

**CHAIN OF CUSTODY**

ALS Laboratory  
please tick →

CLIENT: ERM  
 OFFICE: Pymont  
 PROJECT: Project Symphony  
 ORDER NUMBER: 0224198  
 PROJECT MANAGER: Joe Herny  
 SAMPLER: Josh Birch  
 COC emailed to ALS? (YES / NO):  
 Email Reports to (will default to PM if no other addresses are listed):  
 Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS:  
 Standard TAT (List due date)  
 Non Standard or urgent TAT (List due date) **48 HRS please**  
 ALS QUOTE NO.: SY79413  
 SITE: BAYSWATER LIDDELL

FOR LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes  
 Free ice / frozen ice packs present upon receipt? Yes  
 Random Sample Temperature on Receipt:  
 Other comment:

RECEIVED BY: JYH  
 DATE/TIME: 23/12/13

Lab / Analysis Organised By / Date: ALS  
 Relinquished By / Date: ALS  
 Connote / Courier: Envirolab  
 WO No: 701  
 Attach By PO / Internal Sheet

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED including SMILES (S), State Codes must be ticked to attract state money Why no Metals are required, specify Total (undiluted bottle or sample) or Diluted (diluted bottle or sample)												Additional Information
						S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Br, Ba, Ca, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl, Se)	S-24 TRHOC (Cd, STEKX, PAR, Phos's)	VOC Target Scan	PCB	pH (1-5)	Exchangeable cations (EDC27) EC	PFOS PFOA	Asbestos (absent/present)	Particulate 5 mg to 75µm (S-6)	Organic Matter plus Total Organic Carbon (EPP34)		
1	LI-MW09-0-2	16/12/13	SOIL	16 + Bag	2	X	X	X	X	X	X	X	X	X	X	X	X	
2	LI-MW09-1.0			16 + Bag	2	X	X	X	X	X	X	X	X	X	X	X	X	HOLD
3	LI-MW09-2.8			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
4	LI-SB01-2.7			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
5	LI-SB02-1.6			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
6	LI-SB04-0.1			16 + Bag	2	X	X	X	X	X	X	X	X	X	X	X	X	
7	LI-SB04-1.0			16 + Bag x2	3	X	X	X	X	X	X	X	X	X	X	X	X	
8	LI-SB05-2.5			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
9	LV-MW04-2.2			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
10	LV-MW05-2.7			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
11	ROI-161213-JG			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
12	ROI-161213-HC			16	1	X	X	X	X	X	X	X	X	X	X	X	X	
13	ROI-161213-JG			16	1	X	X	X	X	X	X	X	X	X	X	X	X	

Environmental Division  
 Sydney  
 Work Order  
**ES1327894**



Telephone: +61-2-8784 8555

**ENVIROLAB**  
 Envirolab Services  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200

Job NO: 103044

Date Received: 23/12/13  
 Time Received: 10:30  
 Received by: JYH  
 Temp: Cool/Ambient  
 Cooling: Ice/icepack  
 Security: Intact/Broken/None

QARC  
 (19) TB10 = C6-Ca + BTEXN  
 (20) TS8 = BTEXN only  
 (21) ROI-161213-JG = TRH, BTEX, 8 metals  
 (22) TS-14

**CHAIN OF CUSTODY**

ALG Laboratory  
please tick →

CLIENT: <b>ERM</b>	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle) Custody Seal intact? Yes No N/A Free ice / frozen ice bricks present upon receipt? Yes No N/A Random Sample Temperature on Receipt: °C Other comment:
OFFICE: <b>FIRMONT</b>	<input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): <b>48 HRS pls.</b>	
PROJECT: <b>Project Symphony</b>	ALS QUOTE NO.: <b>SY79413</b>	
ORDER NUMBER: <b>0224198</b>	SITE: <b>BAYSWATER LIODELL</b>	
PROJECT MANAGER: <b>JOE FERRING</b>	CONTACT PH:	
SAMPLER: <b>JOSH GRVIN</b>	SAMPLER MOBILE:	RECEIVED BY: <b>JH (EUS)</b>
COC emailed to ALS? (YES / NO)	ODD FORMAT (or default):	DATE/TIME: <b>23/12/13 1030</b>
Cancel Reports to (will default to PM if no other addresses are listed):	RELINQUISHED BY:	
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME: <b>14/12/13 17:10</b>	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED (including SUITES (N), State Codes must be ticked to instruct sub-division) Wet or Metals as required, specify Total (undiluted bottle material) or Dissolved (field lab or bottle material)												Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL CONTAINERS	S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Bi, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRH (CG-CAD) BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1-5)	Exchangeable cations (ED027)	PFOS/PFOA	Asbestos (presence/absence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (E0304)		
13	LV-MW03-1.8	17/12/13	SOIL	IG	1	X		X										
14	LV-MW02-1.7	17/12/13	"	"	1	X		X										
15	TB6	LAB	"	"	1													
16	TS14	LAB	"	"	1													
17	ROI-171213-JG	17/12/13	W	ZVC, 1PN, 1G	4												X BTEXN, CG-Ca X BTEXN X TRH, BTEX, metals	

Water Contaminant Codes: P - Unpreserved Plastic, N - Nitrate Preserved Plastic, ORG - Nitrate Preserved Organic, LHM - Leadmium Hydroxide/Lead Oxide, G - Cadmium Hydroxide Preserved Plastic, AG - Asbestos Glass, Unpreserved, AP - Airfall and Unpreserved, H - Hydrogen Sulfide Preserved Plastic, V - VOA Volatile HCl Preserved, VR - VOA Volatile Cadmium Oxidate Preserved, VS - VOA Volatile Sulfide Preserved, AV - Airbreath Unpreserved Volatile, G - Sulfide Preserved, A - HCl preserved Plastic, HG - HCl preserved Oxidation bottle, CP - Sulfide Preserved Plastic, F - Formaldehyde Preserved Glass, S - Sulfide Preserved Plastic, DTA - Preserved Bottle, G - Plastic Bottle, AG - Plastic Bottle, Acid Sulphate, Oxidation, Unpreserved



**Envirolab Services Pty Ltd**  
ABN 37 112 535 645  
12 Ashley St Chatswood NSW 2067  
ph 02 9910 6200 fax 02 9910 6201  
enquiries@envirolabservices.com.au  
www.envirolabservices.com.au

## **SAMPLE RECEIPT ADVICE**

### **Client:**

Environmental Resources Management Australia  
Locked Bag 24  
Broadway NSW 2007

ph: 02 8584 8888

Fax: 02 8584 8800

Attention: Joe Ferring

### **Sample log in details:**

Your reference:

**0224198, Project Symphony**

Envirolab Reference:

**103044**

Date received:

**23/12/2013**

Date results expected to be reported:

**2/01/14**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Soil
Turnaround time requested:	Standard
Temperature on receipt (°C)	12.1
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

### **Comments:**

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

### **Contact details:**

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**103044**

**Client:**

**Environmental Resources Management Australia**

Locked Bag 24

Broadway

NSW 2007

**Attention:** Joe Ferring

**Sample log in details:**

Your Reference:

**0224198, Project Symphony**

No. of samples:

1 Soil

Date samples received / completed instructions received

23/12/2013 / 23/12/2013

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date:

2/01/14 / 2/01/14

Date of Preliminary Report:

Not issued

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Accredited for compliance with ISO/IEC 17025.

**Tests not covered by NATA are denoted with \*.**

**Results Approved By:**



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Jacinta Hurst  
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213
		-JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date extracted	-	24/12/2013
Date analysed	-	25/12/2013
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	<25
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	<25
vTPHC <sub>6</sub> - C <sub>10</sub> less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	104

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213 -JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date extracted	-	24/12/2013
Date analysed	-	25/12/2013
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	<50
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	<100
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	<100
TRH>C <sub>10</sub> -C <sub>16</sub>	mg/kg	<50
TRH>C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50
TRH>C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100
TRH>C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100
Surrogate o-Terphenyl	%	87

PAHs in Soil		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213 -JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date extracted	-	24/12/2013
Date analysed	-	24/12/2013
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQNEPMB1	mg/kg	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE
Surrogate p-Terphenyl-d14	%	87

Total Phenolics in Soil		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213 -JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date extracted	-	24/12/2013
Date analysed	-	24/12/2013
Total Phenolics (as Phenol)	mg/kg	<5



Acid Extractable metals in soil		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213 -JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date digested	-	30/12/2013
Date analysed	-	30/12/2013
Arsenic	mg/kg	10
Cadmium	mg/kg	<0.4
Chromium	mg/kg	35
Copper	mg/kg	12
Lead	mg/kg	36
Mercury	mg/kg	<0.1
Nickel	mg/kg	22
Zinc	mg/kg	45

Moisture		
Our Reference:	UNITS	103044-1
Your Reference	-----	T01_161213
		-JG
Date Sampled	-----	16/12/2013
Type of sample		Soil
Date prepared	-	24/12/2013
Date analysed	-	30/12/2013
Moisture	%	17

MethodID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note Naphthalene is determined from the VOC analysis.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 0224198, Project Symphony**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			24/12/2013	103044-1	24/12/2013    24/12/2013	LCS-1	24/12/2013
Date analysed	-			25/12/2013	103044-1	25/12/2013    25/12/2013	LCS-1	25/12/2013
TRHC <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-016	<25	103044-1	<25    <25	LCS-1	105%
TRHC <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-016	<25	103044-1	<25    <25	LCS-1	105%
Benzene	mg/kg	0.2	Org-016	<0.2	103044-1	<0.2    <0.2	LCS-1	97%
Toluene	mg/kg	0.5	Org-016	<0.5	103044-1	<0.5    <0.5	LCS-1	103%
Ethylbenzene	mg/kg	1	Org-016	<1	103044-1	<1    <1	LCS-1	109%
m+p-xylene	mg/kg	2	Org-016	<2	103044-1	<2    <2	LCS-1	108%
o-Xylene	mg/kg	1	Org-016	<1	103044-1	<1    <1	LCS-1	105%
naphthalene	mg/kg	1	Org-014	<1	103044-1	<1    <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	100	103044-1	104    98    RPD: 6	LCS-1	98%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			24/12/2013	103044-1	24/12/2013    24/12/2013	LCS-1	24/12/2013
Date analysed	-			25/12/2013	103044-1	25/12/2013    25/12/2013	LCS-1	25/12/2013
TRHC <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-003	<50	103044-1	<50    <50	LCS-1	104%
TRHC <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-003	<100	103044-1	<100    <100	LCS-1	102%
TRHC <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-003	<100	103044-1	<100    <100	LCS-1	92%
TRH>C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-003	<50	103044-1	<50    <50	LCS-1	104%
TRH>C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-003	<100	103044-1	<100    <100	LCS-1	102%
TRH>C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-003	<100	103044-1	<100    <100	LCS-1	90%
Surrogate o-Terphenyl	%		Org-003	84	103044-1	87    84    RPD: 4	LCS-1	93%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			24/12/2013	103044-1	24/12/2013    24/12/2013	LCS-1	24/12/2013
Date analysed	-			24/12/2013	103044-1	24/12/2013    24/12/2013	LCS-1	24/12/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	102%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	105%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	105%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	102%

**Client Reference: 0224198, Project Symphony**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	109%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	LCS-1	98%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	103044-1	<0.2    <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	103044-1	<0.05    <0.05	LCS-1	108%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	103044-1	<0.1    <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	84	103044-1	87    82    RPD: 6	LCS-1	95%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Soil						Base II Duplicate II %RPD		
Date extracted	-			24/12/2013	[NT]	[NT]	LCS-1	24/12/2013
Date analysed	-			24/12/2013	[NT]	[NT]	LCS-1	24/12/2013
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	[NT]	[NT]	LCS-1	92%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			30/12/2013	103044-1	30/12/2013    30/12/2013	LCS-6	30/12/2013
Date analysed	-			30/12/2013	103044-1	30/12/2013    30/12/2013	LCS-6	30/12/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	103044-1	10    9    RPD: 11	LCS-6	91%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	103044-1	<0.4    <0.4	LCS-6	97%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	103044-1	35    27    RPD: 26	LCS-6	95%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	103044-1	12    14    RPD: 15	LCS-6	96%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	103044-1	36    29    RPD: 22	LCS-6	94%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	103044-1	<0.1    <0.1	LCS-6	95%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	103044-1	22    20    RPD: 10	LCS-6	95%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	103044-1	45    42    RPD: 7	LCS-6	98%

QUALITY CONTROL	UNITS	PQL	METHOD	Blank
Moisture				
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

**Quality Control Definitions**

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

**Duplicate:** This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

**Matrix Spike :** A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

**LCS (Laboratory Control Sample) :** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

**Laboratory Acceptance Criteria**

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.



- Sydney
- Melbourne
- Brisbane
- Perth
- Hunter Valley
- North Coast
- Other

Ground Floor, 33 Saunders Street, Pyrmont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800  
 Level 3, Tower 3, Yarra Tower, WTC, 18-38 Siddley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022  
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381  
 Level 6, Grain Pool Bld, 172 St Georges Tce, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262  
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152  
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No: 02/2892  
 Project Name: Symphony - Liddell  
 Project Location: Muswellbrook, NSW  
 Project Manager: Joseph Ferry  
 Sampler: Joshua Kowala

COC Number  
**A 17017**  
 Laboratory  
**ALS**

**General Analysis Requirements** Yes (tick)

1. Turn Around Time (please tick:  1 Day  2 Days  3 Days  Normal TAT)

2. Do you wish any sediment layers in water to be excluded from extractions?

3. Additional QA/QC reported where sample batches are < 10 samples?

4. % of extraneous material removed from samples to be reported as per NEPM 5.1.1?

Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Preservation			Containers (number/type)	BTEX	TPH (C8-C9 P & T) + TPH (C10-C36)	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	Asbestos
					Soil	Water	Other	Ice	Acid	Filter												
1	LT-MW2.05	0.5	6/11	7:40	X		X				1200	X					X	X	X	X		
2	LT-MW2.1	L0		7:49													X	X	X	X		
3	LT-MW1.05	0.5		7:51													X	X	X	X		
4	LT-MW1.05	0.5		7:59								X					X	X	X	X		
5	LT-MW3.5	0.1		8:15													X	X	X	X		
6	LT-MW3.05	0.5		8:40								X					X	X	X	X		
7	LT-MW3.10	1.0		9:05													X	X	X	X		
8	LT-MW4.5	0.1		9:10													X	X	X	X		
9	LT-MW4.05			9:30								X					X	X	X	X		
10	LT-MW4.10	1.0		9:45													X	X	X	X		
11	LP-MW01.2	0.1		11:17													X	X	X	X		
12	LP-MW01.07	0.7		11:20								X					X	X	X	X		
13	LP-MW01.10	1.0		11:28													X	X	X	X		
14	LP-SB1.5	0.1		11:45													X	X	X	X		
15	LP-SB1.05	0.5		11:51								X					X	X	X	X		
16	LP-SB03.5	0.1		12:54													X	X	X	X		
17	LP-SB03.05	0.5		13:00								X					X	X	X	X		
18	LPD01	-	6/11	-								X					X	X	X	X		
19	LO-SB09.5	-		13:30																		

Subcontract Forward Lab / Split WO  
 Lab / Analysis: Asbestos  
 Organised By / Date:  
 Relinquished By / Date:  
 Connote / Courier:  
 WO No: 51324260  
 Attach By PO / Internal Sheet:

Environmental Division  
 Sydney  
 Work Order  
**ES1324260**

Telephone: +61-2-8784 8555

Hold  
 Hold  
 Hold  
 Hold  
 Hold  
 Hold  
 Hold  
 Hold  
 Hold

Comments: Asbestos (presence / non presence) Send results to John Ewing and Symphoan Maera  
 Relinquished by: Joshua Kowala Signed: [Signature] Date/Time: 6/11/13 Received by: [Signature] Date/Time: 8/11/13 10:30  
 Relinquished by: Signed: Date/Time: Received by: Date/Time:

#27-20 extra samples rec'd.





- Sydney
- Melbourne
- Brisbane
- Perth
- Hunter Valley
- North Coast
- Other

Ground Floor, 33 Saunders Street, Pyrmont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800  
 Level 3, Tower 3, Yarra Tower, WTC, 18-38 Siddley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022  
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 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152  
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7180

Project No: **0213789**  
 Project Name: **Symphony - Liddel**  
 Project Location: **Liddel Paper Station, Macquarie**  
 Project Manager: **Joseph Ferring**  
 Sampler: **Joshua Kowald**  
 COC Number: **A 17018**  
 Laboratory: **ALS**

General Analysis Requirements										Yes (tick)										Other Comments on sample (eg: high voc, highly contaminated, special detection limits etc etc)				
1. Turn Around Time (please tick: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input checked="" type="checkbox"/> Normal TAT)																					TRH Asbestos			
2. Do you wish any sediment layers in water to be excluded from extractions?																								
3. Additional QA/QC reported where sample batches are < 10 samples?																								
4. % of extraneous material removed from samples to be reported as per NEPM 5.1.17?																								
Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Preservation				Containers (number/type)	BTEX	TPH (C6-C8 P & T) + TPH (C10-C36)	Specialized TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	TRH	Asbestos
					Soil	Water	Other	Ice	Acid	Filter	Other													
20	LPSB09-05	0.5	6/11		X			X				1xJar	X					X	X	X	X	X	X	
21	LPSB09-10	1.0																						Hold
22	LPSB02-surf	0.1																						Hold
23	LPSB02-05	0.5											X					X	X	X	X	X	X	
24	LPSB02-1.0	1.0																						Hold
25	R01		5/11		X			X					X										X	
26	R02		6/11		X			X					X										X	
<del>27</del>	<del>LTAW1-surf</del>		<del>5/11/13</del>																					
28	LPSB03-1.0		5/11/13																					
29	TS9 -		30/10/13																					
30	TB																							
31	TSC																							

Comments: **Send results to John Ewing @ Symphony. Meegen@erm.com** \*Metals (circle)  
 Relinquished by: **Joshua Kowald** Signed: *[Signature]* Date/Time: **6/4/13** Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Signed: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b> : <b>ES1324260</b>	
<b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory</b> : Environmental Division Sydney  <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800	<b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555
<b>Project</b> : 0212789 SYMPHONY-LIDDEL <b>Order number</b> : ---- <b>C-O-C number</b> : 17017,17018 <b>Site</b> : MUSWELLBROOK,NSW <b>Sampler</b> : JK	<b>Page</b> : 1 of 3  <b>Quote number</b> : ES2013ENVRES0354 (EN/009/13)  <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

<b>Date Samples Received</b> : 08-NOV-2013 <b>Client Requested Due Date</b> : 15-NOV-2013	<b>Issue Date</b> : 13-NOV-2013 11:41 <b>Scheduled Reporting Date</b> : <b>15-NOV-2013</b>
--	---

#### Delivery Details

<b>Mode of Delivery</b> : Carrier <b>No. of coolers/boxes</b> : 7 HARD <b>Security Seal</b> : Intact.	<b>Temperature</b> : 5.7°C - Ice present <b>No. of samples received</b> : 31 <b>No. of samples analysed</b> : 15
---	--

#### 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
- Samples received in appropriately pretreated and preserved containers.
- Samples TS9\_30-10-13 and TSC were received extra and will be analysed for TPH C6-C10/BTEX. Please notify if this is not required.
- Samples LTMW1\_SURF, LPSB03\_1.0 and TB\_30/10/2013 were received extra and placed on hold.
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Breaches in recommended extraction / analysis holding times may occur. Please refer to the 'Proactive Holding Time Report' below for further details. Please contact ALS if further information is required.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA200 Asbestos Identification in Soils	SOIL - EP066 (solids) Polychlorinated Biphenyls by GC/MS	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1324260-001	06-NOV-2013 07:40	LT_MW02_0.5			✓		✓
ES1324260-002	06-NOV-2013 07:49	LT_MW02_1.0	✓				
ES1324260-003	06-NOV-2013 07:51	LT_MW01_0.1	✓				
ES1324260-004	06-NOV-2013 07:59	LT_MW01_0.5			✓		✓
ES1324260-005	06-NOV-2013 08:15	LT_MW03_0.1	✓				
ES1324260-006	06-NOV-2013 08:40	LT_MW03_0.5			✓		✓
ES1324260-007	06-NOV-2013 09:05	LT_MW03_1.0	✓				
ES1324260-008	06-NOV-2013 09:10	LT_MW04_0.1	✓				
ES1324260-009	06-NOV-2013 09:30	LT_MW04_0.5			✓		✓
ES1324260-010	06-NOV-2013 09:45	LT_MW04_1.0	✓				
ES1324260-011	06-NOV-2013 11:17	LP_MW01_0.1	✓				
ES1324260-012	06-NOV-2013 11:20	LP_MW01_0.7		✓			✓
ES1324260-013	06-NOV-2013 11:28	LP_MW01_1.0	✓				
ES1324260-014	06-NOV-2013 11:45	LP_SB01_0.1	✓				
ES1324260-015	06-NOV-2013 11:51	LP_SB01_0.5		✓			✓
ES1324260-016	06-NOV-2013 12:54	LP_SB03_0.1	✓				
ES1324260-017	06-NOV-2013 13:00	LP_SB03_0.5		✓			✓
ES1324260-018	06-NOV-2013 15:00	D01_061113_JK		✓			✓
ES1324260-019	06-NOV-2013 13:30	LO_SB09_0.1	✓				
ES1324260-020	06-NOV-2013 15:00	LO_SB09_0.5		✓	✓		✓
ES1324260-021	06-NOV-2013 15:00	LO_SB09_1.0	✓				
ES1324260-022	06-NOV-2013 15:00	LP_SB02_0.1	✓				
ES1324260-023	06-NOV-2013 15:00	LP_SB02_0.5		✓	✓		✓
ES1324260-024	06-NOV-2013 15:00	LP_SB02_1.0	✓				
ES1324260-027	05-NOV-2013 15:00	LT_MW01_0.1	✓				
ES1324260-028	06-NOV-2013 15:00	LP_SB03_1.0	✓				
ES1324260-029	30-OCT-2013 15:00	TS9_301013				✓	
ES1324260-030	30-OCT-2013 15:00	TB_301013				✓	
ES1324260-031	30-OCT-2013 15:00	TSC9_301013				✓	



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1324260-025	05-NOV-2013 15:00	R01_051113_JK	✓
ES1324260-026	06-NOV-2013 15:00	R02_061113_JK	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### SYMPHONY MACGEN

- \*AU Certificate of Analysis - NATA Email symphony.macgen@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) Email symphony.macgen@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA Email symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT Email symphony.macgen@erm.com
- Chain of Custody (CoC) Email symphony.macgen@erm.com
- EDI Format - ENMRG Email symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM Email symphony.macgen@erm.com
- EDI Format - ESDAT Email symphony.macgen@erm.com
- EDI Format - XTab Email symphony.macgen@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

