	☐

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

Fadi Soro

From: Brenda Hong
Sent: Wednesday, 29 January 2020 8:25 AM
To: Samples Sydney
Cc: Loren Schiavon; Helen Simpson
Subject: COC AECOM - Project 60623599_1.1
Attachments: 60623599_1.1_CoC1.pdf

COC for samples from AECOM delivered by John yesterday afternoon.

Best regards,

Brenda Hong

Client Services Manager, Environmental NSW



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



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EnviroMail™ 128 – Revised PFAS Bottle Requirements



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From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Wednesday, 29 January 2020 8:13 AM
To: Brenda Hong <Brenda.Hong@alsglobal.com>; Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Cc: Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>
Subject: RE: [EXTERNAL] - Project 60623599_1.1

Hi Brenda
CoC for samples picked up yesterday. Any Qs, pls call.
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
SY +61 2 8934 0000 F +61 2 8934 0001
www.aecom.com


Please consider the environment before printing this email.

From: Brenda Hong <Brenda.Hong@alsglobal.com>
Sent: Tuesday, 28 January 2020 12:00 PM
To: Wathen, Kurtis <Kurtis.Wathen@aecom.com>
Cc: Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>; Latham, Alex <Alex.Latham@aecom.com>
Subject: RE: [EXTERNAL] - Project 60623599_1.1

Great, thanks Kurtis!

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
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06

From: Wathen, Kurtis <Kurtis.Wathen@aecom.com>

Sent: Tuesday, 28 January 2020 11:06 AM

To: Brenda Hong <Brenda.Hong@alsglobal.com>

Cc: Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>; Latham, Alex <Alex.Latham@aecom.com>

Subject: Re: [EXTERNAL] - Project 60623599_1.1

Hi Brenda,

3 pm works, thanks for that.

Kurtis Wathen
Environmental Engineer
+61 447 224 684

From: Brenda Hong <Brenda.Hong@alsglobal.com>

Sent: Tuesday, January 28, 2020 10:25:29 AM

To: Latham, Alex <Alex.Latham@aecom.com>
Cc: Wathen, Kurtis <Kurtis.Wathen@aecom.com>; Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>
Subject: RE: [EXTERNAL] - Project 60623599_1.1

No worries, just spoke to the driver and he said he can do 3pm each day, hopefully that works?

Best regards,

Brenda Hong

Client Services Manager, Environmental NSW



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From: Latham, Alex <Alex.Latham@aecom.com>

Sent: Tuesday, 28 January 2020 10:24 AM

To: Brenda Hong <Brenda.Hong@alsglobal.com>

Cc: Wathen, Kurtis <Kurtis.Wathen@aecom.com>; Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>

Subject: RE: [EXTERNAL] - Project 60623599_1.1

Hey Bren
Hopefully the team will get back to you to advise. Cheers.

Alex Latham

Associate Director
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Alex.Latham@aecom.com

AECOM

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Please consider the environment before printing this email.

From: Brenda Hong <Brenda.Hong@alsglobal.com>
Sent: Tuesday, 28 January 2020 10:21 AM
To: Latham, Alex <Alex.Latham@aecom.com>
Cc: Wathen, Kurtis <Kurtis.Wathen@aecom.com>; Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>
Subject: RE: [EXTERNAL] - Project 60623599_1.1

Hi AL, happy 2020! Sorry I was away for a few days... I will arrange for a dedicated driver to pick up samples from the Alexandria site address for each day.
What time is suitable for your team?

Best regards,

Brenda Hong

Client Services Manager, Environmental NSW



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From: Latham, Alex <Alex.Latham@aecom.com>
Sent: Friday, 24 January 2020 1:22 PM
To: Brenda Hong <Brenda.Hong@alsglobal.com>
Cc: Wathen, Kurtis <Kurtis.Wathen@aecom.com>; Panozzo, Rebekah <Rebekah.Panozzo@aecom.com>
Subject: [EXTERNAL] - Project 60623599_1.1

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60

Hi Brenda,
Just wanted to let you know we are commencing a drilling program on Tuesday (for about 5 days) and will prob' need ALS to come pick up samples at the end of each day.
1-3 Burrows Rd Alexandria.
Speak soon.
Cheers,

Alex Latham
Associate Director
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Page : 2 of 17
Work Order : ES2003147
Client : AECOM Australia Pty Ltd
Project : 60623599_1.1

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+i) & Benzo(k)fluoranthene (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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP068: Positive results have been confirmed by re-extraction and re-analysis.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
- Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
- The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
- Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
- All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH116_0.3-0.4 30-Jan-2020 00:00 ES2003147-001	BH116_0.6-0.65 30-Jan-2020 00:00 ES2003147-002	BH117_0.3-0.4 30-Jan-2020 00:00 ES2003147-005	BH117_1.3-1.4 30-Jan-2020 00:00 ES2003147-007	BH117_2.2-2.3 30-Jan-2020 00:00 ES2003147-008
EA055: Moisture Content (Dried @ 105-110°C)	11.6	12.8	9.2	31.0	24.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	No	No	No	No*	----
Asbestos Type	-	-	-	Ch	----
Asbestos (Trace)	No	No	No	No	----
Sample weight (dry)	442	484	518	483	----
Synthetic Mineral Fibre	No	No	No	No	----
Organic Fibre	No	No	No	No	----
APPROVED IDENTIFIER:	A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	A. SMYLLIE	----
EA200N: Asbestos Quantification (non-NATA)					
∅ Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	<math><0.0004</math>	<math><0.0004</math>	<math><0.0004</math>	0.0024	----
Asbestos (Fines and Fibrous FA+AF)	<math><0.001</math>	<math><0.001</math>	<math><0.001</math>	<math><0.001</math>	----
Asbestos Containing Material	<math><0.1</math>	<math><0.1</math>	<math><0.1</math>	<math><0.1</math>	----
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	<math><0.01</math>	<math><0.01</math>	<math><0.01</math>	<math><0.01</math>	----
∅ Weight Used for % Calculation	0.442	0.484	0.518	0.483	----
∅ Fibrous Asbestos >7mm	<math><0.0004</math>	<math><0.0004</math>	<math><0.0004</math>	<math><0.0004</math>	----
EG005(ED093): Total Metals by ICP-AES					
Arsenic	23	32	<math><5</math>	27	52
Cadmium	<math><1</math>	<math><1</math>	<math><1</math>	2	7
Chromium	11	26	6	51	90
Copper	83	384	6	964	1250
Lead	192	1280	30	2260	2240
Nickel	20	28	8	55	64
Zinc	217	915	21	1430	3720
EG035T: Total Recoverable Mercury by FIMS					
Mercury	<math><0.1</math>	0.6	<math><0.1</math>	2.0	1.0
EP066: Polychlorinated Biphenyls (PCB)					
Total Polychlorinated biphenyls	<math><0.1</math>	----	----	----	----
EP068A: Organochlorine Pesticides (OC)					
alpha-BHC	<math><0.05</math>	----	----	----	----
Hexachlorobenzene (HCB)	<math><0.05</math>	----	----	----	----
beta-BHC	<math><0.05</math>	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH116_0.3-0.4 30-Jan-2020 00:00 ES2003147-001 Result	BH116_0.6-0.65 30-Jan-2020 00:00 ES2003147-002 Result	BH117_0.3-0.4 30-Jan-2020 00:00 ES2003147-005 Result	BH117_1.3-1.4 30-Jan-2020 00:00 ES2003147-007 Result	BH117_2.2-2.3 30-Jan-2020 00:00 ES2003147-008 Result
EP068A: Organochlorine Pesticides (OC) - Continued					
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	****
delta-BHC	319-86-8	0.05	mg/kg	<0.05	****
Heptachlor	76-44-8	0.05	mg/kg	<0.05	****
Aldrin	309-00-2	0.05	mg/kg	<0.05	****
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	****
^ Total Chlordane (sum)	****	0.05	mg/kg	<0.05	****
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	****
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	****
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	****
Dieldrin	60-57-1	0.05	mg/kg	<0.05	****
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	****
Endrin	72-20-8	0.05	mg/kg	<0.05	****
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	****
gamma-Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	****
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	****
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	****
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	****
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	****
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	****
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	****
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	****
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	****
EP068B: Organophosphorus Pesticides (OP)					
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	****
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	****
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	****
Dimethoate	60-51-5	0.05	mg/kg	<0.05	****
Diazinon	333-41-5	0.05	mg/kg	<0.05	****
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	****
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	****
Malathion	121-75-5	0.05	mg/kg	<0.05	****
Fenthion	55-38-9	0.05	mg/kg	<0.05	****
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	****
Parathion	56-38-2	0.2	mg/kg	<0.2	****



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH116_0.3-0.4 30-Jan-2020 00:00 ES2003147-001 Result	BH116_0.6-0.65 30-Jan-2020 00:00 ES2003147-002 Result	BH117_0.3-0.4 30-Jan-2020 00:00 ES2003147-005 Result	BH117_1.3-1.4 30-Jan-2020 00:00 ES2003147-007 Result	BH117_2.2-2.3 30-Jan-2020 00:00 ES2003147-008 Result
EP068B: Organophosphorus Pesticides (OP) - Continued					
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5
OP Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5
Benzo(b+)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	----	10	mg/kg	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	900
C29 - C36 Fraction	----	100	mg/kg	<100	550



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH116_0.3-0.4	BH116_0.6-0.65	BH117_0.3-0.4	BH117_1.3-1.4	BH117_2.2-2.3
	30-Jan-2020 00:00	30-Jan-2020 00:00	30-Jan-2020 00:00	30-Jan-2020 00:00	30-Jan-2020 00:00
	ES2003147-001	ES2003147-002	ES2003147-005	ES2003147-007	ES2003147-008
	Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued					
^ C10 - C36 Fraction (sum)	50	<50	*****	*****	1450
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	10	<10	*****	*****	<10
^ C6 - C10 Fraction minus BTEX (F1)	10	<10	*****	*****	<10
>C10 - C16 Fraction	50	<50	*****	*****	<50
>C16 - C34 Fraction	100	180	*****	*****	1310
>C34 - C40 Fraction	100	<100	*****	*****	260
^ >C10 - C40 Fraction (sum)	50	180	*****	*****	1670
^ >C10 - C16 Fraction minus Naphthalene (F2)	50	<50	*****	*****	<50
EP080: BTEXN					
Benzene	71-43-2	0.2	<0.2	*****	<0.2
Toluene	108-88-3	0.5	<0.5	*****	<0.5
Ethylbenzene	100-41-4	0.5	<0.5	*****	<0.5
meta- & para-Xylene	108-38-3	0.5	<0.5	*****	<0.5
ortho-Xylene	95-47-6	0.5	<0.5	*****	<0.5
^ Sum of BTEX	*****	0.2	<0.2	*****	<0.2
^ Total Xylenes	*****	0.5	<0.5	*****	<0.5
Naphthalene	91-20-3	1	<1	*****	<1
EP066S: PCB Surrogate					
Decachlorobiphenyl	2051-24-3	0.1	94.9	*****	*****
EP068S: Organochlorine Pesticide Surrogate					
Dibromo-DDE	21655-73-2	0.05	104	*****	*****
EP068T: Organophosphorus Pesticide Surrogate					
DEF	78-48-8	0.05	98.3	*****	*****
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.5	83.4	93.8	95.6
2-Chlorophenol-D4	93951-73-6	0.5	88.1	94.3	99.1
2,4,6-Tribromophenol	118-79-6	0.5	64.0	70.1	95.1
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.5	100.0	107	108
Anthracene-d10	1719-06-8	0.5	92.1	114	105
4-Terphenyl-d14	1718-51-0	0.5	96.6	107	108



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH115_0.6-0.7	BH115_2.5-2.6	BH111_0.3-0.4	BH111_0.65-0.75	BH110_0.35-0.36
ES2003147-014	ES2003147-016	ES2003147-023	ES2003147-024	ES2003147-028	
29-Jan-2020 00:00	29-Jan-2020 00:00	30-Jan-2020 00:00	30-Jan-2020 00:00	28-Jan-2020 00:00	
Result	Result	Result	Result	Result	Result
25.1	20.6	19.4	15.0	27.1	
EA055: Moisture Content (Dried @ 105-110°C)					
Moisture Content	1.0	%			
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	Ch + Am
Asbestos Type	1332-21-4	-	--	Ch + Am	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No
Sample weight (dry)	0.01	464	g	No	384
Synthetic Mineral Fibre	0.1	No	g/kg	No	No
Organic Fibre	0.1	No	g/kg	No	No
APPROVED IDENTIFIER:	-	A. SMYLYE		A. SMYLYE	A. SMYLYE
EA200N: Asbestos Quantification (non-NATA)					
Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	1332-21-4	0.0004	g	0.0495	<math><0.0004</math>
Asbestos (Fines and Fibrous FA+AF)	1332-21-4	0.001	% (w/w)	0.011	<math><0.001</math>
Asbestos Containing Material	1332-21-4	0.1	g	<math><0.1</math>	<math><0.1</math>
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<math><0.01</math>	<math><0.01</math>
Weight Used for % Calculation	0.0001	0.464	kg	0.344	0.384
Fibrous Asbestos >7mm	0.0004	<math><0.0004</math>	g	<math><0.0004</math>	<math><0.0004</math>
EG005(ED093): Total Metals by ICP-AES					
Arsenic	7440-38-2	5	mg/kg	45	41
Cadmium	7440-43-9	1	mg/kg	1	7
Chromium	7440-47-3	2	mg/kg	90	210
Copper	7440-50-8	5	mg/kg	407	3350
Lead	7439-92-1	5	mg/kg	522	4530
Nickel	7440-02-0	2	mg/kg	160	337
Zinc	7440-66-6	5	mg/kg	776	3400
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	0.1	mg/kg	0.5	<math><0.1</math>
EP066: Polychlorinated Biphenyls (PCB)					
Total Polychlorinated biphenyls	0.1	mg/kg	<math><0.1</math>		
EP068A: Organochlorine Pesticides (OC)					
alpha-BHC	319-84-6	0.05	mg/kg	<math><0.05</math>	<math><0.05</math>
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<math><0.05</math>	<math><0.05</math>
beta-BHC	319-85-7	0.05	mg/kg	<math><0.05</math>	<math><0.05</math>