**CERTIFICATE OF ANALYSIS**

Work Order	: <b>ES1324260</b>	Page	: 1 of 12
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0212789 SYMPHONY-LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 08-NOV-2013
C-O-C number	: 17017,17018	Issue Date	: 15-NOV-2013
Sampler	: JK	No. of samples received	: 31
Site	: MUSWELLBROOK,NSW	No. of samples analysed	: 15
Quote number	: EN/009/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LT_MW02_0.5	LT_MW01_0.5	LT_MW03_0.5	LT_MW04_0.5	LP_MW01_0.7
				06-NOV-2013 07:40	06-NOV-2013 07:59	06-NOV-2013 08:40	06-NOV-2013 09:30	06-NOV-2013 11:20
Compound	CAS Number	LOR	Unit	ES1324260-001	ES1324260-004	ES1324260-006	ES1324260-009	ES1324260-012
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	21.7	29.7	13.4	20.6	27.5
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	No
Asbestos Type	1332-21-4	0.1	--	----	----	----	----	-
Sample weight (dry)	----	0.01	g	----	----	----	----	16.3
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	S.SPOONER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	12	9	7	12	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	24	10	14	15
Copper	7440-50-8	5	mg/kg	26	15	7	18	<5
Lead	7439-92-1	5	mg/kg	16	14	10	13	9
Nickel	7440-02-0	2	mg/kg	28	19	8	18	10
Zinc	7440-66-6	5	mg/kg	59	40	36	60	12
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LT_MW02_0.5	LT_MW01_0.5	LT_MW03_0.5	LT_MW04_0.5	LP_MW01_0.7
				06-NOV-2013 07:40	06-NOV-2013 07:59	06-NOV-2013 08:40	06-NOV-2013 09:30	06-NOV-2013 11:20
Compound	CAS Number	LOR	Unit	ES1324260-001	ES1324260-004	ES1324260-006	ES1324260-009	ES1324260-012
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LT_MW02_0.5	LT_MW01_0.5	LT_MW03_0.5	LT_MW04_0.5	LP_MW01_0.7
				06-NOV-2013 07:40	06-NOV-2013 07:59	06-NOV-2013 08:40	06-NOV-2013 09:30	06-NOV-2013 11:20
Compound	CAS Number	LOR	Unit	ES1324260-001	ES1324260-004	ES1324260-006	ES1324260-009	ES1324260-012
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	71.6	64.7	67.8	63.6	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.0	93.6	98.6	96.4	96.4
2-Chlorophenol-D4	93951-73-6	0.1	%	105	99.7	107	105	103
2,4,6-Tribromophenol	118-79-6	0.1	%	100	91.0	92.9	89.8	89.1
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	98.5	94.0	98.8	98.8	97.2
Anthracene-d10	1719-06-8	0.1	%	93.1	88.2	89.8	90.3	88.7
4-Terphenyl-d14	1718-51-0	0.1	%	93.0	88.4	93.3	93.2	91.3
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.7	82.0	96.9	77.3	82.3
Toluene-D8	2037-26-5	0.1	%	101	104	107	98.2	90.2
4-Bromofluorobenzene	460-00-4	0.1	%	98.0	96.4	98.8	94.8	86.2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB01_0.5	LP_SB03_0.5	D01_061113_JK	LO_SB09_0.5	LP_SB02_0.5
				06-NOV-2013 11:51	06-NOV-2013 13:00	06-NOV-2013 15:00	06-NOV-2013 15:00	06-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324260-015	ES1324260-017	ES1324260-018	ES1324260-020	ES1324260-023
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	11.4	19.4	17.5	19.8	19.6
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	0.1	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	24.4	27.3	21.9	35.5	28.8
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	15	15	12	13
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	25	23	12	16
Copper	7440-50-8	5	mg/kg	16	23	22	24	27
Lead	7439-92-1	5	mg/kg	14	21	19	14	16
Nickel	7440-02-0	2	mg/kg	20	32	32	16	18
Zinc	7440-66-6	5	mg/kg	51	58	56	60	72
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB01_0.5	LP_SB03_0.5	D01_061113_JK	LO_SB09_0.5	LP_SB02_0.5
				06-NOV-2013 11:51	06-NOV-2013 13:00	06-NOV-2013 15:00	06-NOV-2013 15:00	06-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324260-015	ES1324260-017	ES1324260-018	ES1324260-020	ES1324260-023
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB01_0.5	LP_SB03_0.5	D01_061113_JK	LO_SB09_0.5	LP_SB02_0.5
				06-NOV-2013 11:51	06-NOV-2013 13:00	06-NOV-2013 15:00	06-NOV-2013 15:00	06-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324260-015	ES1324260-017	ES1324260-018	ES1324260-020	ES1324260-023
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	67.0	60.3
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	93.8	95.1	95.2	97.5	88.3
2-Chlorophenol-D4	93951-73-6	0.1	%	99.3	102	102	106	96.3
2,4,6-Tribromophenol	118-79-6	0.1	%	86.1	86.4	85.3	89.1	78.8
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	93.4	96.0	96.5	97.1	89.6
Anthracene-d10	1719-06-8	0.1	%	84.2	89.3	88.3	90.8	82.9
4-Terphenyl-d14	1718-51-0	0.1	%	87.9	91.7	90.9	93.5	85.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	77.5	75.2	91.6	83.2	78.0
Toluene-D8	2037-26-5	0.1	%	87.9	82.6	99.4	89.7	83.8
4-Bromofluorobenzene	460-00-4	0.1	%	82.0	80.5	92.2	83.6	80.0



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TS9_301013	TB_301013	TSC9_301013	----	----
				30-OCT-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1324260-029	ES1324260-030	ES1324260-031	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	65	<10	71	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	70	<10	77	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	46	<10	52	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	0.5	<0.2	0.5	----	----
Toluene	108-88-3	0.5	mg/kg	12.0	<0.5	12.6	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	1.4	<0.5	1.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	7.3	<0.5	7.6	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	2.8	<0.5	2.9	----	----
^ Sum of BTEX	----	0.2	mg/kg	24.0	<0.2	25.1	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	10.1	<0.5	10.5	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	80.9	117	96.8	----	----
Toluene-D8	2037-26-5	0.1	%	83.1	122	105	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	79.7	105	98.2	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_051113_JK	R02_061113_JK	---	---	---
				05-NOV-2013 15:00	06-NOV-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1324260-025	ES1324260-026	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	93.1	89.2	----	----	----
Toluene-D8	2037-26-5	0.1	%	86.3	94.5	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	94.1	102	----	----	----



## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LP_MW01_0.7 - 06-NOV-2013 11:20	Pale brown clay soil with grey and red rocks plus a trace of vegetation.
EA200: Description	LP_SB01_0.5 - 06-NOV-2013 11:51	Mid brown clay soil with dark grey and orange rocks plus a trace of vegetation.
EA200: Description	LP_SB03_0.5 - 06-NOV-2013 13:00	Mid orange clay soil with grey rocks plus a trace of vegetation.
EA200: Description	D01_061113_JK - 06-NOV-2013 15:00	Mid orange clay soil with grey rocks plus a trace of vegetation.
EA200: Description	LO_SB09_0.5 - 06-NOV-2013 15:00	Mid yellow - brown clay soil with grey rocks plus a trace of vegetation.
EA200: Description	LP_SB02_0.5 - 06-NOV-2013 15:00	Mid yellow - brown clay soil with grey rocks plus a trace of vegetation.



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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	: <b>ES1324260</b>	Page	: 1 of 13
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0212789 SYMPHONY-LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: MUSWELLBROOK,NSW	Date Samples Received	: 08-NOV-2013
C-O-C number	: 17017,17018	Issue Date	: 15-NOV-2013
Sampler	: JK	No. of samples received	: 31
Order number	: ----	No. of samples analysed	: 15
Quote number	: EN/009/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3152346)</b>									
ES1324197-036	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.0	5.7	13.4	No Limit
ES1324252-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	41.1	42.2	2.7	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3152347)</b>									
ES1324260-009	LT_MW04_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.6	19.8	3.7	0% - 20%
ES1324281-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	30.3	25.1	18.8	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3155651)</b>									
ES1324233-007	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	8	24.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	36	33	9.6	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	8	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	17	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	70	65	6.9	0% - 50%
ES1324260-020	LO_SB09_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	15	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	9	20.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	21	16.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	15	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	60	54	9.6	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3155652)</b>									
ES1324233-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324260-020	LO_SB09_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3154233)</b>									
ES1324220-039	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324373-004	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155824)</b>									
ES1324260-001	LT_MW02_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)		
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155824) - continued</b>											
ES1324260-001	LT_MW02_0.5	EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
ES1324261-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155824)</b>											
ES1324260-001	LT_MW02_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		ES1324261-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155824) - continued</b>									
ES1324261-002	Anonymous	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3154163)</b>									
ES1324260-001	LT_MW02_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324260-023	LP_SB02_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3155823)</b>									
ES1324260-001	LT_MW02_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324261-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3154163)</b>									
ES1324260-001	LT_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324260-023	LP_SB02_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3155823)</b>									
ES1324260-001	LT_MW02_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324261-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3154163)</b>									
ES1324260-001	LT_MW02_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3154163) - continued</b>									
ES1324260-001	LT_MW02_0.5	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324260-023	LP_SB02_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3156428)</b>									
ES1324260-025	R01_051113_JK	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1324339-029	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3156428)</b>									
ES1324260-025	R01_051113_JK	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1324339-029	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3156428)</b>									
ES1324260-025	R01_051113_JK	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES1324339-029	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
	91-20-3	5	µg/L	<5	<5	0.0	No Limit		



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155651)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	106	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	106	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	104	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	101	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155652)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	71.6	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3154233)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	96.0	57.4	117	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	95.1	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.8	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	92.2	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	89.8	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	70.6	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	83.6	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	80.5	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	86.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	80.6	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	81.3	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	86.3	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	12.4	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.0	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	96.6	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	99.8	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	99.5	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	106	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	91.6	73	121	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824) - continued</b>									
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	100	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	77.7	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	99.8	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	98.9	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	75.6	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	79.8	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	85.6	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3154163)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.5	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	106	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	104	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	86.7	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3160935)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	118	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3154163)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.5	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	101	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	98.9	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	72.2	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3160935)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	120	68.4	128	
<b>EP080: BTEXN (QCLot: 3154163)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.3	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.5	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.8	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.2	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	89.8	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	85.8	62	138	
<b>EP080: BTEXN (QCLot: 3160935)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	109	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	106	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	111	60	120	





Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EP080: BTEXN (QCLot: 3160935) - continued</b>									
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	104	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.6	62	138	

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3152390)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.5	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	96.3	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	97.5	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156428)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	80.0	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3152390)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	93.6	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.8	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	99.3	67	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156428)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	82.5	75	127	
<b>EP080: BTEXN (QCLot: 3156428)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	81.1	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	78.8	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	78.8	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	77.4	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	84.8	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	99.7	70	124	

### 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	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155651)</b>							
ES1324233-007	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.5	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155651) - continued</b>							
ES1324233-007	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	99.1	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155652)</b>							
ES1324233-007	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	89.3	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3154233)</b>							
ES1324220-039	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	88.3	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>							
ES1324260-001	LT_MW02_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	79.4	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.2	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	80.4	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	62.4	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>							
ES1324260-001	LT_MW02_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.3	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3154163)</b>							
ES1324260-001	LT_MW02_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	103	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>							
ES1324260-001	LT_MW02_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	84.4	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.4	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.1	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3154163)</b>							
ES1324260-001	LT_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.9	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>							
ES1324260-001	LT_MW02_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.4	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.9	52	132
<b>EP080: BTEXN (QCLot: 3154163)</b>							
ES1324260-001	LT_MW02_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	96.4	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	104	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	102	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	102	70	130
		EP080: ortho-Xylene	106-42-3 95-47-6	2.5 mg/kg	102	70	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080: BTEXN (QCLot: 3154163) - continued</b>							
ES1324260-001	LT_MW02_0.5	EP080: Naphthalene	91-20-3	2.5 mg/kg	104	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156428)</b>								
ES1324260-025	R01_051113_JK	EP080: C6 - C9 Fraction	----	325 µg/L	113	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156428)</b>								
ES1324260-025	R01_051113_JK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	113	70	130	
<b>EP080: BTEXN (QCLot: 3156428)</b>								
ES1324260-025	R01_051113_JK	EP080: Benzene	71-43-2	25 µg/L	82.6	70	130	
		EP080: Toluene	108-88-3	25 µg/L	88.1	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	86.7	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	79.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	90.4	70	130	
	EP080: Naphthalene	91-20-3	25 µg/L	102	70	130		

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3154163)</b>											
ES1324260-001	LT_MW02_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	103	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3154163)</b>											
ES1324260-001	LT_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.9	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3154163)</b>											
ES1324260-001	LT_MW02_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	96.4	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	104	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	102	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	102	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	102	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	104	----	70	130	----	----		
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3154233)</b>											



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3154233) - continued</b>										
ES1324220-039	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	88.3	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155651)</b>										
ES1324233-007	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	98.5	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	103	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	102	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----
EG005T: Zinc	7440-66-6	125 mg/kg	99.1	----	70	130	----	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155652)</b>										
ES1324233-007	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	89.3	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>										
ES1324260-001	LT_MW02_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	84.4	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.4	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.1	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>										
ES1324260-001	LT_MW02_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.4	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.9	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>										
ES1324260-001	LT_MW02_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	79.4	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.3	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.2	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	80.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	62.4	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>										
ES1324260-001	LT_MW02_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.3	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156428)</b>										
ES1324260-025	R01_051113_JK	EP080: C6 - C9 Fraction	----	325 µg/L	113	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156428)</b>										
ES1324260-025	R01_051113_JK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	113	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3156428)</b>										
ES1324260-025	R01_051113_JK	EP080: Benzene	71-43-2	25 µg/L	82.6	----	70	130	----	----



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report</i>						
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>		<i>Recovery Limits (%)</i>		<i>RPDs (%)</i>	
				<i>Concentration</i>	<i>MS</i>	<i>MSD</i>	<i>Low</i>	<i>High</i>	<i>Value</i>	<i>Control Limit</i>
<b>EP080: BTEXN (QCLot: 3156428) - continued</b>										
ES1324260-025	R01_051113_JK	EP080: Toluene	108-88-3	25 µg/L	88.1	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	86.7	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	79.6	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	90.4	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	102	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324260</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0212789 SYMPHONY-LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: MUSWELLBROOK,NSW	Date Samples Received	: 08-NOV-2013
C-O-C number	: 17017,17018	Issue Date	: 15-NOV-2013
Sampler	: JK	No. of samples received	: 31
Order number	: ----	No. of samples analysed	: 15
Quote number	: EN/009/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5,	LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	----	----	----	11-NOV-2013	20-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
<b>Snap Lock Bag (EA200)</b>								
LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5,	LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	---	05-MAY-2014	----	15-NOV-2013	14-MAY-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5,	LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	13-NOV-2013	05-MAY-2014	✓	14-NOV-2013	05-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5,	LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	13-NOV-2013	04-DEC-2013	✓	15-NOV-2013	04-DEC-2013	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
LT_MW02_0.5, LT_MW03_0.5, LO_SB09_0.5,	LT_MW01_0.5, LT_MW04_0.5, LP_SB02_0.5	06-NOV-2013	13-NOV-2013	20-NOV-2013	✓	13-NOV-2013	23-DEC-2013	✓



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
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5, LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	14-NOV-2013	20-NOV-2013	✓	14-NOV-2013	24-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5, LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	14-NOV-2013	20-NOV-2013	✓	15-NOV-2013	24-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5, LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	14-NOV-2013	20-NOV-2013	✓	15-NOV-2013	24-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5, LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	12-NOV-2013	20-NOV-2013	✓	13-NOV-2013	20-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS9_301013, TSC9_301013	30-OCT-2013	12-NOV-2013	13-NOV-2013	✓	13-NOV-2013	13-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TB_301013	30-OCT-2013	15-NOV-2013	13-NOV-2013	*	15-NOV-2013	13-NOV-2013	*
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LT_MW02_0.5, LT_MW03_0.5, LP_MW01_0.7, LP_SB03_0.5, LO_SB09_0.5, LT_MW01_0.5, LT_MW04_0.5, LP_SB01_0.5, D01_061113_JK, LP_SB02_0.5	06-NOV-2013	12-NOV-2013	20-NOV-2013	✓	13-NOV-2013	20-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS9_301013, TSC9_301013	30-OCT-2013	12-NOV-2013	13-NOV-2013	✓	13-NOV-2013	13-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TB_301013	30-OCT-2013	15-NOV-2013	13-NOV-2013	*	15-NOV-2013	13-NOV-2013	*





Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01_051113_JK	05-NOV-2013	11-NOV-2013	12-NOV-2013	✓	12-NOV-2013	21-DEC-2013	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R02_061113_JK	06-NOV-2013	11-NOV-2013	13-NOV-2013	✓	12-NOV-2013	21-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_051113_JK	05-NOV-2013	14-NOV-2013	19-NOV-2013	✓	14-NOV-2013	19-NOV-2013	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R02_061113_JK	06-NOV-2013	14-NOV-2013	20-NOV-2013	✓	14-NOV-2013	20-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_051113_JK	05-NOV-2013	14-NOV-2013	19-NOV-2013	✓	14-NOV-2013	19-NOV-2013	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R02_061113_JK	06-NOV-2013	14-NOV-2013	20-NOV-2013	✓	14-NOV-2013	20-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	21	9.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	21	9.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

Matrix: SOIL

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EP080/071: Total Petroleum Hydrocarbons</b>						
Soil Glass Jar - Unpreserved TB_301013	15-NOV-2013	13-NOV-2013	2	15-NOV-2013	13-NOV-2013	2
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>						
Soil Glass Jar - Unpreserved TB_301013	15-NOV-2013	13-NOV-2013	2	15-NOV-2013	13-NOV-2013	2
<b>EP080: BTEXN</b>						
Soil Glass Jar - Unpreserved TB_301013	15-NOV-2013	13-NOV-2013	2	15-NOV-2013	13-NOV-2013	2

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



- Sydney
- Melbourne
- Brisbane
- Perth
- Hunter Valley
- North Coast
- Other

Ground Floor, 33 Saunders Street, Pyrmont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800  
 Level 3, Tower 3, Yarra Tower, WTC, 18-38 Siddely Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022  
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381  
 Level 6, Grain Pool Bld, 172 St Georges Tce, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262  
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152  
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No: **02/13789**

COC Number  
**A 17016**

Project Name: **Project Symphony**

Project Location: **Liddell Power Station**

Project Manager: **Joseph**

Sampler: **Joshua Kovatol**

Laboratory

**ALS**

General Analysis Requirements

1. Turn Around Time (please tick:  1 Day  2 Days  3 Days  Normal TAT)
2. Do you wish any sediment layers in water to be excluded from extractions?
3. Additional QA/QC reported where sample batches are < 10 samples?
4. % of extraneous material removed from samples to be reported as per NEPM 5.1.1?

Yes (tick)

Other Comments on sample  
(eg: high voc, highly contaminated, special detection limits etc etc)

**Precedence**  
⌞

Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Preservation				Containers (number/type)	BTEX	TPH (C6-C9 P & T) + TPH (C10-C36)	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	TRIT C6-G0	
					Soil	Water	Other	Ice	Acid	Filter	Other													
1	LK-MW2.Surf	0.1	5/11	11:40	X			X				(2) Jar	X						X	X		X	X	
2	LK-MW2.05	0.5	5/11	11:35																				
3	LK-MW2.1.0	1.0	5/11	11:40																				
4	LK-SB2.Surf	0.1	5/11	12:40																				
5	LK-SB02.05	0.5	5/11	12:45																				
6	LK-SB02.1.0	1.0	5/11	12:47																				
7	LK-SB01.Surf	0.1	5/11	12:55																				
8	LK-SB01.05	0.5	5/11	13:15																				
9	LK-SB01.1.0	1.0	5/11	13:35																				
10	LK-MW01.Surf	0.1	5/11	13:58																				
11	LK-MW01.05	0.5	5/11	14:02																				
12	LK-MW03.Surf	0.1	5/11	14:52																				
13	LK-MW03.05	0.5	5/11	14:58																				
14	LK001	-	5/11	-																				
15	LK-MW03.1.0	1.0	5/11	14:57																				
16	LK-MW01	1.0	5/11/13																					
17	TS 10	30/10	13:00																					
18	TB																							
19	TSC																							

Environmental Division  
Sydney  
Work Order  
**ES1324261**

Telephone: +61-2-8784 8555

Hold  
Hold  
Hold  
Hold  
Hold

Comments: **Send results to Symphony Macgen@ERM.com**

\*Metals (circle)  
As Cd Cr Cu Hg Ni Pb Zn

Requested by: **Joshua Kovatol** Signed: *[Signature]* Date/Time: **5/11/13** Received by: **Stevie** Date/Time: **8/11/13 10:20**

by: \_\_\_\_\_ Signed: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1324261**

<p><b>Client : ENVIRO RESOURCES MANAGEMENT</b></p> <p><b>Contact : MR JOSEPH FERRING</b></p> <p><b>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b></p>	<p><b>Laboratory : Environmental Division Sydney</b></p> <p><b>Contact : Barbara Hanna</b></p> <p><b>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</b></p>
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<p><b>E-mail : joseph.ferring@erm.com</b></p> <p><b>Telephone : +61 02 8584 8888</b></p> <p><b>Facsimile : +61 02 8584 8800</b></p>	<p><b>E-mail : Barbara.Hanna@alsglobal.com</b></p> <p><b>Telephone : +61 2 8784 8555</b></p> <p><b>Facsimile : +61 2 8784 8555</b></p>
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<p><b>Project : 0213789 PROJECT SYMPHONY</b></p> <p><b>Order number : ----</b></p> <p><b>C-O-C number : 17016</b></p> <p><b>Site : LIDDEL POWER STATION</b></p> <p><b>Sampler : JK</b></p>	<p><b>Page : 1 of 3</b></p> <p><b>Quote number : ES2013ENVRES0354 (EN/009/13)</b></p> <p><b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b></p>
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#### Dates

<p><b>Date Samples Received : 08-NOV-2013</b></p> <p><b>Client Requested Due Date : 15-NOV-2013</b></p>	<p><b>Issue Date : 13-NOV-2013 11:35</b></p> <p><b>Scheduled Reporting Date : 15-NOV-2013</b></p>
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#### Delivery Details

<p><b>Mode of Delivery : Carrier</b></p> <p><b>No. of coolers/boxes : 7 HARDS</b></p> <p><b>Security Seal : Intact.</b></p>	<p><b>Temperature : 5.7°C - Ice present</b></p> <p><b>No. of samples received : 19</b></p> <p><b>No. of samples analysed : 9</b></p>
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample LKMW01\_1.0 received extra and placed on hold, Please confirm**
- **Sample TS, TB and TSC received extra and conducted TPH C6-C9/BTEX analysis, Please confirm**
- 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 (14 days), Solid (60 days) from date of completion of work order.





## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/6Metals
ES1324261-001	05-NOV-2013 11:30	LK_MW02_0.1	✓			
ES1324261-002	05-NOV-2013 11:35	LK_MW02_0.5				✓
ES1324261-003	05-NOV-2013 11:40	LK_MW02_1.0	✓			
ES1324261-004	05-NOV-2013 12:40	LK_SB02_0.1	✓			
ES1324261-005	05-NOV-2013 12:45	LK_SB02_0.5				✓
ES1324261-006	05-NOV-2013 12:47	LK_SB02_1.0	✓			
ES1324261-007	05-NOV-2013 12:55	LK_SB01_0.1	✓			
ES1324261-008	05-NOV-2013 13:25	LK_SB01_0.5				✓
ES1324261-009	05-NOV-2013 13:35	LK_SB01_1.0	✓			
ES1324261-010	05-NOV-2013 13:58	LK_MW01_0.1	✓			
ES1324261-011	05-NOV-2013 14:02	LK_MW01_0.5				✓
ES1324261-012	05-NOV-2013 14:32	LK_MW03_0.1	✓			
ES1324261-013	05-NOV-2013 14:58	LK_MW03_0.5				✓
ES1324261-014	05-NOV-2013 15:00	D01_051113_JK				✓
ES1324261-015	05-NOV-2013 14:57	LK_MW03_1.0	✓			
ES1324261-016	05-NOV-2013 15:00	LK_MW01_1.0	✓			
ES1324261-017	30-OCT-2013 15:00	TS10_301013		✓		
ES1324261-018	30-OCT-2013 15:00	TB_301013		✓		
ES1324261-019	30-OCT-2013 15:00	TSC10_301013		✓		

## Proactive Holding Time Report

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



## *Requested Deliverables*

### **MR JOSEPH FERRING**

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

### **SYMPHONY MACGEN**

- \*AU Certificate of Analysis - NATA Email symphony.macgen@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) Email symphony.macgen@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA Email symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT Email symphony.macgen@erm.com
- Chain of Custody (CoC) Email symphony.macgen@erm.com
- EDI Format - ENMRG Email symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM Email symphony.macgen@erm.com
- EDI Format - ESDAT Email symphony.macgen@erm.com
- EDI Format - XTab Email symphony.macgen@erm.com

### **THE ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324261</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : 0213789 PROJECT SYMPHONY <b>Order number</b> : ---- <b>C-O-C number</b> : 17016 <b>Sampler</b> : JK <b>Site</b> : LIDDEL POWER STATION  <b>Quote number</b> : EN/009/13	<b>Page</b> : 1 of 9  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 08-NOV-2013 <b>Issue Date</b> : 15-NOV-2013  <b>No. of samples received</b> : 19 <b>No. of samples analysed</b> : 9
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



## General Comments

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

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

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

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LK_MW02_0.5	LK_SB02_0.5	LK_SB01_0.5	LK_MW01_0.5	LK_MW03_0.5
				05-NOV-2013 11:35	05-NOV-2013 12:45	05-NOV-2013 13:25	05-NOV-2013 14:02	05-NOV-2013 14:58
Compound	CAS Number	LOR	Unit	ES1324261-002	ES1324261-005	ES1324261-008	ES1324261-011	ES1324261-013
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.3	17.6	17.4	19.8	22.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	7	<5	10	14
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	28	12	12	15	27
Copper	7440-50-8	5	mg/kg	23	<5	<5	<5	10
Lead	7439-92-1	5	mg/kg	10	11	13	12	13
Nickel	7440-02-0	2	mg/kg	110	6	2	4	8
Zinc	7440-66-6	5	mg/kg	54	24	11	15	28
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LK_MW02_0.5	LK_SB02_0.5	LK_SB01_0.5	LK_MW01_0.5	LK_MW03_0.5
				05-NOV-2013 11:35	05-NOV-2013 12:45	05-NOV-2013 13:25	05-NOV-2013 14:02	05-NOV-2013 14:58
Compound	CAS Number	LOR	Unit	ES1324261-002	ES1324261-005	ES1324261-008	ES1324261-011	ES1324261-013
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LK_MW02_0.5	LK_SB02_0.5	LK_SB01_0.5	LK_MW01_0.5	LK_MW03_0.5
				05-NOV-2013 11:35	05-NOV-2013 12:45	05-NOV-2013 13:25	05-NOV-2013 14:02	05-NOV-2013 14:58
Compound	CAS Number	LOR	Unit	ES1324261-002	ES1324261-005	ES1324261-008	ES1324261-011	ES1324261-013
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	94.1	95.5	94.3	103	101
2-Chlorophenol-D4	93951-73-6	0.1	%	101	101	102	107	106
2,4,6-Tribromophenol	118-79-6	0.1	%	82.6	82.8	82.3	90.9	89.7
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	95.3	95.6	94.4	100	98.3
Anthracene-d10	1719-06-8	0.1	%	86.7	88.6	90.4	94.5	94.9
4-Terphenyl-d14	1718-51-0	0.1	%	88.6	96.3	94.6	104	103
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	90.9	87.7	85.9	100	96.5
Toluene-D8	2037-26-5	0.1	%	97.5	105	90.7	105	97.1
4-Bromofluorobenzene	460-00-4	0.1	%	107	106	89.4	103	97.2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_051113_JK	TS10_301013	TB_301013	TSC10_301013	----
				05-NOV-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1324261-014	ES1324261-017	ES1324261-018	ES1324261-019	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.7	----	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	13	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	17	----	----	----	----
Copper	7440-50-8	5	mg/kg	13	----	----	----	----
Lead	7439-92-1	5	mg/kg	15	----	----	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	----	----
Zinc	7440-66-6	5	mg/kg	61	----	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				D01_051113_JK	TS10_301013	TB_301013	TSC10_301013	----
				05-NOV-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1324261-014	ES1324261-017	ES1324261-018	ES1324261-019	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<b>62</b>	<10	<b>77</b>	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<b>68</b>	<10	<b>83</b>	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<b>44</b>	<10	<b>56</b>	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<b>0.5</b>	<0.2	<b>0.5</b>	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<b>11.9</b>	<0.5	<b>13.5</b>	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<b>1.4</b>	<0.5	<b>1.6</b>	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<b>7.4</b>	<0.5	<b>8.1</b>	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<b>2.8</b>	<0.5	<b>3.1</b>	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_051113_JK	TS10_301013	TB_301013	TSC10_301013	----
				05-NOV-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	30-OCT-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1324261-014	ES1324261-017	ES1324261-018	ES1324261-019	----
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	24.0	<0.2	26.8	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	10.2	<0.5	11.2	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	94.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	99.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	84.9	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	94.8	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	89.5	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	97.6	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	86.6	88.8	87.8	----
Toluene-D8	2037-26-5	0.1	%	99.6	97.0	102	116	----
4-Bromofluorobenzene	460-00-4	0.1	%	101	95.2	96.9	108	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1324261</b>	<b>Page</b>	: 1 of 11
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	<b>: GROUND FLOOR</b> 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	<b>: 0213789 PROJECT SYMPHONY</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	<b>: LIDDEL POWER STATION</b>	<b>Date Samples Received</b>	: 08-NOV-2013
<b>C-O-C number</b>	<b>: 17016</b>	<b>Issue Date</b>	: 15-NOV-2013
<b>Sampler</b>	<b>: JK</b>	<b>No. of samples received</b>	: 19
<b>Order number</b>	<b>: ----</b>	<b>No. of samples analysed</b>	: 9
<b>Quote number</b>	<b>: EN/009/13</b>		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba

#### Position

Senior Spectroscopist  
Senior Organic Chemist

#### Accreditation Category

Sydney Inorganics  
Sydney Organics



### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3156252)</b>									
ES1324237-021	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.9	12.6	5.2	0% - 50%
ES1324237-032	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	8.6	8.2	5.0	No Limit
<b>EA055: Moisture Content (QC Lot: 3156253)</b>									
ES1324261-013	LK_MW03_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.8	21.0	8.1	0% - 20%
ES1324338-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.3	6.4	2.0	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3155654)</b>									
ES1324261-002	LK_MW02_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	34	17.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	110	103	7.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	17.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	27	17.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	54	54	0.0	0% - 50%
ES1324309-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	6	38.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	8	24.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	18	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3155655)</b>									
ES1324261-002	LK_MW02_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324309-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155824)</b>									
ES1324260-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155824) - continued</b>									
ES1324260-001	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1324261-002	LK_MW02_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155824)</b>									
ES1324260-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1324261-002	LK_MW02_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155824) - continued</b>									
ES1324261-002	LK_MW02_0.5	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3155620)</b>									
ES1324261-002	LK_MW02_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324261-014	D01_051113_JK	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3155823)</b>									
ES1324260-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324261-002	LK_MW02_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3155620)</b>									
ES1324261-002	LK_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324261-014	D01_051113_JK	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3155823)</b>									
ES1324260-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324261-002	LK_MW02_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3155620)</b>									
ES1324261-002	LK_MW02_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit





Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3155620) - continued</b>									
ES1324261-014	D01_051113_JK	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155654)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	115	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	115	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	114	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	108	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	118	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155655)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	81.3	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	95.1	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.8	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	92.2	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	89.8	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	70.6	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	83.6	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	80.5	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	86.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	80.6	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	81.3	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	86.3	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	12.4	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.0	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	96.6	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	99.8	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	99.5	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	106	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	91.6	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	100	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	77.7	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	99.8	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	98.9	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	75.6	71	113	
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	79.8	71.7	113	
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	85.6	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155620)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.8	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	106	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	104	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	86.7	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155620)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.5	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	101	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	98.9	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	72.2	63	131	
<b>EP080: BTEXN (QCLot: 3155620)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	70.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	81.6	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.6	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	84.6	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.8	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	86.8	62	138	

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155654)</b>								
ES1324261-002	LK_MW02_0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	115	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	120	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155654) - continued</b>								
ES1324261-002	LK_MW02_0.5	EG005T: Copper	7440-50-8	125 mg/kg	118	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	108	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	89.8	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	101	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155655)</b>								
ES1324261-002	LK_MW02_0.5	EG035T: Mercury	7439-97-6	5 mg/kg	96.1	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>								
ES1324260-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	79.4	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.3	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.2	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	80.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	62.4	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>								
ES1324260-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.3	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155620)</b>								
ES1324261-002	LK_MW02_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	92.8	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>								
ES1324260-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	84.4	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.4	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.1	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155620)</b>								
ES1324261-002	LK_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.2	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>								
ES1324260-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.4	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.9	52	132	
<b>EP080: BTEXN (QCLot: 3155620)</b>								
ES1324261-002	LK_MW02_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	93.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	80.2	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.8	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	85.7	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.6	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	91.5	70	130			



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
				Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155620)</b>											
ES1324261-002	LK_MW02_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	92.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155620)</b>											
ES1324261-002	LK_MW02_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	88.2	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3155620)</b>											
ES1324261-002	LK_MW02_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	93.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	80.2	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.8	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	85.7	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.6	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.5	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3155654)</b>											
ES1324261-002	LK_MW02_0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	115	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	120	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	118	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	108	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	89.8	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	101	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3155655)</b>											
ES1324261-002	LK_MW02_0.5	EG035T: Mercury	7439-97-6	5 mg/kg	96.1	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155823)</b>											
ES1324260-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	84.4	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	79.4	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	68.1	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155823)</b>											
ES1324260-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.4	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.9	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824)</b>											
ES1324260-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	79.4	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.3	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	72.2	----	60	130	----	----	



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155824) - continued</b>										
ES1324260-001	Anonymous	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	80.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	62.4	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155824)</b>										
ES1324260-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	90.3	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324261</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0213789 PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDEL POWER STATION	Date Samples Received	: 08-NOV-2013
C-O-C number	: 17016	Issue Date	: 15-NOV-2013
Sampler	: JK	No. of samples received	: 19
Order number	: ----	No. of samples analysed	: 9
Quote number	: EN/009/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	----	----	----	13-NOV-2013	19-NOV-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	13-NOV-2013	04-MAY-2014	✓	13-NOV-2013	04-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	13-NOV-2013	03-DEC-2013	✓	14-NOV-2013	03-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	14-NOV-2013	19-NOV-2013	✓	14-NOV-2013	24-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	14-NOV-2013	19-NOV-2013	✓	15-NOV-2013	24-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	14-NOV-2013	19-NOV-2013	✓	15-NOV-2013	24-DEC-2013	✓





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	
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	13-NOV-2013	19-NOV-2013	✓	13-NOV-2013	19-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS10_301013, TSC10_301013	TB_301013,	30-OCT-2013	13-NOV-2013	13-NOV-2013	✓	13-NOV-2013	13-NOV-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LK_MW02_0.5, LK_SB01_0.5, LK_MW03_0.5,	LK_SB02_0.5, LK_MW01_0.5, D01_051113_JK	05-NOV-2013	13-NOV-2013	19-NOV-2013	✓	13-NOV-2013	19-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS10_301013, TSC10_301013	TB_301013,	30-OCT-2013	13-NOV-2013	13-NOV-2013	✓	13-NOV-2013	13-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	36	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



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## Summary of Outliers

### Outliers : Quality Control Samples

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

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

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

#### **Regular Sample Surrogates**

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.
-

Edm 3



**CHAIN OF CUSTODY**

ALS Laboratory  
 please tick

ALS Laboratory  
 please tick

ALS Laboratory  
 please tick

ALS Laboratory  
 please tick

ALS Laboratory  
 please tick

ALS Laboratory  
 please tick

**CLIENT:** ERM

**OFFICE:** SYDNEY

**PROJECT:** Project Symphony

**ORDER NUMBER:** 0224198

**PROJECT MANAGER:** JOE FERRING

**SAMPLER:** T. ARNANI

**COC emailed to ALS?** ( YES / NO )

**Relinquished by:** T. ARNANI

**DATE/TIME:** 8.11.13 / 1700

**Relinquished by:** [Signature]

**DATE/TIME:** 11/11/13 1700

**Relinquished by:** [Signature]

**DATE/TIME:** 11/11/13 1700

**FOR LABORATORY USE ONLY (Circle)**

Custody Seal intact?  Yes  No

Free ice / frozen ice blocks present upon receipt?  Yes  No

Random Sample Temperature on Receipt: **4.6** °C

Other comment:

**TURNAROUND REQUIREMENTS:**  Standard TAT (List due date);  Non Standard or urgent TAT (List due date):

**Standard TAT (List due date):**

**Non Standard or urgent TAT (List due date):**

**ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be related to affected suite price)**

Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	TOTAL CONTAINERS	As Metals (As, Ba, Be, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	As Metals (As, Ba, Be, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	77 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Ni, Pb, Zn, Hg)	Mo, Ti, Se	Cd, Cr, Cu, Ni, Pb, Zn, B, Mn, Ni, Pb, V, Zn, B	S-24 TRHC-6	Cd, Cr, Cu, Ni, Pb, Zn, B	Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED07)	PFOS/PFOA	Asbestos (presence)	Particle Sizing to 75um (Sieve)	Organic Matter plus Total Organic Carbon (EP04)	Additional Information	
1	T/BLANK		Soil		1																		
2	T/SPIKE		Soil		1																		TRH / BTEX
3	ROL 081113-TA	8.11.13	WATER		3																		BTEX
4	LN-MW02-0.5		Soil		1	X					X												TRH/BTEX/Pb
5	LN-MW02-1.5				1	X					X												HOLD
6	LN-MW02-0.1				1	X					X												
7	LN-MW03-0.1				1	X					X												
8	LN-MW03-0.5				1	X					X												
9	LP-MW04-0.1				1	X					X												
10	LP-MW04-0.5				1	X					X												
11	LP-SB07-0.1				1	X					X												
12	LP-SB07-0.5				1	X					X												

**CONTAINER INFORMATION**

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

**ASBESTOS e EN**

**Environmental Division Sydney**

**Work Order ES1324460**

Barcode

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Milk Preserved Plastic; ORG = Nitric Preserved Plastic; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Aliphatic Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Class; H = HCl Preserved Plastic; HS = HCl Preserved Plastic; SP = Sulfuric Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

IPM 3



**CHAIN OF CUSTODY**

15000 W. 10th Avenue, Suite 300, Golden, CO 80401  
 Phone: 303.440.1770  
 Fax: 303.440.1771  
 Email: info@alslaboratory.com

3500 W. 10th Avenue, Suite 300, Golden, CO 80401  
 Phone: 303.440.1770  
 Fax: 303.440.1771  
 Email: info@alslaboratory.com

3500 W. 10th Avenue, Suite 300, Golden, CO 80401  
 Phone: 303.440.1770  
 Fax: 303.440.1771  
 Email: info@alslaboratory.com

3500 W. 10th Avenue, Suite 300, Golden, CO 80401  
 Phone: 303.440.1770  
 Fax: 303.440.1771  
 Email: info@alslaboratory.com

CLIENT: ERM

OFFICE: SYDNEY

PROJECT: Project Symphony

ORDER NUMBER: 0204198

PROJECT MANAGER: Joe Ferris

SAMPLER: T. ARMANI

COC emailed to ALS? ( YES / NO )

Site: BAYS WATER (ADDED)

ALS QUOTE NO.: SV794713

Standard TAT (List due date):  Standard  Non Standard or urgent TAT (List due date):

TURNAROUND REQUIREMENTS:

Standard TAT may be longer for some tests e.g., Ultra Trace Organics

RELINQUISHED BY: T. ARMANI DATE/TIME: 8-11-13/1700

RELINQUISHED BY: Rainwash DATE/TIME: 11/13/1700

FOR LABORATORY USE ONLY (Circle):

Category Seal Intact?  Yes  No

File for / freeze / ice bricks present upon receipt?  Yes  No

Random Sample Temperature on Receipt: 4°C

Other comment:

RECEIVED BY: Rainwash DATE/TIME: 11/13/1700

RECEIVED BY: Rainwash DATE/TIME: 11/13/1700

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Asbestos e-ov (except for LP-SB08-0.1 - requires split to be sent back)

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	CONTAINER INFORMATION										ANALYSIS REQUIRED (including SUITES (N/A, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottles required) or Dissolver (acid filtered bottle required).	Additional Information				
					TOTAL	(refer to)	CONAINERS	2-Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17-Metals (As, Ba, Be, Cd, Cr, Cu, Ni, Pb, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRHC- (Cd, Ag, TERN, PAH, Phenols)	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED07)			PFOA/PFOA	Asbestos (absence/presence)	Particle Sizing to 75um (Sieve)	Organic Matter plus Total Organic Carbon (EP04)
13	LP-SB09-0.1	8-11-13	SOIL		1															
14	LP-SB09-0.5				1		X													
15	DOL-08113-TA				1		X													
16	LP-MU03-0.1				2		X													
17	LP-SB06-0.1				1		X													
18	LP-SB06-0.5				1		X													
19	TOL-08113-TA				1		X													
20	LP-SB06-1.5				1		X													
21	LP-SB10-0.1				2		X													
22	LP-SB08-0.1				1		X													
23	TSC				1		X													
24	LP-SB08-0.5				1		X													
25	LP-SB08-0.5				1		X													

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OHC = Nitric Preserved ORC; S = Sodium Hydroxide Preserved Plastic; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved Plastic; AP = Air-tight Unpreserved Plastic; V = VOA; Vol HCl Preserved; VB = VOA Vol Sulfuric Preserved; AV = Air-tight Unpreserved Vol SCS = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Stable Bottle; ABS = Plastic Bag for Acid Sulphuric Soils; B = Unpreserved Bag.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b> : <b>ES1324460</b>	
<b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory</b> : Environmental Division Sydney  <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : Project Symphony <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : LIDDELL <b>Sampler</b> : TA
<b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : Project Symphony <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : LIDDELL <b>Sampler</b> : TA	<b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555  <b>Page</b> : 1 of 3  <b>Quote number</b> : ES2013ENVRES0369 (SY/794/13)  <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

<b>Date Samples Received</b> : 08-NOV-2013 <b>Client Requested Due Date</b> : 18-NOV-2013	<b>Issue Date</b> : 13-NOV-2013 11:10 <b>Scheduled Reporting Date</b> : <b>18-NOV-2013</b>
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#### Delivery Details

<b>Mode of Delivery</b> : Carrier <b>No. of coolers/boxes</b> : 1 HARD <b>Security Seal</b> : Intact.	<b>Temperature</b> : 4.6° C - Ice present <b>No. of samples received</b> : 23 <b>No. of samples analysed</b> : 22
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample T01\_081113\_TA will be forwarded to Envirolab as per COC.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA200 Asbestos Identification in Soils	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/6Metals
ES1324460-001	08-NOV-2013 15:00	TRIP BLANK					✓	
ES1324460-002	08-NOV-2013 15:00	TRIP SPIKE					✓	
ES1324460-004	08-NOV-2013 15:00	LN_MW02_0.5	✓					
ES1324460-005	08-NOV-2013 15:00	LN_MW02_1.5			✓	✓		✓
ES1324460-006	08-NOV-2013 15:00	LN_MW02_0.1		✓				
ES1324460-007	08-NOV-2013 15:00	LN_MW03_0.1		✓				
ES1324460-008	08-NOV-2013 15:00	LN_MW03_0.5			✓	✓		✓
ES1324460-009	08-NOV-2013 15:00	LP_MW04_0.1		✓				
ES1324460-010	08-NOV-2013 15:00	LP_MW04_0.5						✓
ES1324460-011	08-NOV-2013 15:00	LP_SB07_0.1		✓				
ES1324460-012	08-NOV-2013 15:00	LP_SB07_0.5						✓
ES1324460-013	08-NOV-2013 15:00	LP_SB09_0.1		✓				
ES1324460-014	08-NOV-2013 15:00	LP_SB09_0.5						✓
ES1324460-015	08-NOV-2013 15:00	D01_081113_TA						✓
ES1324460-016	08-NOV-2013 15:00	LP_MW03_0.1		✓				✓
ES1324460-017	08-NOV-2013 15:00	LP_SB06_0.1		✓				
ES1324460-018	08-NOV-2013 15:00	LP_SB06_0.5						✓
ES1324460-019	08-NOV-2013 15:00	LP_SB06_1.5						✓
ES1324460-020	08-NOV-2013 15:00	LP_SB10_0.1		✓				
ES1324460-021	08-NOV-2013 15:00	LP_SB08_0.1		✓				✓
ES1324460-022	08-NOV-2013 15:00	LP_SB08_0.5						✓
ES1324460-023	08-NOV-2013 15:00	TSC					✓	





Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-06 TRH/TEXN/Pb
ES1324460-003	08-NOV-2013 15:00	R01_081113_TA	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### JOHN EWING

- \*AU Certificate of Analysis - NATA ( COA ) Email john.ewing@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email john.ewing@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email john.ewing@erm.com
- Chain of Custody (CoC) ( COC ) Email john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG ) Email john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT ) Email john.ewing@erm.com
- EDI Format - XTab ( XTAB ) Email john.ewing@erm.com

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324460</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : Project Symphony <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : TA <b>Site</b> : LIDDELL  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 22  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 08-NOV-2013 <b>Issue Date</b> : 19-NOV-2013  <b>No. of samples received</b> : 23 <b>No. of samples analysed</b> : 22
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



NATA Accredited Laboratory 825  
 Accredited for compliance with  
 ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos
Pabi Subba	Senior Organic Chemist	Sydney Organics



## General Comments

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

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

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

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	LN_MW02_1.5	LN_MW02_0.1	LN_MW03_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-001	ES1324460-002	ES1324460-005	ES1324460-006	ES1324460-007
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	----	----	22.0	----	----
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	No	No
Asbestos Type	1332-21-4	0.1	--	----	----	----	-	-
Sample weight (dry)	----	0.01	g	----	----	----	342	317
APPROVED IDENTIFIER:	----	-	--	----	----	----	C.OWLER	C.OWLER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	----	12	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	----	10	----	----
Copper	7440-50-8	5	mg/kg	----	----	22	----	----
Lead	7439-92-1	5	mg/kg	----	----	13	----	----
Nickel	7440-02-0	2	mg/kg	----	----	14	----	----
Zinc	7440-66-6	5	mg/kg	----	----	50	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	<5	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	<5	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	<5	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	LN_MW02_1.5	LN_MW02_0.1	LN_MW03_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-001	ES1324460-002	ES1324460-005	ES1324460-006	ES1324460-007
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	<0.5	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	<0.5	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	<5	----	----
Chloromethane	74-87-3	5	mg/kg	----	----	<5	----	----
Vinyl chloride	75-01-4	5	mg/kg	----	----	<5	----	----
Bromomethane	74-83-9	5	mg/kg	----	----	<5	----	----
Chloroethane	75-00-3	5	mg/kg	----	----	<5	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	<5	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	<0.5	----	----
Iodomethane	74-88-4	0.5	mg/kg	----	----	<0.5	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	<0.5	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	<0.5	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	<0.5	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	<0.5	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	<0.5	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	<0.5	----	----
Trichloroethene	79-01-6	0.5	mg/kg	----	----	<0.5	----	----
Dibromomethane	74-95-3	0.5	mg/kg	----	----	<0.5	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	<0.5	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	<0.5	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	----	----	<0.5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	----	<0.5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	----	<0.5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	<0.5	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	<0.5	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	LN_MW02_1.5	LN_MW02_0.1	LN_MW03_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-001	ES1324460-002	ES1324460-005	ES1324460-006	ES1324460-007
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	<0.5	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	<0.5	----	----
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	<0.5	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	----	----
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	----	----	<5	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	LN_MW02_1.5	LN_MW02_0.1	LN_MW03_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-001	ES1324460-002	ES1324460-005	ES1324460-006	ES1324460-007
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	<b>0.6</b>	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	<b>1.2</b>	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<b>59</b>	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<b>64</b>	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<b>39</b>	<10	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	LN_MW02_1.5	LN_MW02_0.1	LN_MW03_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-001	ES1324460-002	ES1324460-005	ES1324460-006	ES1324460-007
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<b>0.5</b>	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<b>13.9</b>	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<b>1.3</b>	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<b>6.6</b>	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<b>2.6</b>	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<b>24.9</b>	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<b>9.2</b>	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	<b>64.6</b>	----	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	<b>102</b>	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	<b>118</b>	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	<b>110</b>	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	<b>83.5</b>	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	<b>78.4</b>	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	<b>42.6</b>	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	<b>82.1</b>	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	<b>70.5</b>	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	<b>68.9</b>	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	<b>87.6</b>	<b>89.0</b>	<b>108</b>	----	----
Toluene-D8	2037-26-5	0.1	%	<b>99.3</b>	<b>104</b>	<b>109</b>	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	<b>89.2</b>	<b>98.8</b>	<b>110</b>	----	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW03_0.5	LP_MW04_0.1	LP_MW04_0.5	LP_SB07_0.1	LP_SB07_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-008	ES1324460-009	ES1324460-010	ES1324460-011	ES1324460-012
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	21.0	----	8.8	----	19.4
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	No	----
Asbestos Type	1332-21-4	0.1	--	----	-	----	-	----
Sample weight (dry)	----	0.01	g	----	451	----	361	----
APPROVED IDENTIFIER:	----	-	--	----	C.OWLER	----	C.OWLER	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	12	----	<5	----	10
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	----	<1
Chromium	7440-47-3	2	mg/kg	18	----	6	----	22
Copper	7440-50-8	5	mg/kg	38	----	8	----	20
Lead	7439-92-1	5	mg/kg	22	----	9	----	15
Nickel	7440-02-0	2	mg/kg	24	----	5	----	22
Zinc	7440-66-6	5	mg/kg	90	----	33	----	46
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	----	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	LN_MW03_0.5	LP_MW04_0.1	LP_MW04_0.5	LP_SB07_0.1	LP_SB07_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
				ES1324460-008	ES1324460-009	ES1324460-010	ES1324460-011	ES1324460-012
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW03_0.5	LP_MW04_0.1	LP_MW04_0.5	LP_SB07_0.1	LP_SB07_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-008	ES1324460-009	ES1324460-010	ES1324460-011	ES1324460-012
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	<5	----	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	----	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	<2	----	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW03_0.5	LP_MW04_0.1	LP_MW04_0.5	LP_SB07_0.1	LP_SB07_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-008	ES1324460-009	ES1324460-010	ES1324460-011	ES1324460-012
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	----	<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	<0.5	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	<b>0.6</b>	----	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	<b>1.2</b>	----	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	<50



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW03_0.5	LP_MW04_0.1	LP_MW04_0.5	LP_SB07_0.1	LP_SB07_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-008	ES1324460-009	ES1324460-010	ES1324460-011	ES1324460-012
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	----	<50
<b>EP080: BTEXN</b>								
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
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	----	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	62.4	----	----	----	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	106	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	119	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	112	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	85.7	----	89.5	----	92.2
2-Chlorophenol-D4	93951-73-6	0.1	%	81.0	----	86.6	----	92.5
2,4,6-Tribromophenol	118-79-6	0.1	%	43.8	----	42.5	----	45.2
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	84.6	----	83.7	----	84.4
Anthracene-d10	1719-06-8	0.1	%	73.4	----	72.4	----	73.1
4-Terphenyl-d14	1718-51-0	0.1	%	71.2	----	70.2	----	71.0
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	----	90.1	----	102
Toluene-D8	2037-26-5	0.1	%	110	----	108	----	123
4-Bromofluorobenzene	460-00-4	0.1	%	112	----	94.2	----	109



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB09_0.1	LP_SB09_0.5	D01_081113_TA	LP_MW03_0.1	LP_SB06_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-013	ES1324460-014	ES1324460-015	ES1324460-016	ES1324460-017
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	----	13.3	10.6	6.4	----
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	No	No
Asbestos Type	1332-21-4	0.1	--	-	----	----	-	-
Sample weight (dry)	----	0.01	g	310	----	----	285	349
APPROVED IDENTIFIER:	----	-	--	C.OWLER	----	----	C.OWLER	C.OWLER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	9	10	6	----
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	----	11	12	14	----
Copper	7440-50-8	5	mg/kg	----	13	12	17	----
Lead	7439-92-1	5	mg/kg	----	10	11	14	----
Nickel	7440-02-0	2	mg/kg	----	17	14	15	----
Zinc	7440-66-6	5	mg/kg	----	50	48	59	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	0.2	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	----	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB09_0.1	LP_SB09_0.5	D01_081113_TA	LP_MW03_0.1	LP_SB06_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-013	ES1324460-014	ES1324460-015	ES1324460-016	ES1324460-017
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<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	----	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	----	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB09_0.1	LP_SB09_0.5	D01_081113_TA	LP_MW03_0.1	LP_SB06_0.1
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-013	ES1324460-014	ES1324460-015	ES1324460-016	ES1324460-017
<b>EP080: BTEXN - Continued</b>								
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	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	104	83.5	87.8	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	106	83.9	93.9	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	46.1	45.3	54.0	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	84.9	79.6	83.2	----
Anthracene-d10	1719-06-8	0.1	%	----	72.4	70.8	70.2	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	71.0	68.9	67.6	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	107	101	86.8	----
Toluene-D8	2037-26-5	0.1	%	----	121	122	97.8	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	106	108	87.6	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB06_0.5	LP_SB06_1.5	LP_SB10_0.1	LP_SB08_0.1	LP_SB08_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-018	ES1324460-019	ES1324460-020	ES1324460-021	ES1324460-022
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	22.3	23.7	----	23.1	24.8
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	No	----
Asbestos Type	1332-21-4	0.1	--	----	----	-	-	----
Sample weight (dry)	----	0.01	g	----	----	311	54.9	----
APPROVED IDENTIFIER:	----	-	--	----	----	C.OWLER	C.OWLER	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	12	22	----	6	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg	18	14	----	22	12
Copper	7440-50-8	5	mg/kg	11	23	----	23	26
Lead	7439-92-1	5	mg/kg	10	16	----	15	19
Nickel	7440-02-0	2	mg/kg	3	10	----	30	11
Zinc	7440-66-6	5	mg/kg	12	38	----	76	57
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB06_0.5	LP_SB06_1.5	LP_SB10_0.1	LP_SB08_0.1	LP_SB08_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-018	ES1324460-019	ES1324460-020	ES1324460-021	ES1324460-022
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
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	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	----	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	----	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB06_0.5	LP_SB06_1.5	LP_SB10_0.1	LP_SB08_0.1	LP_SB08_0.5
				08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00	08-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324460-018	ES1324460-019	ES1324460-020	ES1324460-021	ES1324460-022
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	95.7	93.2	----	97.7	98.1
2-Chlorophenol-D4	93951-73-6	0.1	%	88.9	93.5	----	97.6	90.3
2,4,6-Tribromophenol	118-79-6	0.1	%	41.5	40.4	----	55.2	48.8
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	83.9	82.3	----	86.8	84.0
Anthracene-d10	1719-06-8	0.1	%	71.4	70.1	----	72.8	72.2
4-Terphenyl-d14	1718-51-0	0.1	%	70.7	68.2	----	71.1	70.0
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	84.8	111	----	105	106
Toluene-D8	2037-26-5	0.1	%	93.6	118	----	110	112
4-Bromofluorobenzene	460-00-4	0.1	%	93.2	119	----	112	116



## Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

				TSC	---	---	---	---
				08-NOV-2013 15:00	---	---	---	---
Compound	CAS Number	LOR	Unit	ES1324460-023	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>C6 - C9 Fraction</b>	---	10	mg/kg	<b>75</b>	---	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>C6 - C10 Fraction</b>	C6_C10	10	mg/kg	<b>81</b>	---	---	---	---
<b>C6 - C10 Fraction minus BTEX (F1)</b>	C6_C10-BTEX	10	mg/kg	<b>48</b>	---	---	---	---
<b>EP080: BTEXN</b>								
<b>Benzene</b>	71-43-2	0.2	mg/kg	<b>0.6</b>	---	---	---	---
<b>Toluene</b>	108-88-3	0.5	mg/kg	<b>17.8</b>	---	---	---	---
<b>Ethylbenzene</b>	100-41-4	0.5	mg/kg	<b>2.0</b>	---	---	---	---
<b>meta- &amp; para-Xylene</b>	108-38-3 106-42-3	0.5	mg/kg	<b>9.5</b>	---	---	---	---
<b>ortho-Xylene</b>	95-47-6	0.5	mg/kg	<b>3.6</b>	---	---	---	---
<b>Sum of BTEX</b>	---	0.2	mg/kg	<b>33.5</b>	---	---	---	---
<b>Total Xylenes</b>	1330-20-7	0.5	mg/kg	<b>13.1</b>	---	---	---	---
<b>Naphthalene</b>	91-20-3	1	mg/kg	<b>&lt;1</b>	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
<b>1,2-Dichloroethane-D4</b>	17060-07-0	0.1	%	<b>112</b>	---	---	---	---
<b>Toluene-D8</b>	2037-26-5	0.1	%	<b>116</b>	---	---	---	---
<b>4-Bromofluorobenzene</b>	460-00-4	0.1	%	<b>116</b>	---	---	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_081113\_TA

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Client sampling date / time

08-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1324460-003	---	---	---	---
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---
<b>EP080: BTEXN</b>								
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	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	83.2	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	88.6	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	89.1	---	---	---	---



## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LN_MW02_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LN_MW03_0.1 - 08-NOV-2013 15:00	Pale brown clay soil with some vegetation
EA200: Description	LP_MW04_0.1 - 08-NOV-2013 15:00	Mid grey-brown clay soil with some quartz grains plus some vegetation
EA200: Description	LP_SB07_0.1 - 08-NOV-2013 15:00	Mid grey-brown clay soil with some quartz grains plus some vegetation
EA200: Description	LP_SB09_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some coal and quartz grains plus some vegetation
EA200: Description	LP_MW03_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some quartz grains plus some vegetation
EA200: Description	LP_SB06_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some quartz grains plus some vegetation
EA200: Description	LP_SB10_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some quartz grains plus some vegetation
EA200: Description	LP_SB08_0.1 - 08-NOV-2013 15:00	Mid brown clay soil with some vegetation



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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

<b>Work Order</b>	<b>: ES1324460</b>	<b>Page</b>	: 1 of 20
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: Project Symphony	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL	<b>Date Samples Received</b>	: 08-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 19-NOV-2013
<b>Sampler</b>	: TA	<b>No. of samples received</b>	: 23
<b>Order number</b>	: 0224198	<b>No. of samples analysed</b>	: 22
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Christopher Owler  
Pabi Subba

#### Position

Senior Spectroscopist  
Team Leader - Asbestos  
Senior Organic Chemist

#### Accreditation Category

Sydney Inorganics  
Newcastle - Asbestos  
Sydney Organics





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### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3161255)</b>									
ES1324458-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.6	17.9	7.6	0% - 50%
ES1324460-008	LN_MW03_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.0	20.0	4.8	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3161257)</b>									
ES1324460-022	LP_SB08_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.8	22.5	9.6	0% - 20%
ES1324473-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.7	31.6	13.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3158769)</b>									
ES1324458-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	18	31.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	16	25.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	16	17.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	40	33.4	No Limit
ES1324459-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	10	15.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	57	62	9.0	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	15.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	44	44	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	24	18.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	100	109	8.5	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3158771)</b>									
ES1324460-019	LP_SB06_1.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	13	7.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	8	17.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	22	28	23.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	21	8.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	14	10.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	38	32	19.9	No Limit
		ES1324534-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1
		EG005T: Chromium	7440-47-3	2	mg/kg	10	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	14	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	14	12.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	19	7.6	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 (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3158770)</b>									
ES1324458-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324459-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3158772)</b>									
ES1324460-019	LP_SB06_1.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3156180)</b>									
ES1324476-007	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324470-019	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP074B: Oxygenated Compounds (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3160587) - continued</b>									
ES1324460-005	LN_MW02_1.5	EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074G: Trihalomethanes (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074H: Naphthalene (QC Lot: 3160587)</b>									
ES1324460-005	LN_MW02_1.5	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155974)</b>									
ES1324459-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3155974) - continued</b>									
ES1324459-001	Anonymous	EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1324460-014	LP_SB09_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155974)</b>							
ES1324459-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3155974) - continued</b>									
ES1324459-001	Anonymous	EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324460-014	LP_SB09_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3155973)</b>									
ES1324459-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324460-014	LP_SB09_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3156994)</b>									
ES1324458-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324459-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3160586)</b>									
ES1324460-005	LN_MW02_1.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324467-043	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3155973)</b>									
ES1324459-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324460-014	LP_SB09_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3155973) - continued</b>										
ES1324460-014	LP_SB09_0.5	EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3156994)</b>										
ES1324458-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1324459-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3160586)</b>										
ES1324460-005	LN_MW02_1.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1324467-043	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3156994)</b>										
ES1324458-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1324459-005	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
ES1324460-005	LN_MW02_1.5	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1324467-043	Anonymous		106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3160586)</b>										
ES1324460-005	LN_MW02_1.5	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1324467-043	Anonymous	EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EG020F: Dissolved Metals by ICP-MS (QC Lot: 3156305)</b>										
ES1324188-003	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	0.026	0.022	12.6	0% - 20%	
ES1324499-004	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3156464)</b>										
ES1324431-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1324533-041	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	120	120	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3157965)</b>										
ES1324693-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
ES1324693-003	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3156464)</b>										
ES1324431-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1324533-041	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	120	130	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3157965)</b>										
ES1324693-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
ES1324693-003	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3156464)</b>										
ES1324431-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1324533-041	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	2	2	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	4	4	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit			
	91-20-3	5	µg/L	<5	<5	0.0	No Limit			





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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158769)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	107	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	103	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	116	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	99.0	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158771)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	114	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	109	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	120	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	108	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	113	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	113	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158770)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	101	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158772)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.8	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3156180)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	99.4	57.4	117	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3160587)</b>									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	112	64	126	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	115	66	128	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	112	63	129	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	112	63	129	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	111	64	130	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	110	63	129	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	112	63	129	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	112	62	130	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	111	61	131	
<b>EP074B: Oxygenated Compounds (QCLot: 3160587)</b>									
EP074: Vinyl Acetate	108-05-4	1	mg/kg	----	10 mg/kg	39.0	29.6	156	
		5	mg/kg	<5	----	----	----	----	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074B: Oxygenated Compounds (QCLot: 3160587) - continued</b>									
EP074: 2-Butanone (MEK)	78-93-3	1	mg/kg	----	10 mg/kg	126	58	136	
		5	mg/kg	<5	----	----	----	----	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	1	mg/kg	----	10 mg/kg	96.1	54	138	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Hexanone (MBK)	591-78-6	1	mg/kg	----	10 mg/kg	99.3	54	136	
		5	mg/kg	<5	----	----	----	----	
<b>EP074C: Sulfonated Compounds (QCLot: 3160587)</b>									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	100	54	126	
<b>EP074D: Fumigants (QCLot: 3160587)</b>									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	103	55	133	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	109	69	127	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	121	54	124	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	112	51	125	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	112	66	126	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3160587)</b>									
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	48.3	30	148	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	63.8	41	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	87.3	43	147	
		5	mg/kg	<5	----	----	----	----	
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	81.5	47	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	93.9	49	143	
		5	mg/kg	<5	----	----	----	----	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	91.8	49	135	
		5	mg/kg	<5	----	----	----	----	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	98.5	54	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	89.5	43	129	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	105	62	130	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	111	66	132	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	109	66	132	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	110	62	126	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	109	64	128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	116	59	125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	112	65	123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	111	64	120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	110	65	127	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	109	70	130	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3160587) - continued</b>									
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	105	72	128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	117	67	143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	114	62	122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	96.9	54	128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	96.3	55	129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	108	56	132	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	102	65	135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	106	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	106	53	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	121	48	136	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3160587)</b>									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	113	70	128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	110	67	127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	111	64	130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	110	62	130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	111	63	129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	110	63	129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	114	66	128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	108	54	134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	118	60	132	
<b>EP074G: Trihalomethanes (QCLot: 3160587)</b>									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	113	62	120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	116	61	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	# 122	63	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	122	60	126	
<b>EP074H: Naphthalene (QCLot: 3160587)</b>									
EP074: Naphthalene	91-20-3	0.5	mg/kg	----	1 mg/kg	113	63	133	
		5	mg/kg	<5	----	----	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155974)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	109	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	106	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	104	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	105	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	85.9	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	105	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	81.8	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	83.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	85.6	76.4	114	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155974) - continued</b>									
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	86.1	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	90.3	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	30.2	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155974)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	99.6	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	99.9	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	113	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	91.4	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	112	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	87.0	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	114	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	104	76	122	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	96.8	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	97.6	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	86.0	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155973)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	115	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	129	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	95.4	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156994)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.4	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3160586)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	115	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155973)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	110	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	123	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	68.3	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156994)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	93.8	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3160586)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	113	68.4	128	
<b>EP080: BTEXN (QCLot: 3156994)</b>									



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080: BTEXN (QCLot: 3156994) - continued</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	94.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	90.9	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	87.4	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	89.0	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	86.4	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.4	62	138	
<b>EP080: BTEXN (QCLot: 3160586)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	109	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	114	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	112	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	110	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	115	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	121	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 3156305)</b>									
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	106	83	111	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156464)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	84.0	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3157965)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	105	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	102	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	96.9	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156464)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	88.8	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3157965)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	90.7	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	93.2	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	104	67	127	
<b>EP080: BTEXN (QCLot: 3156464)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	75.2	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	82.8	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	71.4	70	120	



Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EP080: BTEXN (QCLot: 3156464) - continued</b>								
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	74.0	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	86.3	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	94.1	70	124

### 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	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158769)</b>							
ES1324458-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	101	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	90.9	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	96.2	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158771)</b>							
ES1324460-019	LP_SB06_1.5	EG005T: Arsenic	7440-38-2	50 mg/kg	87.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.7	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	99.2	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.5	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	91.6	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158770)</b>							
ES1324458-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	115	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158772)</b>							
ES1324460-019	LP_SB06_1.5	EG035T: Mercury	7439-97-6	5 mg/kg	110	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3156180)</b>							
ES1324476-007	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	110	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3160587)</b>							
ES1324460-005	LN_MW02_1.5	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	105	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	104	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3160587)</b>								
ES1324460-005	LN_MW02_1.5	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	107	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155974)</b>								
ES1324459-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	104	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.4	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	81.8	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	73.9	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	65.3	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155974)</b>								
ES1324459-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.5	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	99.7	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155973)</b>								
ES1324459-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	81.0	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	82.5	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.2	52	132	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156994)</b>								
ES1324458-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	75.9	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3160586)</b>								
ES1324460-005	LN_MW02_1.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155973)</b>								
ES1324459-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.9	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.3	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156994)</b>								
ES1324458-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	78.0	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3160586)</b>								
ES1324460-005	LN_MW02_1.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	118	70	130	
<b>EP080: BTEXN (QCLot: 3156994)</b>								
ES1324458-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	78.0	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.8	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.0	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	74.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	73.6	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	72.3	70	130			
<b>EP080: BTEXN (QCLot: 3160586)</b>								
ES1324460-005	LN_MW02_1.5	EP080: Benzene	71-43-2	2.5 mg/kg	105	70	130	



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080: BTEXN (QCLot: 3160586) - continued</b>								
ES1324460-005	LN_MW02_1.5	EP080: Toluene	108-88-3	2.5 mg/kg	110	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	111	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	109	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	113	70	130	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	103	70	130	

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 3156305)</b>								
ES1324188-003	Anonymous	EG020A-F: Lead	7439-92-1	0.2 mg/L	108	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156464)</b>								
ES1324431-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3157965)</b>								
ES1324693-002	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	107	74	150	
		EP071: C15 - C28 Fraction	----	300 µg/L	94.6	77	153	
		EP071: C29 - C36 Fraction	----	200 µg/L	86.5	67	153	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156464)</b>								
ES1324431-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	128	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3157965)</b>								
ES1324693-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	105	74	150	
		EP071: >C16 - C34 Fraction	----	350 µg/L	103	77	153	
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	67	153	
<b>EP080: BTEXN (QCLot: 3156464)</b>								
ES1324431-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.2	70	130	
		EP080: Toluene	108-88-3	25 µg/L	94.1	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	90.5	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	87.2	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.1	70	130	
		EP080: Naphthalene	91-20-3	25 µg/L	102	70	130	

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report





Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3155973)</b>											
ES1324459-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	81.0	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	82.5	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.2	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3155973)</b>											
ES1324459-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.9	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.3	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3155974)</b>											
ES1324459-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	104	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.4	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	81.8	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	73.9	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	65.3	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3155974)</b>											
ES1324459-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.5	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	99.7	----	70	130	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3156180)</b>											
ES1324476-007	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	110	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156994)</b>											
ES1324458-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	75.9	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156994)</b>											
ES1324458-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	78.0	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3156994)</b>											
ES1324458-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	78.0	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.8	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.0	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	74.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	73.6	----	70	130	----	----	
	91-20-3	EP080: Naphthalene		2.5 mg/kg	72.3	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158769)</b>											
ES1324458-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	102	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	101	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	90.9	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	96.2	----	70	130	----	----	



Sub-Matrix: SOIL					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158770)</b>											
ES1324458-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	115	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3158771)</b>											
ES1324460-019	LP_SB06_1.5	EG005T: Arsenic	7440-38-2	50 mg/kg	87.6	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	98.7	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	99.2	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	98.5	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	91.6	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3158772)</b>											
ES1324460-019	LP_SB06_1.5	EG035T: Mercury	7439-97-6	5 mg/kg	110	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3160586)</b>											
ES1324460-005	LN_MW02_1.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3160586)</b>											
ES1324460-005	LN_MW02_1.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	118	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3160586)</b>											
ES1324460-005	LN_MW02_1.5	EP080: Benzene	71-43-2	2.5 mg/kg	105	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	110	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	111	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	109	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	113	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	103	----	70	130	----	----	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3160587)</b>											
ES1324460-005	LN_MW02_1.5	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	105	----	70	130	----	----	
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	104	----	70	130	----	----	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3160587)</b>											
ES1324460-005	LN_MW02_1.5	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	107	----	70	130	----	----	

Sub-Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 3156305)</b>											
ES1324188-003	Anonymous	EG020A-F: Lead	7439-92-1	0.2 mg/L	108	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3156464)</b>											
ES1324431-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3156464)</b>											
ES1324431-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	128	----	70	130	----	----	



Sub-Matrix: WATER

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080: BTEXN (QCLot: 3156464)</b>										
ES1324431-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.2	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	94.1	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	90.5	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	87.2	----	70	130	----	----
		EP080: ortho-Xylene	106-42-3	25 µg/L	93.1	----	70	130	----	----
		EP080: Naphthalene	95-47-6	25 µg/L	102	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3157965)</b>										
ES1324693-002	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	107	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	94.6	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	86.5	----	67	153	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3157965)</b>										
ES1324693-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	105	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	103	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	78.9	----	67	153	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324460</b>	Page	: 1 of 10
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 08-NOV-2013
C-O-C number	: ----	Issue Date	: 19-NOV-2013
Sampler	: TA	No. of samples received	: 23
Order number	: 0224198	No. of samples analysed	: 22
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5	LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1,	08-NOV-2013	----	----	----	15-NOV-2013	22-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
<b>Snap Lock Bag (EA200)</b>								
LN_MW02_0.1, LP_MW04_0.1, LP_SB09_0.1, LP_SB06_0.1, LP_SB08_0.1	LN_MW03_0.1, LP_SB07_0.1, LP_MW03_0.1, LP_SB10_0.1,	08-NOV-2013	---	07-MAY-2014	----	19-NOV-2013	18-MAY-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5	LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1,	08-NOV-2013	14-NOV-2013	07-MAY-2014	✓	15-NOV-2013	07-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5	LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1,	08-NOV-2013	14-NOV-2013	06-DEC-2013	✓	18-NOV-2013	06-DEC-2013	✓



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	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Soil Glass Jar - Unpreserved (EP066) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	14-NOV-2013	22-NOV-2013	✓	15-NOV-2013	24-DEC-2013	✓	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP071) LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5 LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	25-DEC-2013	✓	
<b>EP074D: Fumigants</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074F: Halogenated Aromatic Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074H: Naphthalene</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074B: Oxygenated Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074C: Sulfonated Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	
<b>EP074G: Trihalomethanes</b>								
Soil Glass Jar - Unpreserved (EP074) LN_MW02_1.5, LN_MW03_0.5	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	15-NOV-2013	15-NOV-2013	✓	



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	
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5	LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1,	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	25-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LN_MW02_1.5, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1, LP_SB06_1.5, LP_SB08_0.5	LN_MW03_0.5, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5, LP_SB08_0.1,	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	25-DEC-2013	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1,	TRIP SPIKE, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5	08-NOV-2013	14-NOV-2013	22-NOV-2013	✓	14-NOV-2013	22-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LN_MW02_1.5, LP_SB06_1.5, LP_SB08_0.5,	LN_MW03_0.5, LP_SB08_0.1, TSC	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	22-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK, LP_MW04_0.5, LP_SB09_0.5, LP_MW03_0.1,	TRIP SPIKE, LP_SB07_0.5, D01_081113_TA, LP_SB06_0.5	08-NOV-2013	14-NOV-2013	22-NOV-2013	✓	14-NOV-2013	22-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LN_MW02_1.5, LP_SB06_1.5, LP_SB08_0.5,	LN_MW03_0.5, LP_SB08_0.1, TSC	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	22-NOV-2013	✓

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020F: Dissolved Metals by ICP-MS</b>							
<b>Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)</b> R01_081113_TA	08-NOV-2013	---	07-MAY-2014	----	14-NOV-2013	07-MAY-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01_081113_TA	08-NOV-2013	15-NOV-2013	15-NOV-2013	✓	16-NOV-2013	25-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_081113_TA	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	22-NOV-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_081113_TA	08-NOV-2013	15-NOV-2013	22-NOV-2013	✓	15-NOV-2013	22-NOV-2013	✓





## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	37	10.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	23	13.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	36	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	36	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	36	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	23	8.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	36	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	18	11.1	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.6	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.6	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.6	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP074G: Trihalomethanes	3771319-012	----	<b>Dibromochloromethane</b>	124-48-1	122 %	63-121%	<b>Recovery greater than upper control limit</b>

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



- Sydney
- Melbourne
- Brisbane
- Perth
- Hunter Valley
- North Coast
- Other

Ground Floor, 33 Saunders Street, Pyrmont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800  
 Level 3, Tower 3, Yarra Tower, WTC, 18-38 Sidddeley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022  
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381  
 Level 6, Grain Pool Bld, 172 St Georges Tce, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262  
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152  
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No: 0224198

Project Name: Symphony Liddell

Project Location: Muswellbrook

Project Manager: Joseph Fenwick

Sampler: Jashe Kandel

COC Number

A 17019

Laboratory

ALS

General Analysis Requirements

Yes (tick)

1. Turn Around Time (please tick:  1 Day  2 Days  3 Days  Normal TAT)

2. Do you wish any sediment layers in water to be excluded from extractions?

3. Additional QA/QC reported where sample batches are < 10 samples?

4. % of extraneous material removed from samples to be reported as per NEPM 5.1.1?