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH115_0.6-0.7 29-Jan-2020 00:00 ES2003147-014	BH115_2.5-2.6 29-Jan-2020 00:00 ES2003147-016	BH111_0.3-0.4 30-Jan-2020 00:00 ES2003147-023	BH111_0.65-0.75 30-Jan-2020 00:00 ES2003147-024	BH110_0.35-0.36 28-Jan-2020 00:00 ES2003147-028
	Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued					
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	0.08
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05
^ Total Chlordane (sum)	---	0.05	mg/kg	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	1.24
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05
gamma-Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	1.32
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)					
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH115_0.6-0.7 29-Jan-2020 00:00 ES2003147-014	BH115_2.5-2.6 29-Jan-2020 00:00 ES2003147-016	BH111_0.3-0.4 30-Jan-2020 00:00 ES2003147-023	BH111_0.65-0.75 30-Jan-2020 00:00 ES2003147-024	BH110_0.35-0.36 28-Jan-2020 00:00 ES2003147-028
EP068B: Organophosphorus Pesticides (OP) - Continued					
Pirimphos-ethyl	0.05	<0.05	*****	*****	<0.05
Chlorfenvinphos	0.05	<0.05	*****	*****	<0.05
Bromophos-ethyl	0.05	<0.05	*****	*****	<0.05
Fenamiphos	0.05	<0.05	*****	*****	<0.05
Prothiofos	0.05	<0.05	*****	*****	<0.05
Ethion	0.05	<0.05	*****	*****	<0.05
Carbophenothion	0.05	<0.05	*****	*****	<0.05
Azinphos Methyl	0.05	<0.05	*****	*****	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5	<0.5	<0.5	<0.5	0.9
Anthracene	0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	0.5	<0.5	<0.5	3.6
Pyrene	0.5	0.5	<0.5	<0.5	4.1
Benz(a)anthracene	0.5	<0.5	<0.5	<0.5	2.2
Chrysene	0.5	<0.5	<0.5	<0.5	2.0
Benzo(b+)fluoranthene	0.5	<0.5	<0.5	<0.5	2.3
Benzo(k)fluoranthene	0.5	<0.5	<0.5	<0.5	0.8
Benzo(a)pyrene	0.5	<0.5	<0.5	<0.5	1.8
Indeno(1.2.3.cd)pyrene	0.5	<0.5	<0.5	<0.5	0.8
Dibenz(a,h)anthracene	0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	<0.5	<0.5	<0.5	0.7
^ Sum of polycyclic aromatic hydrocarbons	0.5	1.0	<0.5	<0.5	19.2
^ Benzo(a)pyrene TEQ (zero)	0.5	<0.5	<0.5	<0.5	2.4
^ Benzo(a)pyrene TEQ (half LOR)	0.5	0.6	0.6	0.6	2.7
^ Benzo(a)pyrene TEQ (LOR)	0.5	1.2	1.2	1.2	2.9
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	10	<10	<10	----	<10
C10 - C14 Fraction	50	<50	<50	----	<50
C15 - C28 Fraction	100	<100	<100	----	430
C29 - C36 Fraction	100	<100	<100	----	480



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH115_0.6-0.7	BH115_2.5-2.6	BH111_0.3-0.4	BH111_0.65-0.75	BH110_0.35-0.36
	29-Jan-2020 00:00	29-Jan-2020 00:00	30-Jan-2020 00:00	30-Jan-2020 00:00	28-Jan-2020 00:00
	ES2003147-014	ES2003147-016	ES2003147-023	ES2003147-024	ES2003147-028
	Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued					
^ C10 - C36 Fraction (sum)	110	<50	<50	****	910
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	<10	<10	<10	****	<10
^ C6 - C10 Fraction minus BTEX (F1)	<10	<10	<10	****	<10
>C10 - C16 Fraction	<50	<50	<50	****	<50
>C16 - C34 Fraction	170	<100	<100	****	740
>C34 - C40 Fraction	<100	<100	<100	****	340
^ >C10 - C40 Fraction (sum)	170	<50	<50	****	1080
^ >C10 - C16 Fraction minus Naphthalene (F2)	<50	<50	<50	****	<50
EP080: BTEXN					
o Benzene	<0.2	<0.2	<0.2	****	<0.2
N Toluene	<0.5	<0.5	<0.5	****	<0.5
Ethylbenzene	<0.5	<0.5	<0.5	****	<0.5
meta- & para-Xylene	<0.5	<0.5	<0.5	****	<0.5
ortho-Xylene	<0.5	<0.5	<0.5	****	<0.5
^ Sum of BTEX	<0.2	<0.2	<0.2	****	<0.2
^ Total Xylenes	<0.5	<0.5	<0.5	****	<0.5
Naphthalene	<1	<1	<1	****	<1
EP066S: PCB Surrogate					
Decachlorobiphenyl	112	****	****	****	88.7
EP068S: Organochlorine Pesticide Surrogate					
Dibromo-DDE	137	****	****	****	90.1
EP068T: Organophosphorus Pesticide Surrogate					
DEF	68.9	****	****	****	101
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	81.2	94.4	92.8	91.3	83.0
2-Chlorophenol-D4	86.2	97.7	92.0	87.8	81.9
2,4,6-Tribromophenol	81.5	79.5	46.9	43.8	92.0
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	98.2	107	109	109	98.0
Anthracene-d10	88.9	114	117	117	84.6
4-Terphenyl-d14	94.2	105	109	109	89.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH110_0.4-0.6 28-Jan-2020 00:00 ES2003147-029 Result		BH110_1.2-1.3 28-Jan-2020 00:00 ES2003147-031 Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued				
Anthracene	120-12-7	0.5 mg/kg	<0.5	<0.5
Fluoranthene	206-44-0	0.5 mg/kg	1.7	3.8
Pyrene	129-00-0	0.5 mg/kg	1.4	5.7
Benz(a)anthracene	56-55-3	0.5 mg/kg	0.5	2.5
Chrysene	218-01-9	0.5 mg/kg	0.5	2.9
Benzo(b+J)fluoranthene	205-99-2	0.5 mg/kg	0.7	3.1
Benzo(k)fluoranthene	207-08-9	0.5 mg/kg	<0.5	0.9
Benzo(a)pyrene	50-32-8	0.5 mg/kg	<0.5	2.8
Indeno(1,2,3-cd)pyrene	193-39-5	0.5 mg/kg	<0.5	1.2
Dibenzo(a,h)anthracene	53-70-3	0.5 mg/kg	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5 mg/kg	<0.5	1.7
^ Sum of polycyclic aromatic hydrocarbons		0.5 mg/kg	6.3	25.7
^ Benzo(a)pyrene TEQ (zero)		0.5 mg/kg	<0.5	3.6
^ Benzo(a)pyrene TEQ (half LOR)		0.5 mg/kg	0.7	3.9
^ Benzo(a)pyrene TEQ (LOR)		0.5 mg/kg	1.2	4.1
EP075(SIM)S: Phenolic Compound Surrogates				
Phenol-d6	13127-88-3	0.5 %	96.9	91.0
2-Chlorophenol-D4	93951-73-6	0.5 %	97.1	96.0
2,4,6-Tribromophenol	118-79-6	0.5 %	72.2	93.4
EP075(SIM)T: PAH Surrogates				
2-Fluorobiphenyl	321-60-8	0.5 %	114	107
Anthracene-d10	1719-06-8	0.5 %	105	109
4-Terphenyl-d14	1718-51-0	0.5 %	104	102



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		QC302	
□ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □	30-Jan-2020 00:00	
□ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □	ES2003147-012	
□ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □	Result	
EP080/071: Total Petroleum Hydrocarbons			
C6 - C9 Fraction	20 µg/L	<20	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions			
C6 - C10 Fraction	20 µg/L	<20	
^ C6 - C10 Fraction minus BTEX (F1)	20 µg/L	<20	
EP080: BTEXN			
Benzene	71-43-2	1 µg/L	<1
Toluene	108-88-3	2 µg/L	<2
Ethylbenzene	100-41-4	2 µg/L	<2
meta- & para-Xylene	108-38-3 106-42-3	2 µg/L	<2
ortho-Xylene	95-47-6	2 µg/L	<2
Δ Total Xylenes		2 µg/L	<2
Σ BTEX		1 µg/L	<1
Σ Naphthalene	91-20-3	5 µg/L	<5
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	2 %	104
Toluene-D8	2037-26-5	2 %	109
4-Bromofluorobenzene	460-00-4	2 %	106



Analytical Results
Descriptive Results

Sub-Matrix: SOIL

EA200: AS 4964 - 2004 Identification of Asbestos in Soils	
EA200: Description	BH116_0.3-0.4 - 30-Jan-2020 00:00
EA200: Description	BH116_0.6-0.65 - 30-Jan-2020 00:00
EA200: Description	BH117_0.3-0.4 - 30-Jan-2020 00:00
EA200: Description	BH117_1.3-1.4 - 30-Jan-2020 00:00
EA200: Description	BH115_0.6-0.7 - 29-Jan-2020 00:00
EA200: Description	BH111_0.3-0.4 - 30-Jan-2020 00:00
EA200: Description	BH111_0.65-0.75 - 30-Jan-2020 00:00
EA200: Description	BH110_0.35-0.36 - 28-Jan-2020 00:00
EA200: Description	BH110_0.4-0.6 - 28-Jan-2020 00:00

Mid brown soil.	Mid brown soil.
Mid brown soil.	Mid brown soil.
Mid brown soil.	Mid brown soil.
Mid brown soil containing one asbestos fibre bundle approximately 5x1x0.5mm.	Mid brown soil containing one piece of asbestos rope-like material approximately 15x2x2mm and one piece of asbestos cement sheeting approximately 5x5x2mm with loose asbestos fibre bundles.
Mid brown soil.	Mid brown soil.
Mid brown soil.	Mid brown soil.
Mid brown soil containing two pieces of asbestos cement sheeting approximately 40x30x5mm, one smaller fragment of asbestos cement debris approximately 10x5x2mm and plenty of loose asbestos fibre bundles.	Mid brown soil containing two pieces of asbestos cement sheeting approximately 20x15x2mm and plenty of loose asbestos fibre bundles throughout. Trace asbestos detected.



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 : ES2003147

Page : 1 of 14

Client : AECOM Australia Pty Ltd
 Contact : MR ALEX LATHAM
 Address : PO BOX Q410 QVB POST OFFICE
 SYDNEY NSW, AUSTRALIA 2000
 Telephone : +61 02 8934 0000
 Project : 60623599_1.1
 Order number : 60623599_1.1
 C-O-C number : ---
 Sampler : Kurtis Wathen, REBEKAH PANOZZO
 Site : ---
 Quote number : EN/004/16
 No. of samples received : 38
 No. of samples analysed : 13

Laboratory : Environmental Division Sydney
 Contact : Brenda Hong
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
 Telephone : +61 2 8784 8555
 Date Samples Received : 30-Jan-2020
 Date Analysis Commenced : 01-Feb-2020
 Issue Date : 07-Feb-2020



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

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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.

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Alana Smylie
 Edwandy Fadjar
 Edwandy Fadjar
 Ivan Taylor

Asbestos Identifier
 Organic Coordinator
 Organic Coordinator
 Analyst

Newcastle - Asbestos, Mayfield West, NSW
 Sydney Inorganics, Smithfield, NSW
 Sydney Organics, Smithfield, NSW
 Sydney Inorganics, Smithfield, NSW



Page : 2 of 14
 Work Order : ES2003147
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1

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 NEMP. 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 sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report			Recovery Limits (%)
						Original Result	Duplicate Result	RPD (%)	
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2839957)									
EM2001381-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	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	79	82	3.98	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	29	27	9.48	No Limit
ES2003147-016	BH115_2.5-2.6	EG005T: Cadmium	7440-43-9	1	mg/kg	13	11	15.4	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	38	38	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	145	155	6.48	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	117	99	16.8	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	872	1040	17.9	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	6390	5870	8.46	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	2930	3080	4.99	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2839968)									
ES2002923-001	Anonymous	EA055: Moisture Content	---	0.1	%	9.9	9.0	8.93	No Limit
ES2003147-024	BH111_0.65-0.75	EA055: Moisture Content	---	0.1	%	15.0	14.9	0.754	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2839956)									
EM2001381-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2003147-016	BH115_2.5-2.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2836713)									
ES2002677-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2003046-001	Anonymous	EP066: Total Polychlorinated biphenyls	---	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2836716)									



Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Sub-Matrix: SOIL										
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2836716) - continued										
ES2002677-001		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
			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
ES2003046-001		Anonymous								



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: 2836716) - continued											
ES2003046-001	Anonymous	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: 2836716)											
ES2002677-001	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		
		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		
ES2003046-001	Anonymous	EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	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 (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2836716) - continued									
ES2003046-001	Anonymous	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: 2836715)									
Anonymous									
ES2002677-001	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+)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	207-08-9	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
Anonymous									
ES2003046-001	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+)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	207-08-9	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



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: 2836715) - continued											
ES2003046-001	Anonymous	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		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2836719)											
ES2003147-002	BH116_0.6-0.65	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	0.7	1.0	30.6	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	1.0	25.9	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	0.5	mg/kg	0.7	0.6	17.1	No Limit		
			205-82-3								
		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	0.6	<0.5	22.2	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	3.2	2.6	20.7	No Limit		
ES2003046-008	Anonymous	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.7	<0.5	29.8	No Limit		
		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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
			205-82-3								
		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		



Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Sub-Matrix: SOIL										
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2836719) - continued										
ES2003046-008	Anonymous	191-24-2	EP075(SIM): Benzo(g,h,i)perylene	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	
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2836694)										
ES2003147-001	BH116_0.3-0.4	---	EP080: C6 - C9 Fraction	10	mg/kg	<10	<10	0.00	No Limit	
EW2000476-004	Anonymous	---	EP080: C6 - C9 Fraction	10	mg/kg	<10	<10	0.00	No Limit	
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2836714)										
ES2002677-001	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	
ES2003046-001	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	
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2836718)										
ES2003147-002	BH116_0.6-0.65	---	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	
ES2003046-008	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	
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2836694)										
ES2003147-001	BH116_0.3-0.4	C6_C10	EP080: C6 - C10 Fraction	10	mg/kg	<10	<10	0.00	No Limit	
EW2000476-004	Anonymous	C6_C10	EP080: C6 - C10 Fraction	10	mg/kg	<10	<10	0.00	No Limit	
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2836714)										
ES2002677-001	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	
ES2003046-001	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	
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2836718)										
ES2003147-002	BH116_0.6-0.65	---	EP071: >C16 - C34 Fraction	100	mg/kg	180	130	28.5	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	
ES2003046-008	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: BTEXN (QC Lot: 2836694)										



Sub-Matrix: SOIL									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 2836694) - continued									
ES2003147-001	BH116_0.3-0.4	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
		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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
Sub-Matrix: WATER									
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/074: Total Petroleum Hydrocarbons (QC Lot: 2843462)									
ES2003147-012	QC302	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.00	No Limit
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2843462)									
ES2003147-012	QC302	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2843462)									
ES2003147-012	QC302	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	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report		
				Result	Spike Concentration	Spike Recovery (%)	LCS	Low
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2839957)								
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	96.2	83.0	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	102	76.0	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.0	86.0	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.4	80.0	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	90.6	87.0	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	81.4	80.0	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2839956)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.9	70.0	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2836713)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	105	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2836716)								
EP068: alpha-BHC	319-84-6	0.05	ng/kg	<0.05	0.5 mg/kg	102	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	ng/kg	<0.05	0.5 mg/kg	103	65.0	117
EP068: beta-BHC	319-85-7	0.05	ng/kg	<0.05	0.5 mg/kg	103	67.0	119
EP068: gamma-BHC	58-89-9	0.05	ng/kg	<0.05	0.5 mg/kg	104	68.0	116
EP068: delta-BHC	319-86-8	0.05	ng/kg	<0.05	0.5 mg/kg	104	65.0	117
EP068: Heptachlor	76-44-8	0.05	ng/kg	<0.05	0.5 mg/kg	102	67.0	115
EP068: Aldrin	309-00-2	0.05	ng/kg	<0.05	0.5 mg/kg	108	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	ng/kg	<0.05	0.5 mg/kg	98.3	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	ng/kg	<0.05	0.5 mg/kg	105	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	ng/kg	<0.05	0.5 mg/kg	108	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	ng/kg	<0.05	0.5 mg/kg	106	64.0	116
EP068: Dieldrin	60-57-1	0.05	ng/kg	<0.05	0.5 mg/kg	98.1	66.0	116
EP068: 4,4'-DDE	72-55-9	0.05	ng/kg	<0.05	0.5 mg/kg	106	67.0	115
EP068: Endrin	72-20-8	0.05	ng/kg	<0.05	0.5 mg/kg	102	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	ng/kg	<0.05	0.5 mg/kg	99.2	69.0	115
EP068: 4,4'-DDD	72-54-8	0.05	ng/kg	<0.05	0.5 mg/kg	99.4	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	ng/kg	<0.05	0.5 mg/kg	81.0	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	ng/kg	<0.05	0.5 mg/kg	107	62.0	124
EP068: 4,4'-DDT	50-29-3	0.2	ng/kg	<0.2	0.5 mg/kg	101	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	ng/kg	<0.05	0.5 mg/kg	105	64.0	122
EP068: Methoxychlor	72-43-5	0.2	ng/kg	<0.2	0.5 mg/kg	100	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2836716)								



Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2836716) - continued									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	83.1	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	105	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	76.7	76.7	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	89.7	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	97.4	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	90.4	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	90.4	90.4	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	92.5	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	93.8	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	97.6	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	89.9	89.9	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.8	83.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	87.0	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	96.1	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	80.0	80.0	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	100	100	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	93.5	68.0	120
EP068: Carbofenthoion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	101	101	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	91.4	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2836715)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	91.2	91.2	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.9	94.9	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	96.1	96.1	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	97.1	97.1	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.5	97.5	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	93.1	93.1	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	95.3	95.3	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	98.0	98.0	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.1	93.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.6	97.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	95.9	95.9	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	89.1	89.1	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.8	92.8	70.0	126
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	95.2	95.2	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	94.0	94.0	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	92.2	92.2	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2836719)									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	114	114	77.0	125



Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
				Result	Concentration	Spike Recovery (%)	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2836719) - continued									
EP075(SIM): Acenaphthylene	208-96-8	0.5	ng/kg	<0.5	6 mg/kg	114	72.0	124	124
EP075(SIM): Acenaphthene	83-32-9	0.5	ng/kg	<0.5	6 mg/kg	112	73.0	127	127
EP075(SIM): Fluorene	86-73-7	0.5	ng/kg	<0.5	6 mg/kg	114	72.0	126	126
EP075(SIM): Phenanthrene	85-01-8	0.5	ng/kg	<0.5	6 mg/kg	119	75.0	127	127
EP075(SIM): Anthracene	120-12-7	0.5	ng/kg	<0.5	6 mg/kg	121	77.0	127	127
EP075(SIM): Fluoranthene	206-44-0	0.5	ng/kg	<0.5	6 mg/kg	120	73.0	127	127
EP075(SIM): Pyrene	129-00-0	0.5	ng/kg	<0.5	6 mg/kg	125	74.0	128	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	ng/kg	<0.5	6 mg/kg	109	69.0	123	123
EP075(SIM): Chrysene	218-01-9	0.5	ng/kg	<0.5	6 mg/kg	113	75.0	127	127
EP075(SIM): Benzo(b+h)fluoranthene	205-99-2	0.5	ng/kg	<0.5	6 mg/kg	111	68.0	116	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	ng/kg	<0.5	6 mg/kg	110	74.0	126	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	ng/kg	<0.5	6 mg/kg	113	70.0	126	126
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	ng/kg	<0.5	6 mg/kg	107	61.0	121	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	ng/kg	<0.5	6 mg/kg	103	62.0	118	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	ng/kg	<0.5	6 mg/kg	103	63.0	121	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2836694)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.5	68.4	128	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2836714)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	105	75.0	129	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	107	77.0	131	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	106	71.0	129	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2836718)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	108	75.0	129	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	117	77.0	131	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	115	71.0	129	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836694)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.8	68.4	128	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836714)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	103	77.0	125	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	103	74.0	138	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	111	63.0	131	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836718)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	112	77.0	125	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	113	74.0	138	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	118	63.0	131	131
EP080: BTEXN (QCLot: 2836694)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62.0	116	116



Sub-Matrix: SOIL				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	Spike Recovery (%)	LCS	Low	High
EP080: BTEXN (QCLot: 2836694) - continued									
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.5	94.5	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.2	94.2	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	96.2	96.2	66.0	118
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.2	97.2	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.6	97.6	63.0	119

Sub-Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	Spike Recovery (%)	LCS	Low	High
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2843462)									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	94.7	94.7	75.0	127
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2843462)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.5	95.5	75.0	127
EP080: BTEXN (QCLot: 2843462)									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	102	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	97.3	97.3	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	102	102	70.0	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	96.4	96.4	69.0	121
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	102	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	105	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					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike		Spike Recovery (%)		Recovery Limits (%)	
				Concentration	MS	Low	High		
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2839957)									
EM2001381-001	Anonymous								
		EG005T: Arsenic	7440-38-2	50 mg/kg	89.0	70.0	130		
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.5	70.0	130		
		EG005T: Chromium	7440-47-3	50 mg/kg	88.5	70.0	130		
		EG005T: Copper	7440-50-8	250 mg/kg	78.3	70.0	130		
		EG005T: Lead	7439-92-1	250 mg/kg	85.2	70.0	130		
		EG005T: Nickel	7440-02-0	50 mg/kg	77.5	70.0	130		
		EG005T: Zinc	7440-66-6	250 mg/kg	72.4	70.0	130		
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2839956)									



Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
				MS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2839956) - continued							
EM2001381-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	80.7	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2836713)							
ES2002677-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	92.0	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2836716)							
ES2002677-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.3	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	102	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	103	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	80.4	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	93.1	70.0	130
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	87.6	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2836715)							
ES2002677-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	93.2	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	80.4	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	72.7	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	74.6	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	72.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2836715)							
ES2002677-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.2	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.2	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2836719)							
ES2003046-008	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	114	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	122	70.0	130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2836694)							
ES2003147-001	BH116_0.3-0.4	EP080: C6 - C9 Fraction	----	32.5 mg/kg	109	70.0	130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2836714)							
ES2002677-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	96.1	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	106	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	126	52.0	132
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2836718)							
ES2003046-008	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	94.8	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	111	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	114	52.0	132
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836694)							
ES2003147-001	BH116_0.3-0.4	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	108	70.0	130
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836714)							
ES2002677-001	Anonymous						



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Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836714) - continued							
ES2002677-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	104	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	118	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	118	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2836718)							
ES2003046-008	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	102	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	114	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	106	52.0	132
EP080: BTEXN (QCLot: 2836694)							
ES2003147-001	BH116_0.3-0.4	EP080: Benzene	71-43-2	2.5 mg/kg	117	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	104	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	104	70.0	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	104	70.0	130
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	106	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.1	70.0	130
Sub-Matrix: WATER							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2843462)							
ES2003147-012	QC302	EP080: C6 - C9 Fraction	----	325 µg/L	92.5	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2843462)							
ES2003147-012	QC302	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	93.5	70.0	130
EP080: BTEXN (QCLot: 2843462)							
ES2003147-012	QC302	EP080: Benzene	71-43-2	25 µg/L	88.7	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	93.0	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	101	70.0	130
		EP080: ortho-Xylene	106-42-3	25 µg/L	102	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	107	70.0	130



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Client	: AECOM Australia Pty Ltd	Laboratory	: Environmental Division Sydney
Contact	: MR ALEX LATHAM	Telephone	: +61 2 8784 8555
Project	: 60623599_1.1	Date Samples Received	: 30-Jan-2020
Site	: ----	Issue Date	: 07-Feb-2020
Sampler	: Kurtis Wathen, REBEKAH PANOZZO	No. of samples received	: 38
Order number	: 60623599_1.1	No. of samples analysed	: 13

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.

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	Date analysed	Due for analysis
EA055: Moisture Content (Dried @ 105-110°C)					
Soil Glass Jar - Unpreserved (EA055)					
BH110_0.35-0.36, BH110_1.2-1.3	28-Jan-2020	----	----	04-Feb-2020	11-Feb-2020
BH110_0.4-0.6,					✓
Soil Glass Jar - Unpreserved (EA055)					
BH115_0.6-0.7,	29-Jan-2020	----	----	04-Feb-2020	12-Feb-2020
BH115_2.5-2.6					✓
Soil Glass Jar - Unpreserved (EA055)					
BH116_0.3-0.4, BH117_0.3-0.4, BH117_1.3-1.4, BH111_2.2-2.3, BH111_0.65-0.75	30-Jan-2020	----	----	04-Feb-2020	13-Feb-2020
BH116_0.6-0.65, BH117_1.3-1.4, BH111_0.65-0.75					✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)					
BH110_0.35-0.36,	28-Jan-2020	----	----	04-Feb-2020	26-Jul-2020
BH110_0.4-0.6					✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)					
BH115_0.6-0.7	29-Jan-2020	----	----	04-Feb-2020	27-Jul-2020
BH116_0.3-0.4, BH117_0.3-0.4, BH111_0.3-0.4,	30-Jan-2020	----	----	04-Feb-2020	28-Jul-2020
BH116_0.6-0.65, BH117_1.3-1.4, BH111_0.65-0.75					✓
EA200N: Asbestos Quantification (non-NATA)					
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)					
BH110_0.35-0.36,	28-Jan-2020	----	----	04-Feb-2020	26-Jul-2020
BH110_0.4-0.6					✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)					
BH115_0.6-0.7	29-Jan-2020	----	----	04-Feb-2020	27-Jul-2020
BH116_0.3-0.4, BH117_1.3-1.4, BH111_0.3-0.4,	30-Jan-2020	----	----	04-Feb-2020	28-Jul-2020
BH116_0.6-0.65, BH117_1.3-1.4, BH111_0.65-0.75					✓



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

Method	Sample Date	Extraction / Preparation		Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH110_0.35-0.36, BH110_1.2-1.3	28-Jan-2020	04-Feb-2020	26-Jul-2020	✓	04-Feb-2020	26-Jul-2020	✓
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	04-Feb-2020	27-Jul-2020	✓	04-Feb-2020	27-Jul-2020	✓
BH116_0.6-0.65, BH117_1.3-1.4, BH117_2.2-2.3, BH111_0.65-0.75	30-Jan-2020	04-Feb-2020	28-Jul-2020	✓	04-Feb-2020	28-Jul-2020	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH110_0.35-0.36, BH110_1.2-1.3	28-Jan-2020	04-Feb-2020	25-Feb-2020	✓	06-Feb-2020	25-Feb-2020	✓
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	04-Feb-2020	26-Feb-2020	✓	06-Feb-2020	26-Feb-2020	✓
BH116_0.6-0.65, BH117_1.3-1.4, BH111_0.3-0.4, BH111_0.65-0.75	30-Jan-2020	04-Feb-2020	27-Feb-2020	✓	06-Feb-2020	27-Feb-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH115_0.6-0.7	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH116_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH115_0.6-0.7	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH116_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH115_0.6-0.7	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓
BH116_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	04-Feb-2020	12-Mar-2020	✓