Other Comments on sample

(eg: high voc, highly contaminated, special detection limits etc etc)

Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Preservation			Containers (number/type)	BTEX	TPH (C6-C9 P & T) + TPH (C10-C36)	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	TRH	Asbestos	
					Soil	Water	Other	Ice	Acid	Filter														Other
14	LO-SB08.05	0.1	7/11	8:03	X						1x Jar													
1	LO-SB08.05	0.5	7/11	8:05								X						X	X		X	X		
15	LO-SB08.10	1.0	7/11	8:10																				
16	LO-SB07.01	0.1																						
2	LO-SB07.05	0.5										X						X	X		X	X		
17	LO-SB07.10	1.0																						
18	LO-SB06.01	0.1																						
19	LO-SB06.05	0.5																						
20	LP-SB04.01	0.1																						
3	LP-SB04.05	0.5										X						X	X		X	X		
21	LP-SB04.10	1.0																						
22	LN-MW04.01	0.1																						
4	LN-MW04.05	0.5										X						X	X		X	X		
23	LN-MW04.10	1.0																						
5	LN-MW05.01	0.1										X						X	X		X	X		
6	LN-MW05.05	0.5										X						X	X		X	X		
24	LN-MW05.10	1.0																						
25	LP-MW05.01																							
7	LP-MW05.05											X						X	X		X	X		

Subcon / Forward Lab / Split WO  
 Lab / Analysis ASET / Asbestos  
 Organised By / Date: [Signature] 0-12  
 Relinquished By / Date:  
 Connote / Courier:  
 WO No:  
 Attach By PO / Internal Sheet:

Hold  
Hold

Environmental Division  
 Sydney  
 Work Order  
**ES1324723**



Telephone: +61-2-8784 8555

SNIR

DID NOT RECEIVE

3 samples do not exist as per attached email -  
 no 15/11

Comments: Lab results to John Ewing and Symphony. Margen@erm.com

\*Metals (circle)  
 As Cd Cr Cu Hg Ni Pb Zn

Relinquished by: Jashe Kandel

Signed: [Signature]

Date/Time: 7/11/12

Received by: S.MCCOY [Signature]

Date/Time: 14/11/12

Relinquished by:

Signed:

Date/Time:

Received by:

Date/Time:

15/11  
1/2



- Sydney
- Melbourne
- Brisbane
- Perth
- Hunter Valley
- North Coast
- Other

Ground Floor, 33 Saunders Street, Pyrmont, NSW, 2009. (ph) 02 8584 8888 (fax) 02 8584 8800  
 Level 3, Tower 3, Yarra Tower, WTC, 18-38 Siddley Street, Docklands, VIC, 3005. (ph) 03 9696 8011 (fax) 03 9696 8022  
 Level 1, 60 Leichhardt Street, Spring Hill, QLD, 4004. (ph) 07 3839 8393 (fax) 07 3839 8381  
 Level 6, Grain Pool Bld, 172 St Georges Tce, WA, 6850. (ph) 08 9321 5200 (fax) 08 9321 5262  
 53 Bonville Avenue, Thornton, NSW, 2322. (ph) 02 4964 2150 (fax) 02 4964 2152  
 Suite 3/146 Gordon Street, Port Macquarie, NSW, 2444. (ph) 02 6584 7155 (fax) 02 6584 7160

Project No:	COC Number <b>A 17020</b>
Project Name:	Laboratory
Project Location:	
Project Manager:	
Sampler:	

General Analysis Requirements										Yes (tick)										Other Comments on sample (eg: high voc, highly contaminated, special detection limits etc etc)					
1. Turn Around Time (please tick: <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input checked="" type="checkbox"/> Normal TAT)																									
2. Do you wish any sediment layers in water to be excluded from extractions?																									
3. Additional QA/QC reported where sample batches are < 10 samples?																									
4. % of extraneous material removed from samples to be reported as per NEPM 5.1.1?																									
Laboratory Number	Sample ID	Sample Depth	Sample Date	Sample Time	Matrix			Preservation			Containers (number/type)	BTEX	TPH (C6-C9 P & T) + TPH (C10-C36)	Speciated TPH	VOC Scan (USEPA 8260 List)	SVOC Scan (USEPA 8270 List)	OC OP Pesticides	PAH	Phenols	PCB	Metals* (dissolved / total)	TRI	Asbestos		
					Soil	Water	Other	Ice	Acid	Filter														Other	
8	WLPDO1	-			X			X									X	X			X	X	X		
26	LNMMW06.01																								- Sample does not exist - see attached email WS 15/10
9	LNMMW06.05																X	X			X	X	X		
27	LNMMW06.1.0																								
28	LNMMW07.0.																								
10	LNMMW07.0.5																X	X			X	X	X		
29	LNMMW07.1.0																								
30	LNMMW01.0.1																								
11	LNMMW01.0.5																X	X			X	X	X		
31	LNMMW1.0																								
32	<del>LNMMW1.0</del>																								
32	LOSBOG1.0.																								
12	LOSBOG1.0.5																X				X	X	X		
13	ROI																X				X				

Comments:										*Metals (circle) As Cd Cr Cu Hg Ni Pb Zn									
Relinquished by:	Signed:	Date/Time:	Received by:	Date/Time:	2/2														
Relinquished by:	Signed:	Date/Time:	Received by:	Date/Time:															

## Clea Henderson

---

**From:** Barbara Hanna <Barbara.Hanna@alsglobal.com>  
**Sent:** Tuesday, 10 December 2013 4:53 PM  
**To:** Clea Henderson  
**Cc:** Joseph Ferring; John Ewing; ERM Australia Project Symphony MacGen  
**Subject:** FW: 0224198 Symphony Project  
**Attachments:** img-Z10155317-0001.pdf

Hi Clea,

I had Jennifer Cullen look into this for you. Please see below and attached updated COC. Hopefully this makes sense 😊

Kind Regards

## Barbara Hanna

**Client Services Manager**  
**ALS | Environmental Division**

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

*How was your customer experience? [Please send us your feedback](#)*

*Please see our latest [EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013](#)*

*[EnviroMail 69 - Testing Requirements of the new NEPM - July 2013](#)*

*[EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013](#)*

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Please consider the environment before printing this email.

---

**From:** Jennifer Cullen  
**Sent:** Tuesday, 10 December 2013 2:18 PM  
**To:** Barbara Hanna  
**Subject:** RE: 0224198 Symphony Project

Hi Barb,



I have checked the original paperwork and attached a copy of the COCs. There is a second copy of the COC where Wael has indicated the samples that were actually not received. It looks like the guys in Newcastle crossed out one of the wrong samples.

**Sample number 5 (LN\_MW05\_0.1)** was not received. Client email advised that this does not exist.

**Sample number 6 (LN\_MW05\_0.5)** was not received. There is a comment on the COC that says 'SNR' and a comment on the back of the bottle map that that says to delete as per Wael and there is a comment on the SRN stating that it was not received.

Testing was requested on both of the above samples.

**Sample number 7 (LPMW05\_0.5)** results have been reported.

**Sample number 26 (LNMW06\_0.1)** sample does not exist as per client email.

Kind Regards

**Jennifer Cullen**

Senior Client Services  
ALS | Environmental Division

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

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*Please see our latest [Enviromail 51 Reporting of NEPM TRH and BTEXN - Re-release July 2013](#)*

*[Enviromail 59 - BaP TEQ and other Summed NEPM Parameters - Re-release July 2013](#)*

*[Enviromail 60 PBDEs in Soils and Sediments - Re-release July 2013](#)*

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---

**From:** Clea Henderson [<mailto:Clea.Henderson@erm.com>]  
**Sent:** Tuesday, 10 December 2013 11:13 AM  
**To:** Barbara Hanna  
**Cc:** ERM Australia Project Symphony MacGen; Joseph Ferring; John Ewing  
**Subject:** RE: 0224198 Symphony Project

Thanks Barbara,

Even taking into account the three samples to be removed below, there still seems to be 2 samples missing from the SRN and results, for which analysis was requested (TRH/BTEXN/PAH/Phenols/8Metals/Asbestos).

These are:

LN\_MW05\_0.1

LPMW05\_0.5

I also noticed that the lab sample IDs jump from 004 to 007, so perhaps 005 and 006 are the missing samples?

Can you please investigate?

Thanks,

Clea Henderson  
Chemical Engineer

Environmental Resources Management  
Level 3, Tower 3, 13-38 Siddeley Street,  
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)

Tel: +61 3 9696 8011 (switchboard)

Fax: +61 3 9696 8022

[www.erm.com](http://www.erm.com)

[clea.henderson@erm.com](mailto:clea.henderson@erm.com)

---

**From:** Barbara Hanna [<mailto:Barbara.Hanna@alsglobal.com>]

**Sent:** Tuesday, December 10, 2013 8:59 AM

**To:** Clea Henderson

**Subject:** FW: 0224198 Symphony Project

Hi Clea,

Please see the missing e-mail below.

Kind Regards

**Barbara Hanna**

**Client Services Manager**  
**ALS | Environmental Division**

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

*How was your customer experience? [Please send us your feedback](#)*

*Please see our latest [EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013](#)*

*[EnviroMail 69 - Testing Requirements of the new NEPM - July 2013](#)*

[EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013](#)

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---

**From:** Joshua Kowald [<mailto:Joshua.Kowald@erm.com>]  
**Sent:** Thursday, 14 November 2013 2:16 PM  
**To:** Kirsten Garlick; Joseph Ferring  
**Cc:** ERM Australia Project Symphony MacGen; Samples Newcastle  
**Subject:** RE: 0224198 Symphony Project

Hi Kirsten

LNMW06\_0  
LNMW05\_1.0  
LPMW05\_0.1

Please remove these from the COC. They do not exist.

Thanks  
Joshua Kowald

---

**From:** Kirsten Garlick [<mailto:Kirsten.Garlick@alsglobal.com>]  
**Sent:** Thursday, November 14, 2013 1:00 PM  
**To:** Joshua Kowald; Joseph Ferring  
**Cc:** ERM Australia Project Symphony MacGen; Samples Newcastle  
**Subject:** 0224198 Symphony Project  
**Importance:** High

Hi all,

We have received more samples for the symphony project this morning and have again encountered some issues.

We have the following which do not appear on any COCs:

BC\_MW03\_0.1 dated 6/11/13  
BC\_MW05\_0.1 dated 6/11/13  
BA\_MW03\_0.1 dated 6/11/13

The above samples all had the project ID 0224193 on them.

0123819 and ETL\_D01 are extra samples also, dated the 7/11/13

The following are samples which are listed on COCs but have not been received:

LNMW06\_0.1  
LNMW05\_1.0

LPMW05\_0.1

Please refer to attached COC which these are listed on.

Please confirm ASAP if these samples can be added/removed from COCs and what analysis they require.

Thanks,

**Kirsten Garlick**

**Sample Receipt Officer/Committal Clerk  
ALS | Environmental Division**

5/585 Maitland Road  
Mayfield West NSW 2304 Australia

*How was your customer experience? [Please send us your feedback](#)*

*Please see our latest [EnviroMail 66 - Cryptosporidium Genotyping - May 2013](#)*

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## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order : ES1324723</b>	
<b>Client : ENVIRO RESOURCES MANAGEMENT</b> <b>Contact : MR JOSEPH FERRING</b> <b>Address : GROUND FLOOR</b> 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory : Environmental Division Sydney</b>  <b>Contact : Barbara Hanna</b> <b>Address : 277-289 Woodpark Road Smithfield</b> NSW Australia 2164
<b>E-mail : joseph.ferring@erm.com</b> <b>Telephone : +61 02 8584 8888</b> <b>Facsimile : +61 02 8584 8800</b>	<b>E-mail : Barbara.Hanna@alsglobal.com</b> <b>Telephone : +61 2 8784 8555</b> <b>Facsimile : +61 2 8784 8555</b>
<b>Project : 0244198 SYMPHONY LIDDELL</b> <b>Order number : ----</b> <b>C-O-C number : 17019, 17020</b> <b>Site : MUSWELLBROOK</b> <b>Sampler : JK</b>	<b>Page : 1 of 3</b>  <b>Quote number : ES2013ENVRES0354 (EN/009/13)</b>  <b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>

#### Dates

<b>Date Samples Received : 14-NOV-2013</b> <b>Client Requested Due Date : 21-NOV-2013</b>	<b>Issue Date : 19-NOV-2013 09:23</b> <b>Scheduled Reporting Date : 21-NOV-2013</b>
--	--

#### Delivery Details

<b>Mode of Delivery : Carrier</b> <b>No. of coolers/boxes : 1 HARD</b> <b>Security Seal : Intact.</b>	<b>Temperature : 4.8°C - Ice present</b> <b>No. of samples received : 28</b> <b>No. of samples analysed : 12</b>
---	--

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample LNMW05\_0.5 has not been received but received extra sample 0213819 and placed on hold, Please confirm**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - ASB-SOL (Subcontracted) Asbestos - Count (Solid)	SOIL - S-05 TRH/BTEX/N8 Metals	SOIL - S-27 TRH/BTEX/NIPAH/Phenols/8Metals
ES1324723-001	07-NOV-2013 08:05	LO_SB08_0.5		✓		✓
ES1324723-002	07-NOV-2013 15:00	LO_SB07_0.5		✓		✓
ES1324723-003	07-NOV-2013 15:00	LP_SB04_0.5		✓		✓
ES1324723-004	07-NOV-2013 15:00	LN_MW04_0.5		✓		✓
ES1324723-007	07-NOV-2013 15:00	LP_MW05_0.5		✓		✓
ES1324723-008	07-NOV-2013 15:00	LDP001		✓		✓
ES1324723-009	07-NOV-2013 15:00	LNMW06_0.5		✓		✓
ES1324723-010	07-NOV-2013 15:00	LNMW07_0.5		✓		✓
ES1324723-011	07-NOV-2013 15:00	LNMW01_0.5		✓		✓
ES1324723-012	[ 14-NOV-2013 ]	LOSB06A_0.5		✓	✓	
ES1324723-014	07-NOV-2013 08:03	LO_SB08_SIF	✓			
ES1324723-015	07-NOV-2013 08:10	LO_SB08_1.0	✓			
ES1324723-016	07-NOV-2013 15:00	LO_SB07_0.1	✓			
ES1324723-017	07-NOV-2013 15:00	LO_SB07_1.0	✓			
ES1324723-018	07-NOV-2013 15:00	LO_SB06_0.1	✓			
ES1324723-019	07-NOV-2013 15:00	LO_SB06_0.5	✓			
ES1324723-020	07-NOV-2013 15:00	LP_SB04_0.1	✓			
ES1324723-021	07-NOV-2013 15:00	LP_SB04_1.0	✓			
ES1324723-022	07-NOV-2013 15:00	LN_MW04_0.1	✓			
ES1324723-023	07-NOV-2013 15:00	LN_MW04_1.0	✓			
ES1324723-028	07-NOV-2013 15:00	LNMW07_0.1	✓			
ES1324723-029	07-NOV-2013 15:00	LNMW07_1.0	✓			
ES1324723-030	07-NOV-2013 15:00	LNMW01_0.1	✓			
ES1324723-031	07-NOV-2013 15:00	LNMW1_1.0	✓			
ES1324723-032	07-NOV-2013 15:00	LDSB06A_0.1	✓			
ES1324723-033	07-NOV-2013 15:00	0213819	✓			
ES1324723-034	07-NOV-2013 15:00	ET6_D01				✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1324723-013	[ 14-NOV-2013 ]	R01	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Attachment - Report ( SUBCO ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### SYMPHONY ERARING

- \*AU Certificate of Analysis - NATA Email Symphony.Eraring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) Email Symphony.Eraring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA Email Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT Email Symphony.Eraring@erm.com
- Attachment - Report ( SUBCO ) Email Symphony.Eraring@erm.com
- Chain of Custody (CoC) Email Symphony.Eraring@erm.com
- EDI Format - ENMRG Email Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM Email Symphony.Eraring@erm.com
- EDI Format - ESDAT Email Symphony.Eraring@erm.com
- EDI Format - XTab Email Symphony.Eraring@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324723</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : 0244198 SYMPHONY LIDDELL <b>Order number</b> : ---- <b>C-O-C number</b> : 17019, 17020 <b>Sampler</b> : JK <b>Site</b> : MUSWELLBROOK  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 10  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 14-NOV-2013 <b>Issue Date</b> : 22-NOV-2013  <b>No. of samples received</b> : 31 <b>No. of samples analysed</b> : 11
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



## General Comments

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

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

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

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB08_0.5	LO_SB07_0.5	LP_SB04_0.5	LN_MW04_0.5	LP_MW05_0.5
				07-NOV-2013 08:05	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324723-001	ES1324723-002	ES1324723-003	ES1324723-004	ES1324723-007
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.2	20.3	21.6	17.4	16.7
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	9	12	13	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	8	22	20	22
Copper	7440-50-8	5	mg/kg	28	23	27	31	24
Lead	7439-92-1	5	mg/kg	23	21	18	29	15
Nickel	7440-02-0	2	mg/kg	16	12	14	16	15
Zinc	7440-66-6	5	mg/kg	86	46	67	58	39
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB08_0.5	LO_SB07_0.5	LP_SB04_0.5	LN_MW04_0.5	LP_MW05_0.5
				07-NOV-2013 08:05	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324723-001	ES1324723-002	ES1324723-003	ES1324723-004	ES1324723-007
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB08_0.5	LO_SB07_0.5	LP_SB04_0.5	LN_MW04_0.5	LP_MW05_0.5
				07-NOV-2013 08:05	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324723-001	ES1324723-002	ES1324723-003	ES1324723-004	ES1324723-007
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	109	112	111	84.2	85.0
2-Chlorophenol-D4	93951-73-6	0.1	%	116	115	110	111	117
2,4,6-Tribromophenol	118-79-6	0.1	%	73.8	79.1	75.5	73.9	77.2
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	105	109	103	104	109
Anthracene-d10	1719-06-8	0.1	%	87.8	94.3	90.7	88.0	91.7
4-Terphenyl-d14	1718-51-0	0.1	%	84.0	89.8	86.2	84.0	87.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	73.2	74.2	88.7	89.3	78.8
Toluene-D8	2037-26-5	0.1	%	89.1	81.2	86.0	86.7	78.1
4-Bromofluorobenzene	460-00-4	0.1	%	80.5	80.5	81.8	79.2	75.6



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDP001	LNMW06_0.5	LNMW07_0.5	LNMW01_0.5	LOSB06A_0.5
				07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	[14-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324723-008	ES1324723-009	ES1324723-010	ES1324723-011	ES1324723-012
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.9	19.4	14.8	13.1	23.4
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	14	6	10	13	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	26	10	13	14	16
Copper	7440-50-8	5	mg/kg	26	19	33	28	34
Lead	7439-92-1	5	mg/kg	17	11	16	17	20
Nickel	7440-02-0	2	mg/kg	17	8	34	19	24
Zinc	7440-66-6	5	mg/kg	42	38	102	66	77
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDP001	LNMW06_0.5	LNMW07_0.5	LNMW01_0.5	LOSB06A_0.5
				07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	[14-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324723-008	ES1324723-009	ES1324723-010	ES1324723-011	ES1324723-012
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
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	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDP001	LNMW06_0.5	LNMW07_0.5	LNMW01_0.5	LOSB06A_0.5
				07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	07-NOV-2013 15:00	[14-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324723-008	ES1324723-009	ES1324723-010	ES1324723-011	ES1324723-012
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	110	102	104	107	----
2-Chlorophenol-D4	93951-73-6	0.1	%	115	122	112	115	----
2.4.6-Tribromophenol	118-79-6	0.1	%	78.2	90.3	64.4	84.2	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	115	116	104	96.1	----
Anthracene-d10	1719-06-8	0.1	%	94.0	104	99.2	97.8	----
4-Terphenyl-d14	1718-51-0	0.1	%	90.6	99.6	95.1	95.1	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	90.5	86.4	88.5	90.6	75.1
Toluene-D8	2037-26-5	0.1	%	89.7	87.2	85.0	100	86.6
4-Bromofluorobenzene	460-00-4	0.1	%	86.6	80.4	84.2	86.4	79.1





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01	---	---	---	---
				[14-NOV-2013]	---	---	---	---
Compound	CAS Number	LOR	Unit	ES1324723-013	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---
<b>EP080: BTEXN</b>								
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	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	<b>81.5</b>	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	<b>98.8</b>	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	<b>105</b>	---	---	---	---



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM): Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM): PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

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



Our ref : ASET36141/ 39321 / 1 - 11

Your ref : ES1324723

**NATA Accreditation No: 14484**

18 November 2013

Australian Laboratory Services Pty Ltd  
277 - 284 Woodpark Road  
Smithfield NSW 2164

**Attn: Ms Nanthini Coilparampil**

Dear Nanthini

**Asbestos Identification**

This report presents the results of eleven samples, forwarded by Australian Laboratory Services Pty Ltd on 18 November 2013, for analysis for asbestos.