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

Method	Sample Date	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Evaluation	Due for analysis
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH110_0.4-0.6, BH110_1.2-1.3	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH115_0.6-0.7	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH117_0.3-0.4, BH117_1.3-1.4, BH111_0.3-0.4, BH111_0.65-0.75	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH116_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	12-Mar-2020
EP080/071: Total Petroleum Hydrocarbons					
Soil Glass Jar - Unpreserved (EP071)					
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	11-Feb-2020
Soil Glass Jar - Unpreserved (EP071)					
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Feb-2020
Soil Glass Jar - Unpreserved (EP071)					
BH116_0.3-0.4, BH117_2.2-2.3, BH111_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH116_0.3-0.4, BH117_2.2-2.3,	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	13-Feb-2020
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
Soil Glass Jar - Unpreserved (EP071)					
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	✓	11-Feb-2020
Soil Glass Jar - Unpreserved (EP071)					
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	✓	12-Feb-2020
Soil Glass Jar - Unpreserved (EP071)					
BH116_0.3-0.4, BH117_2.2-2.3, BH111_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	12-Mar-2020
Soil Glass Jar - Unpreserved (EP080)					
BH116_0.3-0.4, BH117_2.2-2.3,	30-Jan-2020	01-Feb-2020	13-Feb-2020	✓	13-Feb-2020



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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	Due for analysis	Evaluation
EP080: BTEXN						
Soil Glass Jar - Unpreserved (EP080)	BH110_0.35-0.36	28-Jan-2020	01-Feb-2020	11-Feb-2020	06-Feb-2020	11-Feb-2020 ✓
Soil Glass Jar - Unpreserved (EP080)	BH115_0.6-0.7, BH115_2.5-2.6	29-Jan-2020	01-Feb-2020	12-Feb-2020	06-Feb-2020	12-Feb-2020 ✓
Soil Glass Jar - Unpreserved (EP080)	BH116_0.3-0.4, BH117_2.2-2.3, BH117_0.3-0.4	30-Jan-2020	01-Feb-2020	13-Feb-2020	06-Feb-2020	13-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	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons						
Amber VOC Vial - Sulfuric Acid (EP080)	QC302	30-Jan-2020	05-Feb-2020	13-Feb-2020	05-Feb-2020	13-Feb-2020 ✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber VOC Vial - Sulfuric Acid (EP080)	QC302	30-Jan-2020	05-Feb-2020	13-Feb-2020	05-Feb-2020	13-Feb-2020 ✓
EP080: BTEXN						
Amber VOC Vial - Sulfuric Acid (EP080)	QC302	30-Jan-2020	05-Feb-2020	13-Feb-2020	05-Feb-2020	13-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	Method	Count		Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected		
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	20	10.00	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	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.00	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	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.00	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	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.00	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	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	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							
Analytical Methods							
Method		Count		Rate (%)		Evaluation	
		QC	Regular	Actual	Expected		Quality Control Specification



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Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	QC	Count		Rate (%)		Quality Control Specification
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
TRH Volatiles/BTEX	EP080	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH Volatiles/BTEX	EP080	1	3	33.33	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
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 (SnCl ₂) (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 SnCl ₂ 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)



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Work Order : ES2003147
Client : AECOM Australia Pty Ltd
Project : 60623599_1.1

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 : ES2003147

Client : AECOM Australia Pty Ltd
Contact : MR ALEX LATHAM
Address : PO BOX Q410 QVB POST OFFICE SYDNEY NSW, AUSTRALIA 2000
Laboratory : Environmental Division Sydney
Contact : Brenda Hong
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
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 : 30-Jan-2020 15:00
Issue Date : 05-Feb-2020
Client Requested Due Date : 06-Feb-2020
Scheduled Reporting Date : 06-Feb-2020

Delivery Details

Mode of Delivery : Undefined
Security Seal : Not Available
No. of coolers/boxes : 2
Temperature : 13.1 - Ice present
Receipt Detail :
No. of samples received / analysed : 38 / 13

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 an updated SRN to include TPH (C6-C9)/BTEXN analysis on sample QC302.
Samples 27-35 have been transferred from ES2002766, as per Alex Latham.
Please note that sample QC107 contained two soil jars. Samples BH117_3.9-4.0 and BH111_4.3-4.4 did not contain an Asbestos bag. Two VOC vials were received for sample QC302 (30/1/20), however no VOC vial was received for sample QC302(29/01/2020) - both VOC vials had the sampling date of 30/01/20. Sample BH115_4.4-4.6 had the depth of 4.4-4.5 on the soil jar. Samples BH111_1.5-1.6 and BH110_6.1-6.2 did not received soil jars. Samples BH111_1.4-1.5, BH115_0.7-0.8 and QC301 were received extra.
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.

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

ES2003147-018 : [29-Jan-2020] : BH115_4.4-4.5 - BH115_4.4-4.5

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
ES2003147-001	30-Jan-2020 00:00	BH116_0.3-0.4		□	□			□	□
ES2003147-002	30-Jan-2020 00:00	BH116_0.6-0.65		□	□				□
ES2003147-003	30-Jan-2020 00:00	BH116_0.75-0.78	□						
ES2003147-004	30-Jan-2020 00:00	QC107	□						
ES2003147-005	30-Jan-2020 00:00	BH117_0.3-0.4		□	□	□	□		
ES2003147-006	30-Jan-2020 00:00	BH117_0.8-0.9	□						
ES2003147-007	30-Jan-2020 00:00	BH117_1.3-1.4		□	□	□	□		
ES2003147-008	30-Jan-2020 00:00	BH117_2.2-2.3		□					□
ES2003147-009	30-Jan-2020 00:00	BH117_3.1-3.2	□						
ES2003147-010	30-Jan-2020 00:00	BH117_3.9-4.0	□						
ES2003147-011	30-Jan-2020 00:00	BH117_4.4-4.5	□						
ES2003147-013	29-Jan-2020 00:00	BH115_0.1-0.2	□						
ES2003147-014	29-Jan-2020 00:00	BH115_0.6-0.7		□	□			□	□
ES2003147-015	29-Jan-2020 00:00	BH115_1.0-1.1	□						
ES2003147-016	29-Jan-2020 00:00	BH115_2.5-2.6		□					□
ES2003147-017	29-Jan-2020 00:00	BH115_3.8-3.9	□						
ES2003147-018	29-Jan-2020 00:00	BH115_4.4-4.5 BH115...	□						
ES2003147-019	30-Jan-2020 00:00	BH111_2.3-2.4	□						
ES2003147-020	30-Jan-2020 00:00	BH111_3.2-3.3	□						
ES2003147-021	30-Jan-2020 00:00	BH111_4.3-4.5	□						
ES2003147-022	30-Jan-2020 00:00	BH111_0.15-0.20	□						
ES2003147-023	30-Jan-2020 00:00	BH111_0.3-0.4		□	□				□
ES2003147-024	30-Jan-2020 00:00	BH111_0.65-0.75		□	□	□	□		
ES2003147-025	30-Jan-2020 00:00	BH111_1.5-1.6	□						
ES2003147-026	29-Jan-2020 00:00	BH113_1.0-1.1	□						
ES2003147-027	28-Jan-2020 00:00	QC104	□						
ES2003147-028	28-Jan-2020 00:00	BH110_0.35-0.36		□	□			□	□
ES2003147-029	28-Jan-2020 00:00	BH110_0.4-0.6		□	□	□	□		
ES2003147-030	28-Jan-2020 00:00	BH110_0.9-1.0	□						
ES2003147-031	28-Jan-2020 00:00	BH110_1.2-1.3		□	□	□			
ES2003147-032	28-Jan-2020 00:00	BH110_5-5.1	□						
ES2003147-033	28-Jan-2020 00:00	BH110_6.1-6.2	□						
ES2003147-034	28-Jan-2020 00:00	BH108_4.1-4.2	□						



			(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
ES2003147-035	30-Jan-2020 00:00	QC108	<input type="checkbox"/>						
ES2003147-036	30-Jan-2020 00:00	BH111_1.4-1.5	<input type="checkbox"/>						
ES2003147-037	29-Jan-2020 00:00	BH115_0.7-0.8	<input type="checkbox"/>						

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) WATER No analysis requested	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2003147-012	30-Jan-2020 00:00	QC302		<input type="checkbox"/>
ES2003147-038	29-Jan-2020 00:00	QC301	<input type="checkbox"/>	

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)

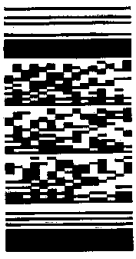
Email alex.latham@aecom.com

- Electronic SRN for EQUIS (ESRN_EQUIS)

Email alex.latham@aecom.com

updated coc rec. 3/1/20 @ 3pm.
 60623599 Burrows IE 1 of 3

Environmental Division
 Sydney
 Work Order Reference
ES2003147



Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

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

Laboratory Details
 Lab Name: ~~Environment~~ **AUS**
 Lab Address: ~~127 Kenley St, Chatswood~~ **151 Mallett St, Sydney**
 Contact Name: ~~Springer~~ **B Hong**
 Lab. Ref. **TEL 200-140**

AECOM Project Manager: Alex Latham
 AECOM Project Manager Email: Alex.Latham@aecom.com
 Sampled By: Kurtis Wather / Rebekah Panozzo
 AECOM Project No: 60623599_1.1

Project Name: Burrows IE
 PO No

Tel: 99706200
 Fax:
 Preliminary Report by:
 Final Report by:
 Lab Quote No:

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)

2. Fast TAT Guarantee Required?

3. Is any sediment layer present in waters to be excluded from extractions?

4. % extraneous material removed from samples to be reported as per NEPM 5.1.17

5. Special storage requirements? (details:)

Lab. ID	Sample ID	Sampling Date	Matrix			Preservation			Container (No. & type)	Analysis Request						
			soil	water	other	acid	ice	other								
1	BH116-0.2-0.4	30/1/20	Y						PAH	TRH C6-C40, BTEXN	8 Metals	OCP, OPP, PCB	Asbestos (EM200)	HOLD	TEL 200-140	
2	BH116-0.5-0.75															
3	BH116-0.75-0.75															
4	QC107															
-	BH117-2.2-2.3															
-	BH117-3.1-3.3															
5	BH117-0.3-0.4															
6	BH117-0.8-0.9															
7	BH117-1.3-1.4															
8	BH117-2.2-2.3															
9	BH117-3.1-3.2															
10	BH117-3.9-4.0															
11	BH117-4.4-4.5															
12	QC302															

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

Relinquished by: **A. Panozzo** Date: **19/07/2019** Signed: **[Signature]**

Relinquished by: **[Signature]** Date: **30/1/20** Signed: **[Signature]**

Received by: **[Signature]** Date: **30/1/20** Signed: **[Signature]**

Attached By PO / Internal Sheet:

2 of 3

CHAIN OF CUSTODY

AECOM Australia Pty Ltd

Sydney (420 George St)

T: 02 8834 0451

Laboratory Details

Lab Name: ~~EnviroLab~~ **ALS**
 Lab Address: ~~19 Ardenway St, Cheltenham~~ **Smithfield**
 Contact Name: ~~Springer~~ **B Hong**
 Lab Ref: **PO No. see project #**

Tel: 9840-6300

Final Report by:
 Lab Quote No:

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

Sampled By: Kurtis Wathen / Rebekah Panozzo

Project Name: Burrows IE

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)

2. Fast TAT Guarantee Required?

3. Is any sediment layer present in waters to be excluded from extractions?

4. % extraneous material removed from samples to be reported as per NEPM 5.1.17

5. Special storage requirements? (details:

Lab ID	Sample ID	Sampling Date	Matrix		Preservation			Container (No. & type)	Analysis Request					Other					
			soil	water	other	filled	acid		ice	other	TRH C6-C40, BTEXN	PAH	8 Metals		OCP, OPP, PCB	Asbestos (EX2002)	TRH Scio - C40		
13	BH115-0.1-0.2	29/11	Y					Y											
14	BH115-0.6-0.7																		
15	BH115-1.0-1.1																		
16	BH115-2.5-2.6																		
17	BH115-3.8-3.9																		
SPIL -	QC302				Y														
18	BH115-4.4-4.6 (4.4-4.5)		Y																
19	BH111-2.3-2.4	30/11	X																
20	BH111-3.2-3.3																		
21	BH111-4.3-4.5																		
22	BH111-0.15-0.20																		
23	BH111-0.3-0.4																		
24	BH111-0.65-0.75																		
SPIL -	QC106																		

Comments: 36 (1)

Relinquished by: [Signature] Date: 19/07/2019

Received by: [Signature] Date: 25/11/2019

Signed: [Signature] Date: 25/11/2019

Signed: [Signature] Date: 25/11/2019

Signed: [Signature] Date: 25/11/2019

25 BH111-1.5-1.6

Nojar JB

V (HOLD)

same date as both QC302 & QC302

different date to previous QC302



Page : 2 of 13
Work Order : ES2003366
Client : AECOM Australia Pty Ltd
Project : 60623599_1.1-Burrows IE

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

∅ = 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 (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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.0mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP071: Results of samples QC111 and QC114 have been confirmed by re-extraction and re-analysis.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
- Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
- The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
- Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
- All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH103_0.15-0.25 03-Feb-2020 00:00 ES2003366-001	BH103_0.85-0.95 03-Feb-2020 00:00 ES2003366-002	BH103_2.0-2.1 03-Feb-2020 00:00 ES2003366-004	BH104_0.8-0.9 03-Feb-2020 00:00 ES2003366-008	BH104_1.6-1.7 03-Feb-2020 00:00 ES2003366-010
EA055: Moisture Content (Dried @ 105-110°C)	4.6	11.6	26.0	11.3	26.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	No	----	No	No	No
Asbestos Type	-	----	-	-	-
Asbestos (Trace)	No	----	No	No	No
Sample weight (dry)	499	----	446	531	431
Synthetic Mineral Fibre	No	----	No	No	No
Organic Fibre	No	----	No	No	No
APPROVED IDENTIFIER:	A. SMYLYIE	----	A. SMYLYIE	A. SMYLYIE	A. SMYLYIE
EA200N: Asbestos Quantification (non-NATA)					
∅ Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	<math><0.0004</math>	----	<math><0.0004</math>	<math><0.0004</math>	<math><0.0004</math>
∅ Asbestos (Fines and Fibrous FA+AF)	<math><0.001</math>	----	<math><0.001</math>	<math><0.001</math>	<math><0.001</math>
∅ Asbestos Containing Material	<math><0.1</math>	----	<math><0.1</math>	<math><0.1</math>	<math><0.1</math>
∅ Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	<math><0.01</math>	----	<math><0.01</math>	<math><0.01</math>	<math><0.01</math>
∅ Weight Used for % Calculation	0.499	----	0.446	0.531	0.431
∅ Fibrous Asbestos >7mm	<math><0.0004</math>	----	<math><0.0004</math>	<math><0.0004</math>	<math><0.0004</math>
EG005(ED093)T: Total Metals by ICP-AES					
Arsenic	<math><5</math>	40	66	10	31
Cadmium	<math><1</math>	<math><1</math>	13	<math><1</math>	5
Chromium	6	9	34	8	42
Copper	10	93	2540	53	540
Lead	19	319	1090	171	1610
Nickel	3	12	39	19	66
Zinc	31	304	17500	170	3720
EG035T: Total Recoverable Mercury by FIMS					
Mercury	<math><0.1</math>	0.7	1.4	0.7	1.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>
Acenaphthylene	<math><0.5</math>	1.3	<math><0.5</math>	0.6	0.7
Acenaphthene	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>
Fluorene	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>	<math><0.5</math>
Phenanthrene	<math><0.5</math>	4.7	1.7	2.4	3.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH103_0.15-0.25 03-Feb-2020 00:00 ES2003366-001	BH103_0.85-0.95 03-Feb-2020 00:00 ES2003366-002	BH103_2.0-2.1 03-Feb-2020 00:00 ES2003366-004	BH104_0.8-0.9 03-Feb-2020 00:00 ES2003366-008	BH104_1.6-1.7 03-Feb-2020 00:00 ES2003366-010
	Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued					
Anthracene	120-12-7 0.5 mg/kg	1.5	<0.5	0.8	1.0
Fluoranthene	206-44-0 0.5 mg/kg	9.5	5.3	4.8	6.2
Pyrene	129-00-0 0.5 mg/kg	8.9	4.6	4.6	6.2
Benz(a)anthracene	56-55-3 0.5 mg/kg	4.3	3.6	2.2	3.0
Chrysene	218-01-9 0.5 mg/kg	3.9	3.3	1.9	2.7
Benzo(b+J)fluoranthene	205-99-2 0.5 mg/kg	5.2	4.9	2.7	4.4
Benzo(k)fluoranthene	207-08-9 0.5 mg/kg	2.1	1.7	0.9	1.4
Benzo(a)pyrene	50-32-8 0.5 mg/kg	4.6	3.4	2.3	3.6
Indeno(1,2,3-cd)pyrene	193-39-5 0.5 mg/kg	2.1	1.5	1.0	1.8
Dibenz(a,h)anthracene	53-70-3 0.5 mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2 0.5 mg/kg	2.7	1.8	1.4	2.5
^ Sum of polycyclic aromatic hydrocarbons	----- 0.5 mg/kg	50.8	31.8	25.6	36.5
^ Benzo(a)pyrene TEQ (zero)	----- 0.5 mg/kg	6.0	4.6	3.0	4.7
^ Benzo(a)pyrene TEQ (half LOR)	----- 0.5 mg/kg	6.3	4.9	3.3	5.0
^ Benzo(a)pyrene TEQ (LOR)	----- 0.5 mg/kg	6.5	5.1	3.5	5.2
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	----- 10 mg/kg	-----	-----	<10	<10
C10 - C14 Fraction	----- 50 mg/kg	-----	-----	<50	<50
C15 - C28 Fraction	----- 100 mg/kg	-----	-----	470	760
C29 - C36 Fraction	----- 100 mg/kg	-----	-----	170	370
^ C10 - C36 Fraction (sum)	----- 50 mg/kg	-----	-----	640	1130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	C6_C10 10 mg/kg	-----	-----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX 10 mg/kg	-----	-----	<10	<10
>C10 - C16 Fraction	----- 50 mg/kg	-----	-----	<50	<50
>C16 - C34 Fraction	----- 100 mg/kg	-----	-----	580	1000
>C34 - C40 Fraction	----- 100 mg/kg	-----	-----	<100	210
^ >C10 - C40 Fraction (sum)	----- 50 mg/kg	-----	-----	580	1210
^ >C10 - C16 Fraction minus Naphthalene (F2)	----- 50 mg/kg	-----	-----	<50	<50
EP080: BTEXN					
Benzene	71-43-2 0.2 mg/kg	-----	-----	<0.2	<0.2
Toluene	108-88-3 0.5 mg/kg	-----	-----	<0.5	<0.5
Ethylbenzene	100-41-4 0.5 mg/kg	-----	-----	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH103_0.15-0.25	BH103_0.85-0.95	BH103_2.0-2.1	BH104_0.8-0.9	BH104_1.6-1.7
	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00
	ES2003366-001	ES2003366-002	ES2003366-004	ES2003366-008	ES2003366-010
	Result	Result	Result	Result	Result
EP080: BTEXN - Continued					
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.5	%	85.2	85.5
2-Chlorophenol-D4	93951-73-6	0.5	%	88.9	89.6
2,4,6-Tribromophenol	118-79-6	0.5	%	72.2	72.6
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.5	%	96.9	95.7
Anthracene-d10	1719-06-8	0.5	%	87.6	89.8
4-Terphenyl-d14	1718-51-0	0.5	%	102	100
EP080S: TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	17060-07-0	0.2	%	94.3	94.0
Toluene-D8	2037-26-5	0.2	%	93.7	105
4-Bromofluorobenzene	460-00-4	0.2	%	83.1	89.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH104_2.0-2.2	QC111	BH100_0.7-0.8	BH100_0.8-0.9	BH114_0.45-0.55
	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00
	ES2003366-011	ES2003366-014	ES2003366-016	ES2003366-017	ES2003366-021
	Result	Result	Result	Result	Result
Moisture Content	20.2	28.2	33.6	28.5	16.1
Moisture Content	0.1	0.1	0.1	0.1	0.1
Moisture Content	1.0	1.0	1.0	1.0	1.0
EA055: Moisture Content (Dried @ 105-110°C)					
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	1332-21-4	1332-21-4	1332-21-4	1332-21-4	1332-21-4
Asbestos Type	-	-	-	-	-
Asbestos (Trace)	5	5	5	5	5
Sample weight (dry)	0.01	0.01	0.01	0.01	0.01
Synthetic Mineral Fibre	0.1	0.1	0.1	0.1	0.1
Organic Fibre	0.1	0.1	0.1	0.1	0.1
APPROVED IDENTIFIER:	-	-	-	-	-
EA200N: Asbestos Quantification (non-NATA)					
Asbestos (Fines and Fibrous >7mm)	1332-21-4	1332-21-4	1332-21-4	1332-21-4	1332-21-4
Asbestos (Fines and Fibrous FA+AF)	0.0004	0.0004	0.0004	0.0004	0.0004
Asbestos Containing Material	0.001	0.001	0.001	0.001	0.001
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	0.01	0.01	0.01	0.01	0.01
Weight Used for % Calculation	0.0001	0.0001	0.0001	0.0001	0.0001
Fibrous Asbestos >7mm	0.0004	0.0004	0.0004	0.0004	0.0004
EG005(ED093)T: Total Metals by ICP-AES					
Arsenic	7440-38-2	35	32	12	30
Cadmium	7440-43-9	4	<1	3	16
Chromium	7440-47-3	32	116	8	186
Copper	7440-50-8	685	180	265	1190
Lead	7439-92-1	1900	1230	278	4520
Nickel	7440-02-0	65	23	11	592
Zinc	7440-66-6	3350	593	428	2890
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	1.2	1.7	2.5	1.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	91-20-3	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	1.0	<0.5	<0.5
Acenaphthene	83-32-9	0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH104_2.0-2.2 03-Feb-2020 00:00 ES2003366-011	QC111 03-Feb-2020 00:00 ES2003366-014	BH100_0.7-0.8 03-Feb-2020 00:00 ES2003366-016	BH100_0.8-0.9 03-Feb-2020 00:00 ES2003366-017	BH114_0.45-0.55 03-Feb-2020 00:00 ES2003366-021	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued						
Phenanthrene	85-01-8	0.5	mg/kg	2.2	4.3	<0.5
Anthracene	120-12-7	0.5	mg/kg	0.7	1.4	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	4.9	7.6	0.8
Pyrene	129-00-0	0.5	mg/kg	4.9	7.1	0.8
Benz(a)anthracene	56-55-3	0.5	mg/kg	2.4	3.5	0.6
Chrysene	218-01-9	0.5	mg/kg	2.3	2.9	<0.5
Benzo(b+)]fluoranthene	205-99-2	0.5	mg/kg	3.8	4.0	0.8
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	1.3	1.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	3.1	3.6	0.6
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	1.6	1.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	2.2	1.8	<0.5
Sum of polycyclic aromatic hydrocarbons (LO)		0.5	mg/kg	29.9	40.2	3.6
Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	4.0	4.7	0.7
Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	4.3	4.9	1.0
Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	4.6	5.2	1.4
EP080/071: Total Petroleum Hydrocarbons						
C6 - C9 Fraction		10	mg/kg	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	650	150	230
C29 - C36 Fraction		100	mg/kg	390	120	210
C10 - C36 Fraction (sum)		50	mg/kg	1040	270	440
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 F Fractions						
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10
>C10 - C16 Fraction		50	mg/kg	<50	<50	<50
>C16 - C34 Fraction		100	mg/kg	930	230	390
>C34 - C40 Fraction		100	mg/kg	200	<100	110
>C10 - C40 Fraction (sum)		50	mg/kg	1130	230	500
>C10 - C16 Fraction minus Naphthalene (F2)		50	mg/kg	<50	<50	<50
EP080: BTEXN						
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH104_2.0-2.2	QC111	BH100_0.7-0.8	BH100_0.8-0.9	BH114_0.45-0.55
	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00
	ES2003366-011	ES2003366-014	ES2003366-016	ES2003366-017	ES2003366-021
	Result	Result	Result	Result	Result
EP080: BTEXN - Continued					
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.5	%	83.6	88.4
2-Chlorophenol-D4	93951-73-6	0.5	%	88.1	92.8
2,4,6-Tribromophenol	118-79-6	0.5	%	74.6	69.8
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.5	%	92.9	99.8
Anthracene-d10	1719-06-8	0.5	%	86.6	92.9
4-Terphenyl-d14	1718-51-0	0.5	%	98.5	105
EP080S: TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	17060-07-0	0.2	%	84.3	105
Toluene-D8	2037-26-5	0.2	%	86.7	114
4-Bromofluorobenzene	460-00-4	0.2	%	85.7	89.9



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	QC114	BH114_1.3-1.4	QC114	QC114	QC114
	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00
	ES2003366-024	ES2003366-023	ES2003366-024	ES2003366-024	ES2003366-024
	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)					
Moisture Content	20.6	37.2	20.6	20.6	20.6
EG005(ED093): Total Metals by ICP-AES					
Arsenic	33	55	33	33	33
Cadmium	55	23	55	55	55
Chromium	234	1240	234	234	234
Copper	1570	2870	1570	1570	1570
Lead	6150	4600	6150	6150	6150
Nickel	456	885	456	456	456
Zinc	3310	9880	3310	3310	3310
EG035T: Total Recoverable Mercury by FIMS					
Mercury	1.3	2.8	1.3	1.3	1.3
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.8	<0.5	0.8	0.8	0.8
Pyrene	0.7	<0.5	0.7	0.7	0.7
Benz(a)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+)fluoranthene	0.6	<0.5	0.6	0.6	0.6
Benzo(k)fluoranthene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	2.1	<0.5	2.1	2.1	2.1
Benzo(a)pyrene TEQ (zero)	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (half LOR)	0.6	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (LOR)	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	QC114	BH114_1.3-1.4	QC114	QC114	QC114
	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00	03-Feb-2020 00:00
	ES2003366-023	ES2003366-023	ES2003366-024	ES2003366-024	ES2003366-024
	Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued					
C10 - C14 Fraction	50	mg/kg	<50	<50	*****
C15 - C28 Fraction	100	mg/kg	140	160	*****
C29 - C36 Fraction	100	mg/kg	140	160	*****
^ C10 - C36 Fraction (sum)	50	mg/kg	280	320	*****
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 F Fractions					
C6 - C10 Fraction	10	mg/kg	<10	<10	*****
^ C6 - C10 Fraction minus BTEX (F1)	10	mg/kg	<10	<10	*****
>C10 - C16 Fraction	50	mg/kg	<50	<50	*****
>C16 - C34 Fraction	100	mg/kg	240	290	*****
>C34 - C40 Fraction	100	mg/kg	<100	<100	*****
^ >C10 - C40 Fraction (sum)	50	mg/kg	240	290	*****
^ >C10 - C16 Fraction minus Naphthalene (CF2)	50	mg/kg	<50	<50	*****
EP080: BTEXN					
Benzene	71-43-2	0.2	mg/kg	<0.2	*****
Toluene	108-88-3	0.5	mg/kg	<0.5	*****
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	*****
meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	*****
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	*****
^ Sum of BTEX		0.2	mg/kg	<0.2	*****
^ Total Xylenes		0.5	mg/kg	<0.5	*****
Naphthalene	91-20-3	1	mg/kg	<1	*****
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.5	%	88.6	*****
2-Chlorophenol-D4	93951-73-6	0.5	%	92.4	*****
2,4,6-Tribromophenol	118-79-6	0.5	%	73.2	*****
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.5	%	98.3	*****
Anthracene-d10	1719-06-8	0.5	%	93.6	*****
4-Terphenyl-d14	1718-51-0	0.5	%	104	*****
EP080S: TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	17060-07-0	0.2	%	87.6	*****
Toluene-D8	2037-26-5	0.2	%	92.9	*****