**1. Introduction:** Eleven samples forwarded were examined and analysed for the presence of asbestos.

**2. Methods :** The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method. **(Safer Environment Method 1.)**

**3. Results :** **Sample No. 1. ASET36141 / 39321 / 1. ES1324723 – 001 - LO - SB08 - 0.5.**  
Approx dimensions 3.6 cm x 3.5 cm x 3.2 cm  
The sample consisted of a mixture of soil, stones, plant matter, fibres^ and fragments of cement.  
**Chrysotile^ asbestos detected.**

**Sample No. 2. ASET36141 / 39321 / 2. ES1324723 – 002 - LO - SB07 - 0.5.**  
Approx dimensions 4.1 cm x 3.7 cm x 3.5 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 3. ASET36141 / 39321 / 3. ES1324723 – 003 - LP - SB04 - 0.5.**  
Approx dimensions 4.1 cm x 3.5 cm x 3.3 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 4. ASET36141 / 39321 / 4. ES1324723 – 004 - LN - MW04 - 0.5.**  
Approx dimensions 4.2 cm x 3.7 cm x 3.4 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 5. ASET36141 / 39321 / 5. ES1324723 – 005 - LN - MW05 - 0.1.**  
Approx dimensions 3.8 cm x 3.7 cm x 3.5 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 6. ASET36141 / 39321 / 6. ES1324723 – 007 - LPMW05 - 0.5.**  
Approx dimensions 3.9 cm x 3.7 cm x 3.5 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635  
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: [aset@bigpond.net.au](mailto:aset@bigpond.net.au) WEBSITE: [www.Ausset.com.au](http://www.Ausset.com.au)



**Sample No. 7. ASET36141 / 39321 / 7. ES1324723 – 008 - LDP01.**  
Approx dimensions 4.1 cm x 3.6 cm x 3.4 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 8. ASET36141 / 39321 / 8. ES1324723 – 009 - LNMW06 - 0.5.**  
Approx dimensions 4.1 cm x 3.7 cm x 3.4 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 9. ASET36141 / 39321 / 9. ES1324723 – 010 - LNMW07 - 0.5.**  
Approx dimensions 4.3 cm x 3.6 cm x 3.5 cm  
The sample consisted of a mixture of clayish soil, stones, plant matter and fragments of shale.  
**No asbestos detected.**

**Sample No. 10. ASET36141 / 39321 / 10. ES1324723 -011 - LNMW01 - 0.5.**  
Approx dimensions 4.2 cm x 3.6 cm x 3.5 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

**Sample No. 11. ASET36141 / 39321 / 11. ES1324723 – 012 - LOSB06 - 0.5.**  
Approx dimensions 3.9 cm x 3.5 cm x 3.4 cm  
The sample consisted of a mixture of clayish soil, stones and plant matter.  
**No asbestos detected.**

Analysed and reported by,

A handwritten signature in black ink, appearing to read "Laxman Dias", written over a light blue horizontal line.

**Laxman Dias. BSc**  
**Analyst / Approved Identifier**  
**Approved Signatory**



**This document is issued in accordance with**  
**NATA's Accreditation requirements. Accredited**  
**for compliance with ISO/IEC 17025.**

**^ denotes loose fibres of relevant asbestos types detected in soil/dust.**

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1324723</b>	<b>Page</b>	: 1 of 12
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: 0244198 SYMPHONY LIDDELL	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: MUSWELLBROOK	<b>Date Samples Received</b>	: 14-NOV-2013
<b>C-O-C number</b>	: 17019, 17020	<b>Issue Date</b>	: 22-NOV-2013
<b>Sampler</b>	: JK	<b>No. of samples received</b>	: 31
<b>Order number</b>	: ----	<b>No. of samples analysed</b>	: 11
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Raymond Commodor	Instrument Chemist	Sydney Inorganics



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### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3166252)</b>									
ES1324715-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.7	22.0	1.2	0% - 20%
ES1324722-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.3	21.6	1.5	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3166253)</b>									
ES1324723-007	LP_MW05_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.7	16.4	2.2	0% - 50%
ES1324726-008	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.3	17.4	0.9	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3163177)</b>									
ES1324717-018	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	5	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	22	0.0	No Limit
ES1324723-008	LDP001	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	25	4.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	17	18	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	15	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	27	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	15	11.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	42	42	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3163178)</b>									
ES1324717-018	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324723-008	LDP001	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3164399)</b>									
ES1324722-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3164399) - continued</b>									
ES1324722-001	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1324723-002	LO_SB07_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164399)</b>							
ES1324722-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324723-002	LO_SB07_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit





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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164399) - continued</b>									
ES1324723-002	LO_SB07_0.5	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3163053)</b>									
ES1324655-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324723-007	LP_MW05_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164398)</b>									
ES1324722-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324723-002	LO_SB07_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3163053)</b>									
ES1324655-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324723-007	LP_MW05_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3164398)</b>									
ES1324722-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324723-002	LO_SB07_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3163053)</b>									
ES1324655-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3163053) - continued</b>									
ES1324723-007	LP_MW05_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		<b>Sub-Matrix: <b>WATER</b></b>							
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1324795-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1324795-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1324795-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3163177)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	103	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	110	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	5	32.0 mg/kg	117	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	107	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3163178)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.1	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164399)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	109	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	112	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	111	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	101	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	84.8	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	105	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	97.1	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	102	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	96.6	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.0	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	84.3	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	26.2	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164399)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	115	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	112	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	115	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	90.9	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	90.6	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	93.0	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	93.8	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	104	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	115	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	105	70	118	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164399) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	114	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	111	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	111	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	103	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3163053)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	80.8	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164398)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	97.2	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	95.8	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	84.5	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163053)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	77.0	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164398)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	97.9	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.5	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	68.6	63	131	
<b>EP080: BTEXN (QCLot: 3163053)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	70.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	74.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	70.0	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	74.2	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	76.4	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	80.7	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3163329)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.1	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.9	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	100	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.0	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163329)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	99.6	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	101	73.9	138	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163329) - continued</b>								
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	101	67	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.8	75	127
<b>EP080: BTEXN (QCLot: 3164249)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	82.2	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	85.6	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	81.2	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	86.8	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.4	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70	124

### 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3163177)</b>							
ES1324717-018	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	88.8	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	104	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	99.4	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3163178)</b>							
ES1324717-018	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164399)</b>							
ES1324722-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	94.5	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.4	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	78.3	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	44.4	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164399)</b>							
ES1324722-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.0	70	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164399) - continued</b>								
ES1324722-001	Anonymous	EP075(SIM): Pyrene	129-00-0	10 mg/kg	94.8	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3163053)</b>								
ES1324655-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	81.9	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164398)</b>								
ES1324722-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	77.5	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.0	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	85.0	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163053)</b>								
ES1324655-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	78.0	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164398)</b>								
ES1324722-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.1	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	71.7	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	64.9	52	132	
<b>EP080: BTEXN (QCLot: 3163053)</b>								
ES1324655-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.9	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	77.6	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.3	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	75.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	78.2	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	80.8	70	130			

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>								
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>								
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	70	130	
<b>EP080: BTEXN (QCLot: 3164249)</b>								
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	70	130	
		EP080: Toluene	108-88-3	25 µg/L	108	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70	130	
EP080: Naphthalene	91-20-3	25 µg/L	93.3	70	130			



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3163053)</b>											
ES1324655-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	81.9	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163053)</b>											
ES1324655-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	78.0	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3163053)</b>											
ES1324655-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.9	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	77.6	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.3	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	75.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	78.2	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	80.8	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3163177)</b>											
ES1324717-018	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	102	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	88.8	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	104	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	103	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	99.4	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3163178)</b>											
ES1324717-018	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164398)</b>											
ES1324722-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	77.5	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.0	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	85.0	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164398)</b>											
ES1324722-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.1	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	71.7	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	64.9	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164399)</b>											
ES1324722-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	94.5	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.4	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	78.3	----	60	130	----	----	



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164399) - continued</b>										
ES1324722-001	Anonymous	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	44.4	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164399)</b>										
ES1324722-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	94.8	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>										
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>										
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3164249)</b>										
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	93.3	----	70	130	----	----





## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324723</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: 0244198 SYMPHONY LIDDELL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: MUSWELLBROOK	Date Samples Received	: 14-NOV-2013
C-O-C number	: 17019, 17020	Issue Date	: 22-NOV-2013
Sampler	: JK	No. of samples received	: 31
Order number	: ----	No. of samples analysed	: 11
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	----	----	----	19-NOV-2013	21-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LOSB06A_0.5	14-NOV-2013	----	----	----	19-NOV-2013	28-NOV-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	18-NOV-2013	06-MAY-2014	✓	18-NOV-2013	06-MAY-2014	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LOSB06A_0.5	14-NOV-2013	18-NOV-2013	13-MAY-2014	✓	18-NOV-2013	13-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	18-NOV-2013	05-DEC-2013	✓	19-NOV-2013	05-DEC-2013	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LOSB06A_0.5	14-NOV-2013	18-NOV-2013	12-DEC-2013	✓	19-NOV-2013	12-DEC-2013	✓



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
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	20-NOV-2013	21-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b> LOSB06A_0.5	14-NOV-2013	20-NOV-2013	28-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	20-NOV-2013	21-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	20-NOV-2013	21-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	18-NOV-2013	21-NOV-2013	✓	19-NOV-2013	21-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LOSB06A_0.5	14-NOV-2013	18-NOV-2013	28-NOV-2013	✓	19-NOV-2013	28-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LO_SB08_0.5, LP_SB04_0.5, LP_MW05_0.5, LNMW06_0.5, LNMW01_0.5 LO_SB07_0.5, LN_MW04_0.5, LDP001, LNMW07_0.5	07-NOV-2013	18-NOV-2013	21-NOV-2013	✓	19-NOV-2013	21-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LOSB06A_0.5	14-NOV-2013	18-NOV-2013	28-NOV-2013	✓	19-NOV-2013	28-NOV-2013	✓

Matrix: **WATER**

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



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01	14-NOV-2013	20-NOV-2013	21-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01	14-NOV-2013	19-NOV-2013	28-NOV-2013	✓	19-NOV-2013	28-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01	14-NOV-2013	19-NOV-2013	28-NOV-2013	✓	19-NOV-2013	28-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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 Work Order : ES1324723  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : 0244198 SYMPHONY LIDDELL



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

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Work Order : ES1324723  
Client : ENVIRO RESOURCES MANAGEMENT  
Project : 0244198 SYMPHONY LIDDELL



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.





## **Summary of Outliers**

### **Outliers : Quality Control Samples**

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

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

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

#### **Regular Sample Surrogates**

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

### **Outliers : Analysis Holding Time Compliance**

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

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

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

- No Quality Control Sample Frequency Outliers exist.



**CHAIN OF CUSTODY**

LABORATORY: ALS Laboratory please list ->  
 ADDRESS: 1000 Bunn Road, Perth WA 6005  
 PH: 08 9447 2222  
 FAX: 08 9447 2222  
 EMAIL: sales@als.com.au

LABORATORY: ALS Laboratory please list ->  
 ADDRESS: 1000 Bunn Road, Perth WA 6005  
 PH: 08 9447 2222  
 FAX: 08 9447 2222  
 EMAIL: sales@als.com.au

LABORATORY: ALS Laboratory please list ->  
 ADDRESS: 1000 Bunn Road, Perth WA 6005  
 PH: 08 9447 2222  
 FAX: 08 9447 2222  
 EMAIL: sales@als.com.au

LABORATORY: ALS Laboratory please list ->  
 ADDRESS: 1000 Bunn Road, Perth WA 6005  
 PH: 08 9447 2222  
 FAX: 08 9447 2222  
 EMAIL: sales@als.com.au

CLIENT: **ERM**

OFFICE: **Sydney**

PROJECT: **Project Symphony**

ORDER NUMBER: **0224198**

PROJECT MANAGER: **Joseph Goring**

SAMPLER: **John Keady**

COC emailed to ALS? (YES/NO): **YES**

Standard TAT may be longer for some tests e.g. Ultra Trace Organics

ALSO QUOTE NO.: **SY794/13**

SITE: **BAYSWATER / LIDDELL**

CONTACT PH: \_\_\_\_\_

SAMPLER MOBILE: \_\_\_\_\_

EDD FORMAT (or default): \_\_\_\_\_

RELINQUISHED BY: **John Keady**

DATE/TIME: **14/11/13 10:55**

RECEIVED BY: **SMS**

DATE/TIME: **14/11/13 17:20**

RELINQUISHED BY: **Raviniah**

DATE/TIME: **14/11/13 19:00**

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?  Yes  No

Free Ice / frozen Ice blocks present upon receipt?  Yes  No

Refrigerant Sample Temperature on Receipt: \_\_\_\_\_ °C

Other comment: \_\_\_\_\_

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	CONTAINER INFORMATION (refer to CONTAINERS TOTAL)	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (undiluted bottle required) or Dissolved (field filtered bottle required).	Additional Information
1	LMW01-0.5	11/11/13	soil	ST	1x200	S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg) X S-24 TRHICs (C40) (BTEXN, PAH, Phenols) X VOC Target Scan X PCB X pH (1-5) X Exchangeable cations (E007) X PFOS/PFOA X Asbestos (absence/presence) X Particulate Sludge to 75um (Sludge) X Organic Matter plus Carbon (EPO4) X	Comments on likely contamination levels.
2	LMW03-0.5						
3	LMW07-0.5						
4	LRM004-0.5						
5	LRM003-0.1						
6	LRM001-0.1						
7	LM5B01-0.1						
8	LS0B02-0.1						
9	RO1	11/11/13	water	AG, VOA			
10	TS						
11	TS-16	30/11/13					
12	TS3-5-11-13						
<p>Water Container Codes: P = Unpreserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial; SC = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specialisation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate; B = Unpreserved Bag.</p>							

Environmental Division  
 Sydney  
 Work Order  
**ES1324724**



Telephone : +61-2-8784 8555

BTEx, TRH only

14 TSC3  
 #10 Not Rec'd. water TSC3 Rec'd.

SMS  
 10/11/13

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1324724</b>		
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>Page</b>	: 1 of 3
<b>Order number</b>	: 0224195	<b>Quote number</b>	: ES2013ENVRES0369 (SY/794/13)
<b>C-O-C number</b>	: ----	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----		
<b>Sampler</b>	: JK		

#### Dates

Date Samples Received	: 14-NOV-2013	Issue Date	: 27-NOV-2013
Client Requested Due Date	: 27-NOV-2013	Scheduled Reporting Date	: <b>27-NOV-2013</b>

#### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.8°C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 13
Security Seal	: Intact.	No. of samples analysed	: 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample TB has not been received, but received extra sample TS16, TS3, TSC16 and TSC3 and conducted TPH C6-C9/BTEX analysis, Please confirm**
- 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 (14 days), Solid (60 days) from date of completion of work order.



### Sample Container(s)/Preservation Non-Compliances

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

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

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols&Metals
ES1324724-001	11-NOV-2013 15:00	LM_MW01_0.5				✓
ES1324724-002	11-NOV-2013 15:00	LM_MW03_0.5				✓
ES1324724-003	11-NOV-2013 15:00	LM_MW02_0.5				✓
ES1324724-004	11-NOV-2013 15:00	LR_MW04_0.5	✓	✓		✓
ES1324724-005	11-NOV-2013 15:00	LR_MW03_0.1	✓	✓		✓
ES1324724-006	11-NOV-2013 15:00	LR_MW01_0.1	✓	✓		✓
ES1324724-007	11-NOV-2013 15:00	LM_SB01_0.1				✓
ES1324724-008	11-NOV-2013 15:00	LS_SB02_0.1				✓
ES1324724-011	30-OCT-2013 15:00	TS16_301013			✓	
ES1324724-012	05-NOV-2013 15:00	TS3_301013			✓	
ES1324724-013	30-OCT-2013 15:00	TSC16_301013			✓	
ES1324724-014	05-NOV-2013 15:00	TSC3_301013			✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1324724-009	11-NOV-2013 15:00	R01_111113_JK	✓



## Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method		Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)	Container			Date	Evaluation	Date	Evaluation
<b>EP080: TPH Volatiles/BTEX</b>							
TS16_301013	Soil Glass Jar - Unpreserved	13-NOV-2013	----	14-NOV-2013	✘	14-NOV-2013	✘
TSC16_301013	Soil Glass Jar - Unpreserved	13-NOV-2013	----	14-NOV-2013	✘	14-NOV-2013	✘

## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	john.ewing@erm.com
- A4 - AU Tax Invoice ( INV )	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com
- EDI Format - XTab ( XTAB )	Email	john.ewing@erm.com

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### SYMPHONY ERARING

- *AU Certificate of Analysis - NATA ( COA )	Email	Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	Symphony.Eraring@erm.com
- Chain of Custody (CoC) ( COC )	Email	Symphony.Eraring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	Symphony.Eraring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	Symphony.Eraring@erm.com
- EDI Format - XTab ( XTAB )	Email	Symphony.Eraring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1324724</b>	Page	: 1 of 15
Amendment	: <b>1</b>		
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224195		
C-O-C number	: ----	Date Samples Received	: 14-NOV-2013
Sampler	: JK	Issue Date	: 27-NOV-2013
Site	: ----		
Quote number	: SY/794/13	No. of samples received	: 13
		No. of samples analysed	: 13

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



## 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.

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**
- **This report has been amended as a result of misinterpretation of sample identification numbers (IDs). All analysis results are as per the previous report**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics Sydney Organics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_0.5	LM_MW03_0.5	LM_MW02_0.5	LR_MW04_0.5	LR_MW03_0.1
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-001	ES1324724-002	ES1324724-003	ES1324724-004	ES1324724-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	19.0	21.1	17.8	21.2	24.6
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	11	8	28	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	16	19	15	17
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	7
Lead	7439-92-1	5	mg/kg	10	12	12	15	15
Nickel	7440-02-0	2	mg/kg	2	5	8	2	12
Zinc	7440-66-6	5	mg/kg	10	16	24	18	70
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	<0.1
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	----	----	----	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	----	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	----	<0.5	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	----	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	----	<0.5	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	----	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	----	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	----	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	----	<5	<5
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	----	<5	<5
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	----	<5	<5
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	----	<5	<5
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	----	<0.5	<0.5
1,2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	----	<0.5	<0.5





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_0.5	LM_MW03_0.5	LM_MW02_0.5	LR_MW04_0.5	LR_MW03_0.1
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-001	ES1324724-002	ES1324724-003	ES1324724-004	ES1324724-005
<b>EP074D: Fumigants - Continued</b>								
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	----	<0.5	<0.5
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	----	<5	<5
Chloromethane	74-87-3	5	mg/kg	----	----	----	<5	<5
Vinyl chloride	75-01-4	5	mg/kg	----	----	----	<5	<5
Bromomethane	74-83-9	5	mg/kg	----	----	----	<5	<5
Chloroethane	75-00-3	5	mg/kg	----	----	----	<5	<5
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	----	<5	<5
1.1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	----	<0.5	<0.5
Iodomethane	74-88-4	0.5	mg/kg	----	----	----	<0.5	<0.5
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	----	<0.5	<0.5
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	----	<0.5	<0.5
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	----	<0.5	<0.5
Trichloroethene	79-01-6	0.5	mg/kg	----	----	----	<0.5	<0.5
Dibromomethane	74-95-3	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	----	<0.5	<0.5
Tetrachloroethene	127-18-4	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	----	----	<0.5	<0.5
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	----	----	<0.5	<0.5
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	----	<0.5	<0.5
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	----	<0.5	<0.5
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	----	<0.5	<0.5
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	----	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_0.5	LM_MW03_0.5	LM_MW02_0.5	LR_MW04_0.5	LR_MW03_0.1
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-001	ES1324724-002	ES1324724-003	ES1324724-004	ES1324724-005
<b>EP074F: Halogenated Aromatic Compounds - Continued</b>								
Bromobenzene	108-86-1	0.5	mg/kg	----	----	----	<0.5	<0.5
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	----	<0.5	<0.5
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	----	<0.5	<0.5
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	----	<0.5	<0.5
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	----	<0.5	<0.5
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	----	<0.5	<0.5
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	----	<0.5	<0.5
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	----	----	----	<0.5	<0.5
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	----	<0.5	<0.5
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	----	<0.5	<0.5
Bromoform	75-25-2	0.5	mg/kg	----	----	----	<0.5	<0.5
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	----	----	----	<5	<5
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_0.5	LM_MW03_0.5	LM_MW02_0.5	LR_MW04_0.5	LR_MW03_0.1
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-001	ES1324724-002	ES1324724-003	ES1324724-004	ES1324724-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_0.5	LM_MW03_0.5	LM_MW02_0.5	LR_MW04_0.5	LR_MW03_0.1
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-001	ES1324724-002	ES1324724-003	ES1324724-004	ES1324724-005
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	60.2	64.0
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	107	114
Toluene-D8	2037-26-5	0.1	%	----	----	----	115	114
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	107	107
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.0	92.4	82.9	86.0	82.2
2-Chlorophenol-D4	93951-73-6	0.1	%	84.0	97.1	92.5	104	85.3
2,4,6-Tribromophenol	118-79-6	0.1	%	81.8	84.0	68.6	71.2	70.6
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	81.2	86.5	84.2	86.5	83.7
Anthracene-d10	1719-06-8	0.1	%	80.7	79.1	85.8	79.6	77.0
4-Terphenyl-d14	1718-51-0	0.1	%	79.5	77.3	76.8	77.1	75.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	114	113	118	113	120
Toluene-D8	2037-26-5	0.1	%	107	102	105	106	105
4-Bromofluorobenzene	460-00-4	0.1	%	103	98.4	96.3	106	106



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LR_MW01_0.1	LM_SB01_0.1	LS_SB02_0.1	TS16_301013	TS3_301013
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	30-OCT-2013 15:00	05-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-006	ES1324724-007	ES1324724-008	ES1324724-011	ES1324724-012
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	23.9	20.6	14.8	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	6	11	14	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	13	12	15	----	----
Copper	7440-50-8	5	mg/kg	14	13	16	----	----
Lead	7439-92-1	5	mg/kg	24	26	15	----	----
Nickel	7440-02-0	2	mg/kg	8	12	7	----	----
Zinc	7440-66-6	5	mg/kg	144	209	45	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	----	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	----	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	----	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	----	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	----	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	----	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	----	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	<5	----	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	----	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	----	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	----	----	----	----
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LR_MW01_0.1	LM_SB01_0.1	LS_SB02_0.1	TS16_301013	TS3_301013
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	30-OCT-2013 15:00	05-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-006	ES1324724-007	ES1324724-008	ES1324724-011	ES1324724-012
<b>EP074D: Fumigants - Continued</b>								
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	----	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	----	----	----	----
Chloromethane	74-87-3	5	mg/kg	<5	----	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	<5	----	----	----	----
Bromomethane	74-83-9	5	mg/kg	<5	----	----	----	----
Chloroethane	75-00-3	5	mg/kg	<5	----	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	----	----	----	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	----	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	<0.5	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	----	----	----	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	----	----	----	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	----	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	----	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	----	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	----	----	----	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	----	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	----	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	----	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	----	----	----	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	----	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	----	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LR_MW01_0.1	LM_SB01_0.1	LS_SB02_0.1	TS16_301013	TS3_301013
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	30-OCT-2013 15:00	05-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-006	ES1324724-007	ES1324724-008	ES1324724-011	ES1324724-012
<b>EP074F: Halogenated Aromatic Compounds - Continued</b>								
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	<5	----	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LR_MW01_0.1	LM_SB01_0.1	LS_SB02_0.1	TS16_301013	TS3_301013
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	30-OCT-2013 15:00	05-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-006	ES1324724-007	ES1324724-008	ES1324724-011	ES1324724-012
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<b>48</b>	<b>122</b>
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<b>56</b>	<b>134</b>
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<b>37</b>	<b>95</b>
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<b>120</b>	<b>150</b>	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<b>120</b>	<b>150</b>	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<b>0.8</b>





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LR_MW01_0.1	LM_SB01_0.1	LS_SB02_0.1	TS16_301013	TS3_301013
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	30-OCT-2013 15:00	05-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324724-006	ES1324724-007	ES1324724-008	ES1324724-011	ES1324724-012
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	9.0	20.3
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	1.1	2.3
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	6.1	11.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	2.5	4.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	18.7	39.4
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	8.6	16.0
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	64.1	----	----	----	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	109	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	101	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	80.7	84.9	89.4	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	99.6	81.3	92.0	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	70.4	82.4	72.8	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	83.1	90.0	82.2	----	----
Anthracene-d10	1719-06-8	0.1	%	74.8	72.5	69.6	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	70.4	76.0	75.9	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	118	113	121	84.8	103
Toluene-D8	2037-26-5	0.1	%	100	97.9	112	79.0	86.2
4-Bromofluorobenzene	460-00-4	0.1	%	99.7	89.5	104	74.3	86.3



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				TSC16_301013	TSC3_301013	---	---	---
				30-OCT-2013 15:00	05-NOV-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1324724-013	ES1324724-014	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	---	10	mg/kg	81	114	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	90	127	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	63	85	---	---	---
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	0.4	1.0	---	---	---
Toluene	108-88-3	0.5	mg/kg	13.8	21.7	---	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	1.6	2.4	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	8.2	12.2	---	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	3.2	4.5	---	---	---
^ Sum of BTEX	---	0.2	mg/kg	27.2	41.8	---	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	11.4	16.7	---	---	---
Naphthalene	91-20-3	1	mg/kg	<1	<1	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.6	121	---	---	---
Toluene-D8	2037-26-5	0.1	%	84.0	103	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	84.8	104	---	---	---