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		QC304	
		03-Feb-2020 00:00	
		ES2003366-029	
		Result	
EP080/071: Total Petroleum Hydrocarbons			
C6 - C9 Fraction	20 µg/L	<20	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions			
C6 - C10 Fraction	20 µg/L	<20	
^ C6 - C10 Fraction minus BTEX (F1)	20 µg/L	<20	
EP080: BTEXN			
Benzene	71-43-2	1 µg/L	<1
Toluene	108-88-3	2 µg/L	<2
Ethylbenzene	100-41-4	2 µg/L	<2
meta- & para-Xylene	108-38-3	2 µg/L	<2
ortho-Xylene	95-47-6	2 µg/L	<2
∆ Total Xylenes		2 µg/L	<2
∑ Sum of BTEX		1 µg/L	<1
∑ Naphthalene	91-20-3	5 µg/L	<5
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	2 %	85.2
Toluene-D8	2037-26-5	2 %	103
4-Bromofluorobenzene	460-00-4	2 %	106

Analytical Results

Descriptive Results

Sub-Matrix: SOIL		QC304	
		03-Feb-2020 00:00	
		ES2003366-029	
		Result	
EA200: AS 4984 - 2004 Identification of Asbestos in Soils			
EA200: Description	BH103_0.15-0.25 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH103_2.0-2.1 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH104_0.8-0.9 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH104_1.6-1.7 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH100_0.7-0.8 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH100_0.8-0.9 - 03-Feb-2020 00:00	Mid brown soil.	
EA200: Description	BH114_0.45-0.55 - 03-Feb-2020 00:00	Mid brown soil containing one piece of fibrous asbestos fibre board approximately 20x10x5mm and several pieces of asbestos cement sheeting approximately 30x30x5mm with plenty of smaller fragments of fibrous asbestos fibre board.	



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
		Low	High
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			
		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



Page : 2 of 9
 Work Order : ES2003366
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1-Burrows IE

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 NEMP. 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 sample ID	Client sample ID	Method: Compound	Laboratory Duplicate (DUP) Report						
			CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2847589)									
ES2003366-023	BH114_1.3-1.4	EG005T: Copper	7440-50-8	5	mg/kg	2870	3000	4.44	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	4600	3790	19.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	9880	9230	6.86	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	6	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	166	149	10.6	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	24	23	4.92	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	98	83	15.9	0% - 50%
		EG005T: Cadmium	7440-43-9	1	mg/kg	23	27	18.2	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	1240	1200	2.79	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	885	801	9.98	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	55	37	38.9	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2847593)									
ES2003366-002	BH103_0.85-0.95	EA055: Moisture Content	---	0.1	%	11.6	11.7	0.00	0% - 50%
ES2003476-002	Anonymous	EA055: Moisture Content	---	0.1	%	11.1	11.5	3.40	0% - 50%
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: 2847590)									
ES2002853-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2003366-023	BH114_1.3-1.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	2.8	2.5	11.9	0% - 20%
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2841968)									



Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOD	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
Sub-Matrix: SOIL Method: Compound EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2841968) - continued										
ES2003366-001		BH103_0.15-0.25	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
				205-82-3						
			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
ES2003366-024		QC114	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			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	0.8	0.5	43.0	No Limit
			EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	<0.5	36.3	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	0.5	mg/kg	0.6	0.5	0.00	No Limit
				205-82-3						
			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	2.1	1.0	71.0	No Limit
			EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	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 (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2841969)									
ES2003366-001	BH103_0.15-0.25	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
ES2003366-024	QC114	EP071: C15 - C28 Fraction	---	100	mg/kg	160	190	15.6	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	160	170	0.00	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2843136)									
ES2003366-001	BH103_0.15-0.25	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
ES2003463-001	Anonymous	EP080: C6 - C9 Fraction	---	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2841969)									
ES2003366-001	BH103_0.15-0.25	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
ES2003366-024	QC114	EP071: >C16 - C34 Fraction	---	100	mg/kg	290	310	8.44	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: 2843136)									
ES2003366-001	BH103_0.15-0.25	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2003463-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2843136)									
ES2003366-001	BH103_0.15-0.25	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
ES2003463-001	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		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
Sub-Matrix: WATER									
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



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 Work Order : ES2003366
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1-Burrows IE

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
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	2	µg/L	<2	<2	0.00	No Limit
				106-42-3						
		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
		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	2	µg/L	<2	<2	0.00	No Limit
				106-42-3						
ES2003311-007	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
		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	2	µg/L	<2	<2	0.00	No Limit
				106-42-3						
		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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report		Laboratory Control Spike (LCS) Report		
				Result	Spike Concentration	Spike Recovery (%)	LCS	Low
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2847589)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	100	86.0	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.6	83.0	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	100	76.0	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	96.7	86.0	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	93.4	80.0	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	87.0	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	101	80.0	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2847590)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	83.2	70.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2841968)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	100	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	101	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	97.0	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	102	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	100	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	104	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	102	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	92.1	75.0	127
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	88.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.6	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.1	70.0	126
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	75.8	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	71.1	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	78.2	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2841969)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	110	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	109	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	97.3	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2843136)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	77.3	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2841969)								



Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2847589) - continued						
ES2002853-001	Anonymous	EG005T: Cadmium	7440-43-9	50 mg/kg	91.5	70.0 130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.3	70.0 130
		EG005T: Copper	7440-50-8	250 mg/kg	84.0	70.0 130
		EG005T: Lead	7439-92-1	250 mg/kg	91.7	70.0 130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.0	70.0 130
		EG005T: Zinc	7440-66-6	250 mg/kg	73.8	70.0 130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2847590)						
ES2002853-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.9	70.0 130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2841968)						
ES2003366-001	BH103_0.15-0.25	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.4	70.0 130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.4	70.0 130
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2841969)						
ES2003366-001	BH103_0.15-0.25	EP071: C10 - C14 Fraction	----	523 mg/kg	105	73.0 137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	117	53.0 131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	132	52.0 132
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2843136)						
ES2003366-001	BH103_0.15-0.25	EP080: C6 - C9 Fraction	----	32.5 mg/kg	102	70.0 130
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2841969)						
ES2003366-001	BH103_0.15-0.25	EP071: >C10 - C16 Fraction	----	860 mg/kg	109	73.0 137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	121	53.0 131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	126	52.0 132
EP080/074: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2843136)						
ES2003366-001	BH103_0.15-0.25	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	110	70.0 130
EP080: BTEXN (QCLot: 2843136)						
ES2003366-001	BH103_0.15-0.25	EP080: Benzene	71-43-2	2.5 mg/kg	88.1	70.0 130
		EP080: Toluene	108-88-3	2.5 mg/kg	87.1	70.0 130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.3	70.0 130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	88.0	70.0 130
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	89.2	70.0 130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	88.4	70.0 130
Sub-Matrix: WATER						
EP080/074: Total Petroleum Hydrocarbons (QCLot: 2845751)						
ES2003311-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	70.0 130



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 Work Order : ES2003366
 Client : AECOM Australia Pty Ltd
 Project : 60623599_1.1-Burrows IE

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)
EP080/074: 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	25 µg/L	91.8	70.0 130
		EP080: ortho-Xylene	106-42-3			
		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



Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2003366	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	: 03-Feb-2020
Site	: ----	Issue Date	: 11-Feb-2020
Sampler	: KURTIS WATHEN/REBEKAH PANOZZO	No. of samples received	: 29
Order number	: 60623599_1.1	No. of samples analysed	: 13

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.

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)						
Snap Lock Bag: Separate bag received (EA055) BH114_0.45-0.55	03-Feb-2020	----	----	07-Feb-2020	17-Feb-2020	✓
Soil Glass Jar - Unpreserved (EA055) BH103_0.15-0.25, BH103_2.0-2.1, BH104_1.6-1.7, BH100_0.7-0.8, BH114_1.3-1.4, QC111, BH100_0.8-0.9, QC114	03-Feb-2020	----	----	07-Feb-2020	17-Feb-2020	✓
Soil Glass Jar - Unpreserved (EA055) BH104_2.0-2.2	03-Feb-2020	----	----	09-Feb-2020	17-Feb-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils						
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH103_0.15-0.25, BH104_0.8-0.9, BH100_0.7-0.8, BH114_0.45-0.55	03-Feb-2020	----	----	06-Feb-2020	01-Aug-2020	✓
Soil Glass Jar - Unpreserved (EA200) BH114_0.45-0.55	03-Feb-2020	----	----	06-Feb-2020	01-Aug-2020	✓
EA200N: Asbestos Quantification (non-NATA)						
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N) BH103_0.15-0.25, BH104_0.8-0.9, BH100_0.7-0.8,	03-Feb-2020	----	----	06-Feb-2020	01-Aug-2020	✓
Soil Glass Jar - Unpreserved (EA200N) BH114_0.45-0.55	03-Feb-2020	----	----	06-Feb-2020	01-Aug-2020	✓



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

Method	Sample Date	Extraction / Preparation		Analysis	
		Date extracted	Due for extraction	Evaluation	Due for analysis
EG005(ED093)T: Total Metals by ICP-AES					
Snap Lock Bag: Separate bag received (EG005T)					
BH114_0.45-0.55	03-Feb-2020	07-Feb-2020	01-Aug-2020	✓	01-Aug-2020
Soil Glass Jar - Unpreserved (EG005T)					
BH103_0.15-0.25, BH103_2.0-2.1, BH104_1.6-1.7, BH100_0.7-0.8, BH114_1.3-1.4,	03-Feb-2020	07-Feb-2020	01-Aug-2020	✓	01-Aug-2020
BH103_0.85-0.95, BH104_0.8-0.9, QC111, BH100_0.8-0.9, QC114				✓	
EG035T: Total Recoverable Mercury by FIMS					
Snap Lock Bag: Separate bag received (EG035T)					
BH114_0.45-0.55	03-Feb-2020	07-Feb-2020	02-Mar-2020	✓	02-Mar-2020
Soil Glass Jar - Unpreserved (EG035T)					
BH103_0.15-0.25, BH103_2.0-2.1, BH104_1.6-1.7, BH100_0.7-0.8, BH114_1.3-1.4,	03-Feb-2020	07-Feb-2020	02-Mar-2020	✓	02-Mar-2020
BH103_0.85-0.95, BH104_0.8-0.9, QC111, BH100_0.8-0.9, QC114				✓	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Snap Lock Bag: Separate bag received (EP075(SIM))					
BH114_0.45-0.55	03-Feb-2020	06-Feb-2020	17-Feb-2020	✓	17-Mar-2020
Soil Glass Jar - Unpreserved (EP075(SIM))					
BH103_0.15-0.25, BH103_2.0-2.1, BH104_1.6-1.7, BH100_0.7-0.8, BH114_1.3-1.4,	03-Feb-2020	06-Feb-2020	17-Feb-2020	✓	17-Mar-2020
BH103_0.85-0.95, BH104_0.8-0.9, QC111, BH100_0.8-0.9, QC114				✓	



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

Method		Sample Date			Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Snap Lock Bag: Separate bag received (EP080)								
BH114_0.45-0.55		05-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	
Snap Lock Bag: Separate bag received (EP071)								
BH114_0.45-0.55		06-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Mar-2020	✓	
Soil Glass Jar - Unpreserved (EP080)								
BH103_0.15-0.25, BH104_1.6-1.7, QC111, BH100_0.8-0.9, QC114	BH104_0.8-0.9, BH104_2.0-2.2, BH100_0.7-0.8, BH114_1.3-1.4,	05-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	
Soil Glass Jar - Unpreserved (EP071)								
BH103_0.15-0.25, BH104_1.6-1.7, QC111, BH100_0.8-0.9, QC114	BH104_0.8-0.9, BH104_2.0-2.2, BH100_0.7-0.8, BH114_1.3-1.4,	06-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Mar-2020	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Snap Lock Bag: Separate bag received (EP080)								
BH114_0.45-0.55		03-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	
Snap Lock Bag: Separate bag received (EP071)								
BH114_0.45-0.55		06-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Mar-2020	✓	
Soil Glass Jar - Unpreserved (EP080)								
BH103_0.15-0.25, BH104_1.6-1.7, QC111, BH100_0.8-0.9, QC114	BH104_0.8-0.9, BH104_2.0-2.2, BH100_0.7-0.8, BH114_1.3-1.4,	05-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	
Soil Glass Jar - Unpreserved (EP071)								
BH103_0.15-0.25, BH104_1.6-1.7, QC111, BH100_0.8-0.9, QC114	BH104_0.8-0.9, BH104_2.0-2.2, BH100_0.7-0.8, BH114_1.3-1.4,	06-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Mar-2020	✓	
EP080: BTEXN								
Snap Lock Bag: Separate bag received (EP080)								
BH114_0.45-0.55		03-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	
Soil Glass Jar - Unpreserved (EP080)								
BH103_0.15-0.25, BH104_1.6-1.7, QC111, BH100_0.8-0.9, QC114	BH104_0.8-0.9, BH104_2.0-2.2, BH100_0.7-0.8, BH114_1.3-1.4,	05-Feb-2020	17-Feb-2020	✓	07-Feb-2020	17-Feb-2020	✓	