**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_111113\_JK

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Client sampling date / time

11-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1324724-009	---	---	---	---
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**EP080/071: Total Petroleum Hydrocarbons**

C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----

**EP080/071: Total Recoverable Hydrocarbons - NEPM 2013**

C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----

**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	----	----	----	----
^ Total Xylenes	1330-20-7	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	0.1	%	83.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	107	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	100	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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	: <b>ES1324724</b>	Page	: 1 of 18
Amendment	: <b>1</b>		
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 14-NOV-2013
Sampler	: JK	Issue Date	: 27-NOV-2013
Order number	: 0224195		
Quote number	: SY/794/13	No. of samples received	: 13
		No. of samples analysed	: 13

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics Sydney Organics



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3167933)</b>									
ES1324716-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.7	12.1	12.4	0% - 50%
ES1324724-008	LS_SB02_0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.8	15.0	1.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3167577)</b>									
ES1324716-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	3	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	12	40.6	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	39	18.0	No Limit
ES1324724-001	LM_MW01_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	10	10.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	5	32.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	8	19.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	15	39.5	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3167578)</b>									
ES1324716-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324724-001	LM_MW01_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3168220)</b>									
ES1324860-020	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324860-028	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3164536)</b>									
ES1324715-006	Anonymous	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		<b>EP074B: Oxygenated Compounds (QC Lot: 3164536)</b>							
ES1324715-006	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074B: Oxygenated Compounds (QC Lot: 3164536) - continued</b>									
ES1324715-006	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3164536)</b>									
ES1324715-006	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3164536)</b>									
ES1324715-006	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3164536)</b>									
ES1324715-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit		





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3164536)</b>											
ES1324715-006	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP074G: Trihalomethanes (QC Lot: 3164536)</b>											
ES1324715-006	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP074H: Naphthalene (QC Lot: 3164536)</b>											
ES1324715-006	Anonymous	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit		
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3167025)</b>											
ES1324724-001	LM_MW01_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
		ES1324834-004	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3167025) - continued</b>									
ES1324834-004	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3167025)</b>									
ES1324724-001	LM_MW01_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1324834-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164535)</b>									
ES1324715-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324724-004	LR_MW04_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166134)</b>									
ES1324724-001	LM_MW01_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324840-010	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3167024)</b>									
ES1324724-001	LM_MW01_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324834-004	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3164535)</b>									
ES1324715-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324724-004	LR_MW04_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166134)</b>									
ES1324724-001	LM_MW01_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324840-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3167024)</b>									
ES1324724-001	LM_MW01_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324834-004	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3164535)</b>									
ES1324715-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324724-004	LR_MW04_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080: BTEXN (QC Lot: 3164535) - continued</b>										
ES1324724-004	LR_MW04_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3166134)</b>										
ES1324724-001	LM_MW01_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1324840-010	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit			
<b>Sub-Matrix: WATER</b>										
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1324967-021	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1324967-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1324967-021	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit			



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167577)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	110	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	109	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	104	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	105	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	107	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	112	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167578)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.9	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3168220)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	101	57.4	117	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3164536)</b>									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	99.6	64	126	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	100	66	128	
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	101	63	129	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	102	63	129	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	100	64	130	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	105	63	129	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	104	63	129	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	102	62	130	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	102	61	131	
<b>EP074B: Oxygenated Compounds (QCLot: 3164536)</b>									
EP074: Vinyl Acetate	108-05-4	1	mg/kg	----	10 mg/kg	97.5	29.6	156	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Butanone (MEK)	78-93-3	1	mg/kg	----	10 mg/kg	90.5	58	136	
		5	mg/kg	<5	----	----	----	----	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	1	mg/kg	----	10 mg/kg	85.8	54	138	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Hexanone (MBK)	591-78-6	1	mg/kg	----	10 mg/kg	99.6	54	136	
		5	mg/kg	<5	----	----	----	----	
<b>EP074C: Sulfonated Compounds (QCLot: 3164536)</b>									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	109	54	126	
<b>EP074D: Fumigants (QCLot: 3164536)</b>									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	86.4	55	133	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074D: Fumigants (QCLot: 3164536) - continued</b>									
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	95.2	69	127	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	99.3	54	124	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	90.3	51	125	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	95.3	66	126	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3164536)</b>									
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	63.1	30	148	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	75.8	41	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	89.0	43	147	
		5	mg/kg	<5	----	----	----	----	
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	77.9	47	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	90.2	49	143	
		5	mg/kg	<5	----	----	----	----	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	90.7	49	135	
		5	mg/kg	<5	----	----	----	----	
EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	96.2	54	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	92.2	43	129	
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	95.5	62	130	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	97.6	66	132	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	96.7	66	132	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	86.7	62	126	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	95.9	64	128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	106	59	125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	95.7	65	123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	99.0	64	120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	98.8	65	127	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	98.0	70	130	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	97.9	72	128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	100	67	143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	92.6	62	122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	86.3	54	128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	108	55	129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	98.6	56	132	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	99.9	65	135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	109	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	117	53	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	101	48	136	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3164536)</b>									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	98.8	70	128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	97.8	67	127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	101	64	130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	101	62	130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	100	63	129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	98.8	63	129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	97.8	66	128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	101	54	134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	99.8	60	132	
<b>EP074G: Trihalomethanes (QCLot: 3164536)</b>									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	98.6	62	120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	105	61	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	104	63	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	107	60	126	
<b>EP074H: Naphthalene (QCLot: 3164536)</b>									
EP074: Naphthalene	91-20-3	0.5	mg/kg	----	1 mg/kg	100	63	133	
		5	mg/kg	<5	----	----	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167025)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	88.9	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	80.6	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	81.6	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	106	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	83.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	83.0	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	72.9	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	85.5	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	84.4	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	70.3	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	71.4	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	22.9	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167025)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	80.8	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	86.5	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	85.2	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	82.6	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	109	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	99.3	79	123	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167025) - continued</b>									
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	82.9	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.6	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	90.2	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	96.1	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	102	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	81.6	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	77.2	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	81.5	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	81.9	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164535)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.8	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	85.1	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167024)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.9	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	95.7	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	91.6	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164535)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	79.4	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.4	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167024)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	95.4	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	94.4	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	96.5	63	131	
<b>EP080: BTEXN (QCLot: 3164535)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	73.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.7	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	75.2	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	79.3	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	80.7	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	92.1	62	138	
<b>EP080: BTEXN (QCLot: 3166134)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	76.3	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	77.8	58	118	





Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
<b>EP080: BTEXN (QCLot: 3166134) - continued</b>								
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	77.8	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	78.3	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	65.6	62	138

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3163329)</b>								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.1	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.9	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	100	62	120
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168852)</b>								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	118	75	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3163329)</b>								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	99.6	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	101	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	101	67	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168852)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	116	75	127
<b>EP080: BTEXN (QCLot: 3168852)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	104	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	106	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	112	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	108	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	112	70	124

### 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	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167577)</b>							
ES1324716-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167577) - continued</b>							
ES1324716-001	Anonymous	EG005T: Cadmium	7440-43-9	50 mg/kg	112	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	108	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167578)</b>							
ES1324716-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	97.6	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3168220)</b>							
ES1324860-020	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	102	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3164536)</b>							
ES1324715-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	72.4	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	80.5	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3164536)</b>							
ES1324715-006	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.6	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167025)</b>							
ES1324724-001	LM_MW01_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	76.7	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.8	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.6	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	47.8	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167025)</b>							
ES1324724-001	LM_MW01_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	80.4	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	84.3	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164535)</b>							
ES1324715-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.4	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>							
ES1324724-001	LM_MW01_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167024)</b>							
ES1324724-001	LM_MW01_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	79.3	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.5	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	63.7	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164535)</b>							
ES1324715-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.3	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>							



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134) - continued</b>								
ES1324724-001	LM_MW01_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167024)</b>								
ES1324724-001	LM_MW01_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	99.1	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.3	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.5	52	132	
<b>EP080: BTEXN (QCLot: 3164535)</b>								
ES1324715-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	73.4	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	76.2	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.9	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	81.7	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.3	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	73.6	70	130			
<b>EP080: BTEXN (QCLot: 3166134)</b>								
ES1324724-001	LM_MW01_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	70	130			

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168852)</b>							
ES1324813-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	116	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168852)</b>							
ES1324813-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	70	130
<b>EP080: BTEXN (QCLot: 3168852)</b>							
ES1324813-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.8	70	130
		EP080: Toluene	108-88-3	25 µg/L	100	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.3	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	103	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	100	70	130
EP080: Naphthalene	91-20-3	25 µg/L	96.7	70	130		



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
				Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164535)</b>											
ES1324715-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.4	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164535)</b>											
ES1324715-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.3	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3164535)</b>											
ES1324715-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	73.4	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	76.2	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.9	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	81.7	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.3	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	73.6	----	70	130	----	----	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3164536)</b>											
ES1324715-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	72.4	----	70	130	----	----	
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	80.5	----	70	130	----	----	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3164536)</b>											
ES1324715-006	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.6	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>											
ES1324724-001	LM_MW01_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>											
ES1324724-001	LM_MW01_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3166134)</b>											
ES1324724-001	LM_MW01_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167024)</b>											
ES1324724-001	LM_MW01_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	79.3	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.5	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	63.7	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167024)</b>											



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167024) - continued</b>										
ES1324724-001	LM_MW01_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	99.1	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.3	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	52.5	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167025)</b>										
ES1324724-001	LM_MW01_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	76.7	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.8	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.6	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	78.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	47.8	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167025)</b>										
ES1324724-001	LM_MW01_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	80.4	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	84.3	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167577)</b>										
ES1324716-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	112	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	105	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	104	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	106	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	108	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167578)</b>										
ES1324716-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	97.6	----	70	130	----	----
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3168220)</b>										
ES1324860-020	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	102	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	116	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3168852)</b>										
ES1324813-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.8	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	100	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.3	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	----	70	130	----	----

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 Work Order : ES1324724 Amendment 1  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: **WATER**

					<i>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report</i>					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>		<i>Recovery Limits (%)</i>		<i>RPDs (%)</i>	
				<i>Concentration</i>	<i>MS</i>	<i>MSD</i>	<i>Low</i>	<i>High</i>	<i>Value</i>	<i>Control Limit</i>
<b>EP080: BTEXN (QCLot: 3168852) - continued</b>										
ES1324813-001	Anonymous	EP080: ortho-Xylene	95-47-6	25 µg/L	100	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	96.7	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1324724</b>	<b>Page</b>	: 1 of 9
<b>Amendment</b>	<b>: 1</b>		
<b>Client</b>	: ENVIRO RESOURCES MANAGEMENT	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----		
<b>C-O-C number</b>	: ----	<b>Date Samples Received</b>	: 14-NOV-2013
<b>Sampler</b>	: JK	<b>Issue Date</b>	: 27-NOV-2013
<b>Order number</b>	: 0224195		
<b>Quote number</b>	: SY/794/13	<b>No. of samples received</b>	: 13
		<b>No. of samples analysed</b>	: 13

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1, LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	----	----	----	20-NOV-2013	25-NOV-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1, LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	20-NOV-2013	10-MAY-2014	✓	20-NOV-2013	10-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1, LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	20-NOV-2013	09-DEC-2013	✓	21-NOV-2013	09-DEC-2013	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>							
<b>Soil Glass Jar - Unpreserved (EP066)</b> LR_MW04_0.5, LR_MW01_0.1, LR_MW03_0.1	11-NOV-2013	20-NOV-2013	25-NOV-2013	✓	21-NOV-2013	30-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1, LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	21-NOV-2013	25-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP074D: Fumigants</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LR_MW04_0.5, LR_MW01_0.1, LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓





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	
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074F: Halogenated Aromatic Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074H: Naphthalene</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074B: Oxygenated Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074C: Sulfonated Compounds</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP074G: Trihalomethanes</b>								
Soil Glass Jar - Unpreserved (EP074) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	18-NOV-2013	18-NOV-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
Soil Glass Jar - Unpreserved (EP075(SIM)) LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1	LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	21-NOV-2013	25-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP075(SIM)) LM_MW01_0.5, LM_MW02_0.5, LR_MW03_0.1, LM_SB01_0.1	LM_MW03_0.5, LR_MW04_0.5, LR_MW01_0.1, LS_SB02_0.1	11-NOV-2013	21-NOV-2013	25-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓



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
<b>EP080: BTEXN</b>							
Soil Glass Jar - Unpreserved (EP080) TS3_301013	05-NOV-2013	18-NOV-2013	19-NOV-2013	✓	18-NOV-2013	19-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) TSC3_301013	05-NOV-2013	19-NOV-2013	19-NOV-2013	✓	21-NOV-2013	19-NOV-2013	*
Soil Glass Jar - Unpreserved (EP080) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1, 11-NOV-2013	18-NOV-2013	25-NOV-2013	✓	18-NOV-2013	25-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) LM_MW01_0.5, LM_MW02_0.5, LS_SB02_0.1	LM_MW03_0.5, LM_SB01_0.1, 11-NOV-2013	19-NOV-2013	25-NOV-2013	✓	21-NOV-2013	25-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) TS16_301013,	TSC16_301013 30-OCT-2013	18-NOV-2013	13-NOV-2013	*	18-NOV-2013	13-NOV-2013	*
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Soil Glass Jar - Unpreserved (EP080) TS3_301013	05-NOV-2013	18-NOV-2013	19-NOV-2013	✓	18-NOV-2013	19-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) TSC3_301013	05-NOV-2013	19-NOV-2013	19-NOV-2013	✓	21-NOV-2013	19-NOV-2013	*
Soil Glass Jar - Unpreserved (EP080) LR_MW04_0.5, LR_MW01_0.1	LR_MW03_0.1, 11-NOV-2013	18-NOV-2013	25-NOV-2013	✓	18-NOV-2013	25-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) LM_MW01_0.5, LM_MW02_0.5, LS_SB02_0.1	LM_MW03_0.5, LM_SB01_0.1, 11-NOV-2013	19-NOV-2013	25-NOV-2013	✓	21-NOV-2013	25-NOV-2013	✓
Soil Glass Jar - Unpreserved (EP080) TS16_301013,	TSC16_301013 30-OCT-2013	18-NOV-2013	13-NOV-2013	*	18-NOV-2013	13-NOV-2013	*

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber Glass Bottle - Unpreserved (EP071) R01_111113_JK	11-NOV-2013	18-NOV-2013	18-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP080: BTEXN</b>							
Amber VOC Vial - Sulfuric Acid (EP080) R01_111113_JK	11-NOV-2013	21-NOV-2013	25-NOV-2013	✓	21-NOV-2013	25-NOV-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
Amber VOC Vial - Sulfuric Acid (EP080) R01_111113_JK	11-NOV-2013	21-NOV-2013	25-NOV-2013	✓	21-NOV-2013	25-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	33	12.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	4	25.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	33	6.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	33	6.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	33	6.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection) (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

Matrix: SOIL

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EP080/071: Total Petroleum Hydrocarbons</b>						
Soil Glass Jar - Unpreserved TSC3_301013	----	----	----	21-NOV-2013	19-NOV-2013	2
Soil Glass Jar - Unpreserved TS16_301013, TSC16_301013	18-NOV-2013	13-NOV-2013	5	18-NOV-2013	13-NOV-2013	5
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>						
Soil Glass Jar - Unpreserved TSC3_301013	----	----	----	21-NOV-2013	19-NOV-2013	2
Soil Glass Jar - Unpreserved TS16_301013, TSC16_301013	18-NOV-2013	13-NOV-2013	5	18-NOV-2013	13-NOV-2013	5
<b>EP080: BTEXN</b>						
Soil Glass Jar - Unpreserved TSC3_301013	----	----	----	21-NOV-2013	19-NOV-2013	2
Soil Glass Jar - Unpreserved TS16_301013, TSC16_301013	18-NOV-2013	13-NOV-2013	5	18-NOV-2013	13-NOV-2013	5

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory

UNELABE 21 Down Road Pentons SA 5206  
Ph: 08 839 5200 E: alselab@alsonline.com  
UNELABE 22 Strand Street Stirling QLD 4053  
Ph: 07 253 7272 E: samples@alsonline.com  
UNELABE 23 Campbellton Drive Campbellton SA 5251  
Ph: 07 271 8890 E: alselab@alsonline.com

UNELABE 24 Hopedale Road Hopedale QLD 4740  
Ph: 07 464 0177 E: info@alsonline.com  
UNELABE 25 Wattle Road Springvale VIC 3171  
Ph: 03 878 5000 E: samples@alsonline.com  
UNELABE 26 Wattle Road Melbourne VIC 3206  
Ph: 03 878 5000 E: samples@alsonline.com  
UNELABE 27 5172 E: samples@alsonline.com

UNELABE 28 Box Hill Road Warragul NSW 2204  
Ph: 02 460 9133 E: samples@alsonline.com  
UNELABE 29 Gonyer Road North Hurst NSW 2541  
Ph: 02 423 2800 E: info@alsonline.com  
UNELABE 30 Hill Way Kilsyth VIC 4020  
Ph: 03 937 6120 E: samples@alsonline.com  
UNELABE 31 1000 7535 E: samples@alsonline.com

UNELABE 32 Woodstock Road Smithfield NSW 2164  
Ph: 02 8184 6595 E: samples@alsonline.com  
UNELABE 33 1415 Denham Court Bialla QLD 4118  
Ph: 07 4786 5800 E: info@alsonline.com  
UNELABE 34 1000 7535 E: samples@alsonline.com  
UNELABE 35 1415 Denham Court Bialla QLD 4118  
Ph: 07 4786 5800 E: info@alsonline.com

CLIENT: **GLBY**  
OFFICE: **Sydney**

PROJECT: **Project Synphony**

ORDER NUMBER: **0704192**

PROJECT MANAGER: **Joseph Perry**

SAMPLER: **Dark Lower**

COC enabled to ALS? (YES / NO)

Email Reports to (will default to PM if no other addresses are listed): **Don Emery & Synphony Manager**

Email Invoice to (will default to PM if no other addresses are listed): **Don Emery & Synphony Manager**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURBAROUND REQUIREMENTS:  Standard TAT (at site date)  Non Standard or urgent TAT (at site date)

ALS QUOTE NO.: **SY194153**

SITE: **BAYSWATER / LIDDELL**

CONTACT PH: **BAYSWATER / LIDDELL**

SAMPLER MOBILE: **EDD FORMAT (or default):**

RELINQUISHED BY: **Dark Lower**

DATE/TIME: **12/11/13**

RECEIVED BY: **Joseph Perry**

DATE/TIME: **12/11/13 11:40**

FOR LABORATORY USE ONLY (Circle)

Freeze / frozen ice blocks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: Yes No N/A

Other comment:

RELINQUISHED BY: **Joseph Perry**

DATE/TIME: **12/11/13 12:00**

RECEIVED BY: **Steven**

DATE/TIME: **12/11/13 19:00**

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION	ANALYSIS REQUIRED INCLUDING SUFFIXES (NB: Suffix Codes must be listed to attract site price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).	Additional Information														
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (codes below)	(refer to)	TOTAL CONTAINERS	S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRH (C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific COC analysis etc.
1	LE-SB06-0.5	12/11	SOIL			2			X						X			
2	LE-MW02-0.5					2												
3	LE-MW01-0.1					2												
4	LE-MW06-0.1					2												
5	LE-MW03-0.5					2												
6	LE-MW04-0.5					2												
7	LEDO1					1												
8	LE-MW04-1.0					1												
9	LE-SB08-0.5					2												
10	LE-SB05-0.5					2												
11	LE-SB01-0.5					2												
12	LE-SB02-0.5					2												

Environmental Division  
Sydney  
Work Order  
**ES1324727**

Telephone: +61-2-8784 8555

Asbestos Bags kept @ site

Water: Condenser: C = Unpreserved Plastic; H = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic  
V = VOA Volatil Preserved; VB = VOA Volatil Sodium Disphosphate Preserved; VS = VOA Volatil Sulfuric Preserved; AV = Air-tight Unpreserved Volatil SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specialisation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Aspartate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag





CHAIN OF CUSTODY

ALS Laboratory  
3150 Victoria Road  
Melbourne VIC 3048  
Ph: 03 9337 2222

LABORATORY USE ONLY (Circle)  
Yes No N/A

FOR LABORATORY USE ONLY (Circle)  
Yes No N/A

Comments on likely contaminant levels, detection, or samples requiring specific analysis etc.

CLIENT: [Blank] TURNAROUND REQUIREMENTS:  Standard TAT (List due date)  Non Standard or Urgent TAT (List due date)

OFFICE: [Blank] Ultra Trace Quantities

PROJECT: Project Symphony ALS QUOTE NO.: SY75413

ORDER NUMBER: [Blank] SITE: BAYSWATER / LUDELL

PROJECT MANAGER: [Blank] CONTACT PH: [Blank]

SAMPLER: [Blank] SAMPLER MODEL: [Blank]

COG emailed to ALS? (YES / NO) EDD FORMAT (or default): [Blank]

Email Reports to (will default to PM if no other addresses are listed): [Blank]

Email Invoice to (will default to PM if no other addresses are listed): [Blank]

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: [Blank]

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED (including SUITES (NB. Suite codes must be listed to affect suite price) - unless Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required))										Additional Information				
						S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg))	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl, Se)	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75um (Sieve)		Organic Matter plus Total Organic Carbon (EP004)			
13	LEWMS_0.1	12/11/13	SOIL		2	X		X												
14	LE5704-0.5	12/11/13	X		2	X		X												
15	RO1.12.W3.5K		W		3			X												
16	IMP S01K		X		1															
17	TYP Blank		X		1															
18	EXTRA SAMPLE OK.																			
19	LE-5804-1.0	12/11/13			1															

Water Container: Glass: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Ultra Preserved ORC; ST = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Autotight Unpreserved Plastic  
 V = VOA Vol HCl Preserved; VB = VOA Vol Bodily Preserved; VS = VOA Vol Sulfuric Preserved; AV = Air-tight Unpreserved Vol SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specimen Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; SS = Plastic Bag for Acid Sulphate Salts; B = Unpreserved Bag.

2/2

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b> : <b>ES1324727</b>	
<b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory</b> : Environmental Division Sydney  <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : ---- <b>Sampler</b> : JK
<b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : ---- <b>Sampler</b> : JK	<b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555  <b>Page</b> : 1 of 3  <b>Quote number</b> : ES2013ENVRES0354 (EN/009/13)  <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

<b>Date Samples Received</b> : 13-NOV-2013 <b>Client Requested Due Date</b> : 21-NOV-2013	<b>Issue Date</b> : 15-NOV-2013 14:57 <b>Scheduled Reporting Date</b> : <b>21-NOV-2013</b>
--	---

#### Delivery Details

<b>Mode of Delivery</b> : Carrier <b>No. of coolers/boxes</b> : 1 HARD <b>Security Seal</b> : Intact.	<b>Temperature</b> : 4.9°C SYD - Ice present <b>No. of samples received</b> : 19 <b>No. of samples analysed</b> : 18
---	--

#### 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
- Samples received in appropriately pretreated and preserved containers.
- Sample LE\_SB04\_1.0 was received extra and placed on hold
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- 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 (14 days), Solid (60 days) from date of completion of work order.