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

Method	Sample Date	Extraction / Preparation		Analysis		
		Date extracted	Due for extraction	Date analysed	Due for analysis	
EP080/071: Total Petroleum Hydrocarbons						
Amber VOC Vial - Sulfuric Acid (EP080)	03-Feb-2020	07-Feb-2020	17-Feb-2020	07-Feb-2020	17-Feb-2020	✓
QC304						
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber VOC Vial - Sulfuric Acid (EP080)	03-Feb-2020	07-Feb-2020	17-Feb-2020	07-Feb-2020	17-Feb-2020	✓
QC304						
EP080: BTEXN						
Amber VOC Vial - Sulfuric Acid (EP080)	03-Feb-2020	07-Feb-2020	17-Feb-2020	07-Feb-2020	17-Feb-2020	✓
QC304						



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	Method	Count			Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected			
Laboratory Duplicates (DUP)								
Moisture Content	EA055	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard	
PAH/Phenols (SIM)	EP075(SIM)	2	17	11.76	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	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard	
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard	
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard	
Laboratory Control Samples (LCS)								
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	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	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
Method Blanks (MB)								
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	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	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
Matrix Spikes (MS)								
PAH/Phenols (SIM)	EP075(SIM)	1	17	5.88	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	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard	
TRH Volatiles/BTEX	EP080	1	15	6.67	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	Method	Count			Rate (%)		Evaluation	Quality Control Specification
		QC	Regular	Actual	Expected			
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 (SnCl ₂) (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 SnCl ₂ 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	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)



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Preparation Methods	Method	Matrix	Method Descriptions
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 : ES2003366

Client : AECOM Australia Pty Ltd
Contact : MR ALEX LATHAM
Address : LEVEL 21, 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000
Laboratory : Environmental Division Sydney
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Facsimile : +61-2-8784 8500
Project : 60623599_1.1-Burrows IE
Page : 1 of 4
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 : 03-Feb-2020 16:00
Issue Date : 05-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 : 5.2°C - Ice present
Receipt Detail :
No. of samples received / analysed : 29 / 13

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.
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		
BH114_0.45-0.55	- Soil Glass Jar - Unpreserved	- Snap Lock Bag: Separate bag received
Moisture Content : EA055		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved
PAH/Phenols (SIM) : EP075(SIM)		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved
Total Mercury by FIMS : EG035T		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved
Total Metals by ICP-AES : EG005T		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved
TRH - Semivolatile Fraction : EP071		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved
TRH Volatiles/BTEX : EP080		
BH114_0.45-0.55	- Snap Lock Bag: Separate bag received	- Soil Glass Jar - Unpreserved

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 & Metals (incl. Digestion)	SOIL - S-04 TRH/BTEXN	SOIL - S-26 & metals/TRH/BTEXN/PAH
ES2003366-001	03-Feb-2020 00:00	BH103_0.15-0.25		✓	✓				✓
ES2003366-002	03-Feb-2020 00:00	BH103_0.85-0.95		✓		✓	✓		
ES2003366-003	03-Feb-2020 00:00	BH103_1.3-1.4	✓						
ES2003366-004	03-Feb-2020 00:00	BH103_2.0-2.1		✓	✓	✓	✓		
ES2003366-005	03-Feb-2020 00:00	BH103_4.4-4.5	✓						
ES2003366-006	03-Feb-2020 00:00	QC112	✓						
ES2003366-007	03-Feb-2020 00:00	BH104_0.15-0.25	✓						
ES2003366-008	03-Feb-2020 00:00	BH104_0.8-0.9		✓	✓				✓
ES2003366-009	03-Feb-2020 00:00	BH104_1.4-1.5	✓						
ES2003366-010	03-Feb-2020 00:00	BH104_1.6-1.7		✓	✓				✓
ES2003366-011	03-Feb-2020 00:00	BH104_2.0-2.2		✓				✓	
ES2003366-012	03-Feb-2020 00:00	BH104_3.3-3.4	✓						
ES2003366-013	03-Feb-2020 00:00	BH104_4.4-4.5	✓						
ES2003366-014	03-Feb-2020 00:00	QC111		✓					✓
ES2003366-015	03-Feb-2020 00:00	BH100_0.15-0.25	✓						
ES2003366-016	03-Feb-2020 00:00	BH100_0.7-0.8		✓	✓				✓
ES2003366-017	03-Feb-2020 00:00	BH100_0.8-0.9		✓	✓				✓
ES2003366-018	03-Feb-2020 00:00	BH100_3.4-.35							
ES2003366-019	03-Feb-2020 00:00	QC113	✓						



			(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-04 TRH/BTEXN	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2003366-020	03-Feb-2020 00:00	BH114_0.15-0.25	✓						
ES2003366-021	03-Feb-2020 00:00	BH114_0.45-0.55		✓	✓				✓
ES2003366-022	03-Feb-2020 00:00	BH114_0.8-0.9	✓						
ES2003366-023	03-Feb-2020 00:00	BH114_1.3-1.4		✓					✓
ES2003366-024	03-Feb-2020 00:00	QC114		✓					✓
ES2003366-025	03-Feb-2020 00:00	BH114_2.3-2.4	✓						
ES2003366-026	03-Feb-2020 00:00	BH114_2.75-2.85	✓						
ES2003366-027	03-Feb-2020 00:00	BH114_3.3-3.4	✓						
ES2003366-028	03-Feb-2020 00:00	BH114_5.0-5.1	✓						

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2003366-029	03-Feb-2020 00:00	QC304	✓

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 - 10:59am 4/2/2020

1/2

CUSTOMY

AECOM Australia Pty Ltd

Sydney (420 George St)

T: 02 8934 0451
M: 0400 973 821

Laboratory Details:

Lab Name: ALS
Lab Address: 277 Woodpark Rd, Smithfield
Contact Name: Brenda Hong
Lab. Ref. Project Name: Burrows IE

Tel: 8784 8615

Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: EN/004/16
PO No. refer Project #

AECOM Project Manager: Alex Latham
AECOM Project Manager Email: Alex.Latham@aecom.com
Sampled By: Kurtis Wathen / Rebekah Panozzo

AECOM Project No: 60623589.1.1 LAB/SPIN WO

Specifications: All reports to be emailed to AECOM Project Manager

ESDAT & Equis & XLS format also required

1. Urgent TAT required? (please circle: 24hr 48hr 5 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 NEM 6.7.17.0.

5. Special storage requirements? (details:)

Prepared By / Date: NEWCA

Quarantined By / Date: ADSS

Quoted / Contained

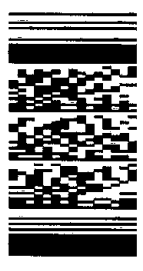
Attach By PO / Internal Sheet

Lab. ID	Sample ID	Sampling Date	Matrix			Preservation			Container (No. & type)
			soil	water	other	filled	acid	ice	
1	BH103-0.15-0.25	3/2/20	Y						D B
2	BH103-0.65-0.95								D B
3	BH103-1.3-1.4								D B
4	PH103-2.0-2.1								D B
5	BH103-4.4-4.5								D B
6	GC111 * GC112								-
7	BH104-0.15-0.25								D B
8	BH104-0.8-0.9								D B
9	BH104-1.4-1.5								D B
10	BH104-1.6-1.7								D B
11	BH104-2.0-2.2								D B
12	BH104-3.3-3.4								D B
13	BH104-4.4-4.5								D B
14	GC110 * GC111								D -

Analysis Request		Yes
TRH C6-C40, BTEXN	<input checked="" type="checkbox"/>	
PAH	<input checked="" type="checkbox"/>	
8 Metals	<input checked="" type="checkbox"/>	
OCP, OPP, PCB	<input checked="" type="checkbox"/>	
Asbestos (EA200N)	<input checked="" type="checkbox"/>	
TRH > C10-C40 (EP071)	<input checked="" type="checkbox"/>	

send requested soil QC samples to Envirolab with crushed ice please

Environmental Division
Sydney
Work Order Reference
ES2003366



Telephone : +61-2-8784 8555

Lab Report No. _____ EnviroID _____

Comments: _____

Relinquished by: R Panozzo Date: 3/2/20 Signed: _____

Received by: _____ Date: _____ Signed: _____



Page : 2 of 12
Work Order : ES2003481
Client : AECOM Australia Pty Ltd
Project : 60623599_1.1-Burrows IE

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+i) & Benzo(k)fluoranthene (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, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.

Weights of Asbestos and percentages are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)

The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos

Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.

All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.

- EA200 'Am' Amosite (brown asbestos)

- EA200 'Cr' Crocidolite (blue asbestos)

- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres

- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.

- EA200 Legend

- EA200 'Ch' Chrysotile (white asbestos)

- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.

- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination

- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2

- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.

- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.

- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH105_0.4-0.5 31-Jan-2020 00:00 ES2003481-002 Result	BH105_0.85-0.95 31-Jan-2020 00:00 ES2003481-004 Result	BH105_1.7-1.8 31-Jan-2020 00:00 ES2003481-005 Result	BH102_0.3-0.4 31-Jan-2020 00:00 ES2003481-010 Result	BH102_0.5-0.6 31-Jan-2020 00:00 ES2003481-011 Result
EA055: Moisture Content (Dried @ 105-110°C)	22.5	29.6	21.9	7.6	12.4
EA200: AS 4964 - 2004 Identification of Asbestos in Soils					
Asbestos Detected	No	****	****	****	No
Asbestos Type	-	****	****	****	-
Asbestos (Trace)	No	****	****	****	No
Sample weight (dry)	0.01	****	****	****	503
Synthetic Mineral Fibre	No	****	****	****	No
Organic Fibre	No	****	****	****	No
APPROVED IDENTIFIER:	A. SMYLYE	****	****	****	A. SMYLYE
EA200N: Asbestos Quantification (non-NATA)					
∅ Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	1332-21-4 0.0004	****	****	****	<math>< 0.0004</math>
∅ Asbestos (Fines and Fibrous FA+AF)	1332-21-4 0.001	****	****	****	<math>< 0.001</math>
∅ Asbestos Containing Material	1332-21-4 0.1	****	****	****	<math>< 0.1</math>
∅ Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4 0.01	****	****	****	<math>< 0.01</math>
∅ Weight Used for % Calculation	0.0001	****	****	****	0.503
∅ Fibrous Asbestos >7mm	0.0004	****	****	****	<math>< 0.0004</math>
EG005(ED093)T: Total Metals by ICP-AES					
Arsenic	7440-38-2 5	25	66	<math>< 5</math>	9
Cadmium	7440-43-9 1	3	7	<math>< 1</math>	<math>< 1</math>
Chromium	7440-47-3 2	20	76	5	19
Copper	7440-50-8 5	2130	431	23	367
Lead	7439-92-1 5	2260	11800	71	2010
Nickel	7440-02-0 2	135	283	3	12
Zinc	7440-66-6 5	4890	1320	49	712
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6 0.1	0.4	0.3	0.1	56.4
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	91-20-3 0.5	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>
Acenaphthylene	208-96-8 0.5	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>
Acenaphthene	83-32-9 0.5	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>
Fluorene	86-73-7 0.5	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>	<math>< 0.5</math>
Phenanthrene	85-01-8 0.5	1.2	<math>< 0.5</math>	<math>< 0.5</math>	3.3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH105_0.4-0.5 31-Jan-2020 00:00 ES2003481-002	BH105_0.85-0.95 31-Jan-2020 00:00 ES2003481-004	BH105_1.7-1.8 31-Jan-2020 00:00 ES2003481-005	BH102_0.3-0.4 31-Jan-2020 00:00 ES2003481-010	BH102_0.5-0.6 31-Jan-2020 00:00 ES2003481-011
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued					
Anthracene	120-12-7 0.5 mg/kg	<0.5	<0.5	<0.5	0.9
Fluoranthene	206-44-0 0.5 mg/kg	<0.5	<0.5	<0.5	6.2
Pyrene	129-00-0 0.5 mg/kg	<0.5	<0.5	<0.5	6.0
Benz(a)anthracene	56-55-3 0.5 mg/kg	<0.5	<0.5	<0.5	2.8
Chrysene	218-01-9 0.5 mg/kg	<0.5	<0.5	<0.5	2.6
Benzo(b+J)fluoranthene	205-99-2 0.5 mg/kg	<0.5	<0.5	<0.5	3.5
Benzo(k)fluoranthene	207-08-9 0.5 mg/kg	<0.5	<0.5	<0.5	1.2
Benzo(a)pyrene	50-32-8 0.5 mg/kg	<0.5	<0.5	<0.5	3.3
Indeno(1,2,3-cd)pyrene	193-39-5 0.5 mg/kg	<0.5	<0.5	<0.5	1.1
Dibenz(a,h)anthracene	53-70-3 0.5 mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2 0.5 mg/kg	<0.5	<0.5	<0.5	1.4
^ Sum of polycyclic aromatic hydrocarbons	----- 0.5 mg/kg	<0.5	<0.5	<0.5	32.3
^ Benzo(a)pyrene TEQ (zero)	----- 0.5 mg/kg	<0.5	<0.5	<0.5	4.2
^ Benzo(a)pyrene TEQ (half LOR)	----- 0.5 mg/kg	0.6	0.6	0.6	4.4
^ Benzo(a)pyrene TEQ (LOR)	----- 0.5 mg/kg	1.2	1.2	1.2	4.7
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction	----- 10 mg/kg	<10	-----	-----	<10
C10 - C14 Fraction	----- 50 mg/kg	<50	-----	-----	<50
C15 - C28 Fraction	----- 100 mg/kg	<100	-----	-----	140
C29 - C36 Fraction	----- 100 mg/kg	180	-----	-----	110
^ C10 - C36 Fraction (sum)	----- 50 mg/kg	180	-----	-----	250
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions					
C6 - C10 Fraction	C6_C10 10 mg/kg	<10	-----	-----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX 10 mg/kg	<10	-----	-----	<10
>C10 - C16 Fraction	----- 50 mg/kg	<50	-----	-----	<50
>C16 - C34 Fraction	----- 100 mg/kg	330	-----	-----	200
>C34 - C40 Fraction	----- 100 mg/kg	150	-----	-----	<100
^ >C10 - C40 Fraction (sum)	----- 50 mg/kg	480	-----	-----	200
^ >C10 - C16 Fraction minus Naphthalene (F2)	----- 50 mg/kg	<50	-----	-----	<50
EP080: BTEXN					
Benzene	71-43-2 0.2 mg/kg	<0.2	-----	-----	<0.2
Toluene	108-88-3 0.5 mg/kg	<0.5	-----	-----	<0.5
Ethylbenzene	100-41-4 0.5 mg/kg	<0.5	-----	-----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	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
	31-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00	31-Jan-2020 00:00
	ES2003481-002	ES2003481-004	ES2003481-005	ES2003481-010	ES2003481-011
	Result	Result	Result	Result	Result
EP080: BTEXN - Continued					
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates					
Phenol-d6	13127-88-3	0.5	%	81.0	85.2
2-Chlorophenol-D4	93951-73-6	0.5	%	83.8	87.5
2,4,6-Tribromophenol	118-79-6	0.5	%	54.8	71.8
EP075(SIM)T: PAH Surrogates					
2-Fluorobiphenyl	321-60-8	0.5	%	81.3	83.6
Anthracene-d10	1719-06-8	0.5	%	82.7	87.4
Benzo[a]Terphenyl-d14	1718-51-0	0.5	%	91.5	90.8
EP080S: TPH(V)/BTEX Surrogates					
1,2-Dichloroethane-D4	17060-07-0	0.2	%	89.5	84.9
Toluene-D8	2037-26-5	0.2	%	91.0	89.6
4-Bromofluorobenzene	460-00-4	0.2	%	82.4	84.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH101_0.16-0.26 31-Jan-2020 00:00 ES2003481-015 Result 13.4	BH101_0.7-0.8 31-Jan-2020 00:00 ES2003481-017 Result 31.4	BH101_1.3-1.4 31-Jan-2020 00:00 ES2003481-019 Result 26.2	BH101_2.2-2.3 31-Jan-2020 00:00 ES2003481-020 Result 26.2
EA055: Moisture Content (Dried @ 105-110°C)							
Moisture Content	1.0	%		13.4	31.4	26.2	26.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Asbestos Detected	1332-21-4	0.1	g/kg			Yes	
Asbestos Type	1332-21-4	-	--			Ch	
Asbestos (Trace)	1332-21-4	5	Fibres			No	
Sample weight (dry)		0.01	g			402	
Synthetic Mineral Fibre		0.1	g/kg			No	
Organic Fibre		0.1	g/kg			No	
APPROVED IDENTIFIER:		-	--			A. SMYLYE	
EA200N: Asbestos Quantification (non-NATA)							
Asbestos (Fines and Fibrous $\leq 7\text{mm}$)	1332-21-4	0.0004	g			0.125	
Asbestos (Fines and Fibrous FA+AF)		0.001	% (w/w)			0.031	
Asbestos Containing Material	1332-21-4	0.1	g			<0.1	
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)			<0.01	
Weight Used for % Calculation		0.0001	kg			0.402	
Fibrous Asbestos >7mm		0.0004	g			<0.0004	
EG005(ED093): Total Metals by ICP-AES							
Arsenic	7440-38-2	5	mg/kg		59		56
Cadmium	7440-43-9	1	mg/kg		4		6
Chromium	7440-47-3	2	mg/kg		50		153
Copper	7440-50-8	5	mg/kg		1310		1440
Lead	7439-92-1	5	mg/kg		2490		2430
Nickel	7440-02-0	2	mg/kg		81		138
Zinc	7440-66-6	5	mg/kg		2410		3410
EG035T: Total Recoverable Mercury by FIMS							
Mercury	7439-97-6	0.1	mg/kg		1.2		9.5
EP066: Polychlorinated Biphenyls (PCB)							
Total Polychlorinated biphenyls		0.1	mg/kg	<0.1			
EP068A: Organochlorine Pesticides (OC)							
alpha-BHC	319-84-6	0.05	mg/kg	<0.05			
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05			
beta-BHC	319-85-7	0.05	mg/kg	<0.05			



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH101_0.16-0.26 31-Jan-2020 00:00 ES2003481-015 Result	BH101_0.7-0.8 31-Jan-2020 00:00 ES2003481-017 Result	BH101_1.3-1.4 31-Jan-2020 00:00 ES2003481-019 Result	BH101_2.2-2.3 31-Jan-2020 00:00 ES2003481-020 Result
EP068A: Organochlorine Pesticides (OC) - Continued				
gamma-BHC	58-89-9 0.05 mg/kg	<0.05	*****	*****
delta-BHC	319-86-8 0.05 mg/kg	<0.05	*****	*****
Heptachlor	76-44-8 0.05 mg/kg	<0.05	*****	*****
Aldrin	309-00-2 0.05 mg/kg	<0.05	*****	*****
Heptachlor epoxide	1024-57-3 0.05 mg/kg	<0.05	*****	*****
^ Total Chlordane (sum)	*****	*****	*****	*****
trans-Chlordane	5103-74-2 0.05 mg/kg	<0.05	*****	*****
alpha-Endosulfan	959-98-8 0.05 mg/kg	<0.05	*****	*****
cis-Chlordane	5103-71-9 0.05 mg/kg	<0.05	*****	*****
Dieldrin	60-57-1 0.05 mg/kg	<0.05	*****	*****
4,4'-DDE	72-55-9 0.05 mg/kg	<0.05	*****	*****
Endrin	72-20-8 0.05 mg/kg	<0.05	*****	*****
Non beta-Endosulfan	33213-65-9 0.05 mg/kg	<0.05	*****	*****
gamma-Endosulfan (sum)	115-29-7 0.05 mg/kg	<0.05	*****	*****
4,4'-DDD	72-54-8 0.05 mg/kg	<0.05	*****	*****
Endrin aldehyde	7421-93-4 0.05 mg/kg	<0.05	*****	*****
Endosulfan sulfate	1031-07-8 0.05 mg/kg	<0.05	*****	*****
4,4'-DDT	50-29-3 0.2 mg/kg	<0.2	*****	*****
Endrin ketone	53494-70-5 0.05 mg/kg	<0.05	*****	*****
Methoxychlor	72-43-5 0.2 mg/kg	<0.2	*****	*****
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1 0.05 mg/kg	<0.05	*****	*****
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3 0.2 mg/kg	<0.05	*****	*****
EP068B: Organophosphorus Pesticides (OP)				
Dichlorvos	62-73-7 0.05 mg/kg	<0.05	*****	*****
Demeton-S-methyl	919-86-8 0.05 mg/kg	<0.05	*****	*****
Monocrotophos	6923-22-4 0.2 mg/kg	<0.2	*****	*****
Dimethoate	60-51-5 0.05 mg/kg	<0.05	*****	*****
Diazinon	333-41-5 0.05 mg/kg	<0.05	*****	*****
Chlorpyrifos-methyl	5598-13-0 0.05 mg/kg	<0.05	*****	*****
Parathion-methyl	298-00-0 0.2 mg/kg	<0.2	*****	*****
Malathion	121-75-5 0.05 mg/kg	<0.05	*****	*****
Fenthion	55-38-9 0.05 mg/kg	<0.05	*****	*****
Chlorpyrifos	2921-88-2 0.05 mg/kg	<0.05	*****	*****
Parathion	56-38-2 0.2 mg/kg	<0.2	*****	*****



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH101_0.16-0.26 31-Jan-2020 00:00 ES2003481-015 Result	BH101_0.7-0.8 31-Jan-2020 00:00 ES2003481-017 Result	BH101_1.3-1.4 31-Jan-2020 00:00 ES2003481-019 Result	BH101_2.2-2.3 31-Jan-2020 00:00 ES2003481-020 Result
EP068B: Organophosphorus Pesticides (OP) - Continued				
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons				
Naphthalene	91-20-3	0.5	mg/kg	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	0.7
Anthracene	120-12-7	0.5	mg/kg	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	1.3
Pyrene	129-00-0	0.5	mg/kg	1.4
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6
Chrysene	218-01-9	0.5	mg/kg	0.6
Benzo(b+)fluoranthene	205-99-2	0.5	mg/kg	0.9
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.7
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5
^ Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	6.2
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	0.8
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	1.2
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.5
EP080/071: Total Petroleum Hydrocarbons				
C6 - C9 Fraction		10	mg/kg	<10
C10 - C14 Fraction		50	mg/kg	<50
C15 - C28 Fraction		100	mg/kg	120
C29 - C36 Fraction		100	mg/kg	140



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	BH101_0.16-0.26 31-Jan-2020 00:00 ES2003481-015 Result	BH101_0.7-0.8 31-Jan-2020 00:00 ES2003481-017 Result	BH101_1.3-1.4 31-Jan-2020 00:00 ES2003481-019 Result	BH101_2.2-2.3 31-Jan-2020 00:00 ES2003481-020 Result
EP080/071: Total Petroleum Hydrocarbons - Continued				
^ C10 - C36 Fraction (sum)	50 mg/kg	260		340
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions				
C6 - C10 Fraction	10 mg/kg	<10		<10
^ C6 - C10 Fraction minus BTEX (F1)	10 mg/kg	<10		<10
>C10 - C16 Fraction	50 mg/kg	<50		<50
>C16 - C34 Fraction	100 mg/kg	230		280
>C34 - C40 Fraction	100 mg/kg	<100		110
^ >C10 - C40 Fraction (sum)	50 mg/kg	230		390
^ >C10 - C16 Fraction minus Naphthalene (F2)	50 mg/kg	<50		<50
EP080: BTEXN				
N-Benzene	71-43-2 0.2 mg/kg	<0.2		<0.2
O-Toluene	108-88-3 0.5 mg/kg	<0.5		<0.5
Ethylbenzene	100-41-4 0.5 mg/kg	<0.5		<0.5
meta- & para-Xylene	108-38-3 106-42-3 0.5 mg/kg	<0.5		<0.5
ortho-Xylene	95-47-6 0.5 mg/kg	<0.5		<0.5
^ Sum of BTEX	0.2 mg/kg	<0.2		<0.2
^ Total Xylenes	0.5 mg/kg	<0.5		<0.5
Naphthalene	91-20-3 1 mg/kg	<1		<1
EP066S: PCB Surrogate				
Decachlorobiphenyl	2051-24-3 0.1 %	98.3		98.3
EP068S: Organochlorine Pesticide Surrogate				
Dibromo-DDE	21655-73-2 0.05 %	98.4		98.4
EP068T: Organophosphorus Pesticide Surrogate				
DEF	78-48-8 0.05 %	87.1		87.1
EP075(SIM)S: Phenolic Compound Surrogates				
Phenol-d6	13127-88-3 0.5 %	86.8		83.8
2-Chlorophenol-D4	93951-73-6 0.5 %	89.4		85.4
2,4,6-Tribromophenol	118-79-6 0.5 %	72.9		71.6
EP075(SIM)T: PAH Surrogates				
2-Fluorobiphenyl	321-60-8 0.5 %	83.3		80.1
Anthracene-d10	1719-06-8 0.5 %	89.2		84.6
4-Terphenyl-d14	1718-51-0 0.5 %	91.9		87.2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		QC303	
		31-Jan-2020 00:00	
		ES2003481-022	
		Result	
EP080/071: Total Petroleum Hydrocarbons			
C6 - C9 Fraction	20	µg/L	<20
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions			
C6 - C10 Fraction	20	µg/L	<20
^ C6 - C10 Fraction minus BTEX (F1)	20	µg/L	<20
EP080: BTEXN			
Benzene	71-43-2	1	µg/L
Toluene	108-88-3	2	µg/L
Ethylbenzene	100-41-4	2	µg/L
meta- & para-Xylene	108-38-3	2	µg/L
ortho-Xylene	95-47-6	2	µg/L
Δ Total Xylenes		2	µg/L
Σ Sum of BTEX		1	µg/L
ONaphthalene	91-20-3	5	µg/L
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	2	%
Toluene-D8	2037-26-5	2	%
4-Bromofluorobenzene	460-00-4	2	%

Analytical Results

Descriptive Results

Sub-Matrix: SOIL		QC303	
		31-Jan-2020 00:00	
		ES2003481-022	
		Result	
EA200: AS 4984 - 2004 Identification of Asbestos in Soils			
EA200: Description	BH105_0.4-0.5 - 31-Jan-2020 00:00		Mid brown soil.
EA200: Description	BH102_0.5-0.6 - 31-Jan-2020 00:00		Mid brown soil.
EA200: Description	BH101_1.3-1.4 - 31-Jan-2020 00:00		Mid brown soil containing many large asbestos fibre bundles approximately 10x4x2mm.