### Sample Container(s)/Preservation Non-Compliances

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

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

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA200 Asbestos Identification in Soils	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/6Metals
ES1324727-001	12-NOV-2013 15:00	LE_SB06_0.5		✓		✓
ES1324727-002	12-NOV-2013 15:00	LE_MW02_0.5		✓		✓
ES1324727-003	12-NOV-2013 15:00	LE_MW01_0.1		✓		✓
ES1324727-004	12-NOV-2013 15:00	LE_MW06_0.1		✓		✓
ES1324727-005	12-NOV-2013 15:00	LE_MW003_0.5		✓		✓
ES1324727-006	12-NOV-2013 15:00	LE_MW004_0.5		✓		✓
ES1324727-007	12-NOV-2013 15:00	LED01				✓
ES1324727-008	12-NOV-2013 15:00	LE_MW04_1.0				✓
ES1324727-009	12-NOV-2013 15:00	LE_SB08_0.5		✓		✓
ES1324727-010	12-NOV-2013 15:00	LE_SB05_0.5		✓		✓
ES1324727-011	12-NOV-2013 15:00	LO_SB01_0.5		✓		✓
ES1324727-012	12-NOV-2013 15:00	LE_SB02_0.5		✓		✓
ES1324727-013	12-NOV-2013 15:00	LEM05_0.1		✓		✓
ES1324727-014	12-NOV-2013 15:00	LESB04_0.5		✓		✓
ES1324727-016	12-NOV-2013 15:00	TRIP SPIKE			✓	
ES1324727-017	08-NOV-2013 15:00	TRIP BLANK			✓	
ES1324727-018	12-NOV-2013 15:00	TSC			✓	
ES1324727-019	12-NOV-2013 15:00	LE_SB04_1.0	✓			

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1324727-015	12-NOV-2013 15:00	R01_121113_JK	✓



## Proactive Holding Time Report

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

### Requested Deliverables

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### SYMPHONY ERARING

- \*AU Certificate of Analysis - NATA Email Symphony.Eraring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) Email Symphony.Eraring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA Email Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT Email Symphony.Eraring@erm.com
- Chain of Custody (CoC) Email Symphony.Eraring@erm.com
- EDI Format - ENMRG Email Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM Email Symphony.Eraring@erm.com
- EDI Format - ESDAT Email Symphony.Eraring@erm.com
- EDI Format - XTab Email Symphony.Eraring@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324727</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : JK <b>Site</b> : ----  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 16  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 13-NOV-2013 <b>Issue Date</b> : 21-NOV-2013  <b>No. of samples received</b> : 19 <b>No. of samples analysed</b> : 18
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB06_0.5	LE_MW02_0.5	LE_MW01_0.1	LE_MW06_0.1	LE_MW003_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-001	ES1324727-002	ES1324727-003	ES1324727-004	ES1324727-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	19.3	20.8	19.8	8.0	22.1
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	0.1	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	231	520	342	541	486
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	14	20	7	<5	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	22	17	17	12
Copper	7440-50-8	5	mg/kg	29	8	19	21	13
Lead	7439-92-1	5	mg/kg	16	13	23	<5	13
Nickel	7440-02-0	2	mg/kg	21	10	19	31	11
Zinc	7440-66-6	5	mg/kg	84	27	78	47	41
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB06_0.5	LE_MW02_0.5	LE_MW01_0.1	LE_MW06_0.1	LE_MW003_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-001	ES1324727-002	ES1324727-003	ES1324727-004	ES1324727-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB06_0.5	LE_MW02_0.5	LE_MW01_0.1	LE_MW06_0.1	LE_MW003_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-001	ES1324727-002	ES1324727-003	ES1324727-004	ES1324727-005
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	102	106	104	109	109
2-Chlorophenol-D4	93951-73-6	0.1	%	100	101	99.3	104	102
2,4,6-Tribromophenol	118-79-6	0.1	%	74.9	77.6	78.3	83.2	77.3
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	94.4	97.4	92.4	104	97.8
Anthracene-d10	1719-06-8	0.1	%	85.7	88.6	86.5	87.3	89.1
4-Terphenyl-d14	1718-51-0	0.1	%	94.0	97.0	93.4	101	94.1
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	74.7	76.0	97.8	100	101
Toluene-D8	2037-26-5	0.1	%	90.2	86.8	116	111	113
4-Bromofluorobenzene	460-00-4	0.1	%	88.2	99.9	111	108	110



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW004_0.5	LED01	LE_MW04_1.0	LE_SB08_0.5	LE_SB05_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-006	ES1324727-007	ES1324727-008	ES1324727-009	ES1324727-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	24.0	18.9	14.4	19.6	19.6
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	No	No
Asbestos Type	1332-21-4	0.1	--	-	----	----	-	-
Sample weight (dry)	----	0.01	g	473	----	----	606	341
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	----	----	S.SPOONER	S.SPOONER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	14	10	8	12	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	9	8	10	9	11
Copper	7440-50-8	5	mg/kg	12	12	15	11	11
Lead	7439-92-1	5	mg/kg	12	12	10	13	14
Nickel	7440-02-0	2	mg/kg	14	9	6	10	14
Zinc	7440-66-6	5	mg/kg	52	37	35	36	58
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	3.1	3.6	1.8	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW004_0.5	LED01	LE_MW04_1.0	LE_SB08_0.5	LE_SB05_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-006	ES1324727-007	ES1324727-008	ES1324727-009	ES1324727-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	2.2	2.3	1.6	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	0.6
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	5.3	5.9	3.4	<0.5	0.6
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	75	70	34	<10	<10
C10 - C14 Fraction	----	50	mg/kg	960	1050	710	<50	<50
C15 - C28 Fraction	----	100	mg/kg	4500	4620	3130	<100	<100
C29 - C36 Fraction	----	100	mg/kg	1000	1000	610	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	6460	6670	4450	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	116	118	56	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	114	116	55	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	1770	1870	1310	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	4460	4580	2970	<100	120
>C34 - C40 Fraction	----	100	mg/kg	270	260	160	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	6500	6710	4440	<50	120
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	1770	1870	1310	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW004_0.5	LED01	LE_MW04_1.0	LE_SB08_0.5	LE_SB05_0.5
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-006	ES1324727-007	ES1324727-008	ES1324727-009	ES1324727-010
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	0.5	0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	1.8	1.5	0.9	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	2.3	1.7	0.9	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	4	3	2	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	112	117	110	104	104
2-Chlorophenol-D4	93951-73-6	0.1	%	104	103	104	99.1	96.7
2,4,6-Tribromophenol	118-79-6	0.1	%	83.7	80.1	77.6	69.9	70.9
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	97.5	93.4	92.0	94.1	95.0
Anthracene-d10	1719-06-8	0.1	%	92.2	81.3	84.2	85.8	88.2
4-Terphenyl-d14	1718-51-0	0.1	%	91.4	89.0	89.3	104	92.5
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.7	89.2	79.4	91.6	92.2
Toluene-D8	2037-26-5	0.1	%	121	112	93.5	109	107
4-Bromofluorobenzene	460-00-4	0.1	%	120	119	94.6	120	126



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB01_0.5	LE_SB02_0.5	LEM05_0.1	LESB04_0.5	TRIP SPIKE
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-011	ES1324727-012	ES1324727-013	ES1324727-014	ES1324727-016
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.4	21.4	45.6	18.3	----
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	----
Asbestos Type	1332-21-4	0.1	--	-	-	-	-	----
Sample weight (dry)	----	0.01	g	505	207	246	324	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	10	5	11	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	8	13	21	15	----
Copper	7440-50-8	5	mg/kg	6	<5	35	24	----
Lead	7439-92-1	5	mg/kg	10	10	17	16	----
Nickel	7440-02-0	2	mg/kg	10	4	22	21	----
Zinc	7440-66-6	5	mg/kg	40	13	133	218	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB01_0.5	LE_SB02_0.5	LEM05_0.1	LESB04_0.5	TRIP SPIKE
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-011	ES1324727-012	ES1324727-013	ES1324727-014	ES1324727-016
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
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	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<b>70</b>
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<b>180</b>	<b>180</b>	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<b>130</b>	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<b>310</b>	<b>180</b>	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<b>78</b>
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<b>46</b>
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<b>250</b>	<b>160</b>	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<b>120</b>	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<b>370</b>	<b>160</b>	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB01_0.5	LE_SB02_0.5	LEM05_0.1	LESB04_0.5	TRIP SPIKE
				12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00	12-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1324727-011	ES1324727-012	ES1324727-013	ES1324727-014	ES1324727-016
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	0.5
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	16.2
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.9
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	9.7
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	3.6
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	31.9
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	13.3
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	107	105	104	103	----
2-Chlorophenol-D4	93951-73-6	0.1	%	96.6	101	96.7	98.4	----
2,4,6-Tribromophenol	118-79-6	0.1	%	70.2	67.5	80.0	71.5	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	93.6	91.5	93.8	91.9	----
Anthracene-d10	1719-06-8	0.1	%	87.9	84.8	84.1	76.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	93.3	87.6	87.8	86.5	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	74.5	130	119	73.6	74.9
Toluene-D8	2037-26-5	0.1	%	85.4	132	122	88.3	91.8
4-Bromofluorobenzene	460-00-4	0.1	%	88.7	126	118	87.4	100



## Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

Client sampling date / time

				TRIP BLANK	TSC	---	---	---
				08-NOV-2013 15:00	12-NOV-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1324727-017	ES1324727-018	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>C6 - C9 Fraction</b>	---	10	mg/kg	<10	<b>69</b>	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>C6 - C10 Fraction</b>	C6_C10	10	mg/kg	<10	<b>75</b>	---	---	---
<b>C6 - C10 Fraction minus BTEX (F1)</b>	C6_C10-BTEX	10	mg/kg	<10	<b>43</b>	---	---	---
<b>EP080: BTEXN</b>								
<b>Benzene</b>	71-43-2	0.2	mg/kg	<0.2	<b>0.6</b>	---	---	---
<b>Toluene</b>	108-88-3	0.5	mg/kg	<0.5	<b>17.8</b>	---	---	---
<b>Ethylbenzene</b>	100-41-4	0.5	mg/kg	<0.5	<b>1.7</b>	---	---	---
<b>meta- &amp; para-Xylene</b>	108-38-3 106-42-3	0.5	mg/kg	<0.5	<b>8.5</b>	---	---	---
<b>ortho-Xylene</b>	95-47-6	0.5	mg/kg	<0.5	<b>3.3</b>	---	---	---
<b>Sum of BTEX</b>	---	0.2	mg/kg	<0.2	<b>31.9</b>	---	---	---
<b>Total Xylenes</b>	1330-20-7	0.5	mg/kg	<0.5	<b>11.8</b>	---	---	---
<b>Naphthalene</b>	91-20-3	1	mg/kg	<1	<b>&lt;1</b>	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
<b>1,2-Dichloroethane-D4</b>	17060-07-0	0.1	%	<b>83.7</b>	<b>93.7</b>	---	---	---
<b>Toluene-D8</b>	2037-26-5	0.1	%	<b>102</b>	<b>114</b>	---	---	---
<b>4-Bromofluorobenzene</b>	460-00-4	0.1	%	<b>108</b>	<b>121</b>	---	---	---





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_121113\_JK

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Client sampling date / time

12-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1324727-015	---	---	---	---
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### EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	---	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	---	---	---

### EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	---	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	---	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	---	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	---	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	---	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	---	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	---	---	---	---

### EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_121113\_JK

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Client sampling date / time

12-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1324727-015	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
<b>EP080: BTEXN</b>								
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	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	18.7	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	40.8	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	53.8	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	65.8	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	97.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	70.9	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	86.6	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	105	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	98.1	----	----	----	----



### Analytical Results

Sub-Matrix: <b>WATER</b> (Matrix: <b>WATER</b> )		Client sample ID	<b>R01_121113_JK</b>	----	----	----	----
		Client sampling date / time	12-NOV-2013 15:00	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<b>ES1324727-015</b>	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates - Continued</b>							

### Analytical Results

#### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LE_SB06_0.5 - 12-NOV-2013 15:00	Brown clay soil
EA200: Description	LE_MW02_0.5 - 12-NOV-2013 15:00	Brown clay soil with some vegetation and small grey rocks and charcoal pieces
EA200: Description	LE_MW01_0.1 - 12-NOV-2013 15:00	Dark brown clay soil with some vegetation
EA200: Description	LE_MW06_0.1 - 12-NOV-2013 15:00	Dark grey-brown pebbly soil with small grey rocks and coal pieces
EA200: Description	LE_MW003_0.5 - 12-NOV-2013 15:00	Orange-brown clay soil with small grey and dark brown rocks
EA200: Description	LE_MW004_0.5 - 12-NOV-2013 15:00	Brown clay soil with some vegetation and small white and dark brown rocks and coal pieces
EA200: Description	LE_SB08_0.5 - 12-NOV-2013 15:00	Mid orange-brown clay soil with grey and red rocks plus a trace of vegetation
EA200: Description	LE_SB05_0.5 - 12-NOV-2013 15:00	Mid brown clay soil with some grey and red rocks plus some quartz grains and a trace of vegetation
EA200: Description	LO_SB01_0.5 - 12-NOV-2013 15:00	Mid yellow-brown clay soil with grey and red rocks plus some quartz grains and a trace of vegetation
EA200: Description	LE_SB02_0.5 - 12-NOV-2013 15:00	Brown clay soil with red rocks plus plenty of vegetation
EA200: Description	LEM05_0.1 - 12-NOV-2013 15:00	Dark brown clay soil with dark red rocks plus plenty of vegetation
EA200: Description	LESB04_0.5 - 12-NOV-2013 15:00	Mid orange-brown clay soil with grey and red rocks plus a trace of vegetation



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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

<b>Work Order</b>	: <b>ES1324727</b>	Page	: 1 of 15
<b>Client</b>	: <b>ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----	<b>Date Samples Received</b>	: 13-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 21-NOV-2013
<b>Sampler</b>	: JK	<b>No. of samples received</b>	: 19
<b>Order number</b>	: 0224198	<b>No. of samples analysed</b>	: 18
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba  
Peter Rennie

#### Position

Senior Spectroscopist  
Senior Organic Chemist  
Asbestos Identifier

#### Accreditation Category

Sydney Inorganics  
Sydney Organics  
Newcastle - Asbestos



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### **General Comments**

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

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

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

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



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3166254)</b>									
ES1324726-020	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.0	17.5	13.0	0% - 50%
ES1324727-009	LE_SB08_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.6	21.4	9.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3165721)</b>									
ES1324472-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	31	32	0.0	No Limit
ES1324718-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	14	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	15	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	43	42	4.2	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3165723)</b>									
ES1324727-004	LE_MW06_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	26	40.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	31	35	11.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	23	8.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	62	26.2	0% - 50%
ES1324727-014	LESB04_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	15	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	21	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	11	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	27	12.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	20	19.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	218	181	18.2	0% - 20%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3165722)</b>									
ES1324472-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324718-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3165725)</b>									
ES1324727-004	LE_MW06_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324727-014	LESB04_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3161567)</b>									
ES1324718-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
ES1324727-006	LE_MW004_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3161567)</b>									
ES1324718-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit





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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3161567) - continued</b>									
ES1324718-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324727-006	LE_MW004_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	3.1	3.0	3.9	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	2.2	2.1	4.9	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	5.3	5.1	3.8	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3161566)</b>									
ES1324718-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324727-006	LE_MW004_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	4500	4990	10.3	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	1000	1010	1.2	0% - 50%
		EP071: C10 - C14 Fraction	----	50	mg/kg	960	1120	16.1	0% - 20%
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3165363)</b>									
ES1324727-001	LE_SB06_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324727-011	LO_SB01_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3161566)</b>									
ES1324718-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3161566) - continued</b>									
ES1324727-006	LE_MW004_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	4460	4770	6.7	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	270	260	6.4	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	1770	2080	16.2	0% - 20%
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3165363)</b>									
ES1324727-001	LE_SB06_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324727-011	LO_SB01_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3165363)</b>									
ES1324727-001	LE_SB06_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1324727-011	LO_SB01_0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1324795-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1324795-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3164249)</b>									
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1324795-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit

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 Work Order : ES1324727  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3164249) - continued</b>									
ES1324795-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165721)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	108	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	109	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	110	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	101	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	109	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165723)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	112	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	109	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	113	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	102	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	109	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165722)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.6	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165725)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.5	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3161567)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	101	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	87.0	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	105	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	107	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	83.3	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	84.4	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	75.5	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	84.5	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	79.3	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	70.1	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	70.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	21.4	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3161567)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	89.5	80	124	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3161567) - continued</b>									
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	93.6	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	89.5	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	85.4	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	94.9	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	93.0	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	92.9	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	85.1	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	90.5	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	89.9	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	95.9	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	84.5	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	83.7	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	81.4	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	84.6	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3161566)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.1	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	116	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	101	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3165363)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	97.9	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3161566)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	100	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	113	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	106	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3165363)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	96.4	68.4	128	
<b>EP080: BTEXN (QCLot: 3165363)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	87.8	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.6	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	87.8	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	94.7	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.6	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.1	62	138	

Sub-Matrix: **WATER**

	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
		Spike	Spike Recovery (%)	Recovery Limits (%)



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)		
					Low	High			
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3168012)</b>									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	34.4	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	75.2	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	97.8	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	87.6	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	84.6	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	81.8	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	64.0	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	68.2	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	74.9	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	66.8	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	78.4	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	64.0	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3168012)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	66.1	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	70.4	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	70.5	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	74.6	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	90.2	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	94.8	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	110	63.6	118	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3168012) - continued</b>									
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	105	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	72.8	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	87.8	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	66.7	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	73.4	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	78.9	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	77.4	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	75.2	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	87.0	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	89.0	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168011)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	100	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	101	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.8	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168011)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	100	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	102	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	99.8	67	127	
<b>EP080: BTEXN (QCLot: 3164249)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	82.2	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	85.6	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	81.2	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	86.8	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.4	72	122	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP080: BTEXN (QCLot: 3164249) - continued</b>								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70	124

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165721)</b>							
ES1324472-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	105	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	115	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	121	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165723)</b>							
ES1324727-004	LE_MW06_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	106	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.6	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	98.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	109	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	102	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165722)</b>							
ES1324472-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.4	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165725)</b>							
ES1324727-004	LE_MW06_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	99.3	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3161567)</b>							
ES1324718-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	80.0	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	73.3	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	78.6	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	73.1	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	56.8	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3161567)</b>							
ES1324718-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	73.2	70	130





Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3161567) - continued</b>							
ES1324718-001	Anonymous	EP075(SIM): Pyrene	129-00-0	10 mg/kg	72.8	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3161566)</b>							
ES1324718-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	82.9	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	84.0	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.8	52	132
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3165363)</b>							
ES1324727-001	LE_SB06_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.1	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3161566)</b>							
ES1324718-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	105	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	77.4	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.9	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3165363)</b>							
ES1324727-001	LE_SB06_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	96.5	70	130
<b>EP080: BTEXN (QCLot: 3165363)</b>							
ES1324727-001	LE_SB06_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	74.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	84.0	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.0	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	91.2	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.9	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	87.0	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>							
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>							
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	70	130
<b>EP080: BTEXN (QCLot: 3164249)</b>							
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	70	130
		EP080: Toluene	108-88-3	25 µg/L	108	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	93.3	70	130



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
				Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3161566)</b>											
ES1324718-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	82.9	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	84.0	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.8	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3161566)</b>											
ES1324718-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	105	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	77.4	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.9	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3161567)</b>											
ES1324718-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	80.0	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	73.3	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	78.6	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	73.1	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	56.8	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3161567)</b>											
ES1324718-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	73.2	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	72.8	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3165363)</b>											
ES1324727-001	LE_SB06_0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	99.1	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3165363)</b>											
ES1324727-001	LE_SB06_0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	96.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3165363)</b>											
ES1324727-001	LE_SB06_0.5	EP080: Benzene	71-43-2	2.5 mg/kg	74.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	84.0	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.0	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	91.2	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.9	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	87.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165721)</b>											
ES1324472-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	105	----	70	130	----	----	



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165721) - continued</b>										
ES1324472-002	Anonymous	EG005T: Lead	7439-92-1	125 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	115	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	121	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165722)</b>										
ES1324472-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.4	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165723)</b>										
ES1324727-004	LE_MW06_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	106	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.6	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	110	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	98.8	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	109	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	102	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165725)</b>										
ES1324727-004	LE_MW06_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	99.3	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164249)</b>											
ES1324767-006	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	118	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164249)</b>											
ES1324767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	120	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3164249)</b>											
ES1324767-006	Anonymous	EP080: Benzene	71-43-2	25 µg/L	105	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	111	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	109	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	93.3	----	70	130	----	----	

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324727</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 13-NOV-2013
C-O-C number	: ----	Issue Date	: 21-NOV-2013
Sampler	: JK	No. of samples received	: 19
Order number	: 0224198	No. of samples analysed	: 18
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1,	LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	----	----	----	19-NOV-2013	26-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
<b>Snap Lock Bag (EA200)</b>								
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1,	LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	---	11-MAY-2014	----	20-NOV-2013	19-MAY-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1,	LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	19-NOV-2013	11-MAY-2014	✓	19-NOV-2013	11-MAY-2014	✓



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
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b>							
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	19-NOV-2013	10-DEC-2013	✓	20-NOV-2013	10-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b>							
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	29-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>							
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	29-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>							
LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	29-DEC-2013	✓



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
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK	08-NOV-2013	19-NOV-2013	22-NOV-2013	✓	19-NOV-2013	22-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, TRIP SPIKE, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5, TSC	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	26-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK	08-NOV-2013	19-NOV-2013	22-NOV-2013	✓	19-NOV-2013	22-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LE_SB06_0.5, LE_MW01_0.1, LE_MW003_0.5, LED01, LE_SB08_0.5, LO_SB01_0.5, LEM05_0.1, TRIP SPIKE, LE_MW02_0.5, LE_MW06_0.1, LE_MW004_0.5, LE_MW04_1.0, LE_SB05_0.5, LE_SB02_0.5, LESB04_0.5, TSC	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	26-NOV-2013	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01_121113_JK	12-NOV-2013	19-NOV-2013	19-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b> R01_121113_JK	12-NOV-2013	19-NOV-2013	19-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b> R01_121113_JK	12-NOV-2013	19-NOV-2013	19-NOV-2013	✓	20-NOV-2013	30-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_121113_JK	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	26-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_121113_JK	12-NOV-2013	19-NOV-2013	26-NOV-2013	✓	19-NOV-2013	26-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	32	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	32	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement





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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
TPH - Semivolatile Fraction	EP071	1	1	100.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

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Work Order : ES1324727  
Client : ENVIRO RESOURCES MANAGEMENT  
Project : PROJECT SYMPHONY



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



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## Summary of Outliers

### **Outliers : Quality Control Samples**

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

#### ***Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes***

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

#### ***Regular Sample Surrogates***

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

### **Outliers : Analysis Holding Time Compliance**

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

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

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

- No Quality Control Sample Frequency Outliers exist.
-



CHAIN OF CUSTODY

LABORATORY: ALS Laboratory, please link to... CHAIN OF CUSTODY... LABORATORY USE ONLY (CONT)

CLIENT: EAM... OFFICE: Sydney... PROJECT: Project Symphony... ORDER NUMBER: 0204108... PROJECT MANAGER: S. Tetterton... SAMPLER: T. ARMANI... COC emailed to ALS? (YES / NO) YES... Email Reports to (will default to PM if no other addresses are listed): Tskn.kwong@erm.com... Email Invoice to (will default to PM if no other addresses are listed):... COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Standard TAT may be longer for some tests e.g. ALS QUOTE NO.: SY79473... BAYSWATER / DOBELL... RELINQUISHED BY: T. ARMANI DATE/TIME: 13/11/13/6:50... RECEIVED BY: [Signature] DATE/TIME: 14/11/13 10:00

Table with columns: LAB ID, SAMPLE ID, DATE / TIME, MATRIX, TYPE & PRESERVATIVE, CONTAINER INFORMATION, ANALYSIS REQUIRED INCLUDING SUITES, pH (4:5), Exchangeable cations, PFOS/PFOA, Asbestos, Particle Sizing, Organic Matter plus Total Organic Carbon, Additional Information. Rows 1-5 contain sample data.

Water Containing Gases: P = Unpreserved Plastic; N = Nitric Preserved Plastic; CRG = Nitric Preserved CRG; SH = Sodium Hydroxide Preserved Plastic; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic; V = VOA Vial HCl Preserved; VA = VOA Vial Sodium Sulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Air-tight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specimen bottle; SP = Sulfuric Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; AS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

Telephone : + 61-2-8784 8555



ES1324730

Environmental Division Sydney Work Order

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1324730**

<p><b>Client : ENVIRO RESOURCES MANAGEMENT</b></p> <p><b>Contact : MR JOSEPH FERRING</b></p> <p><b>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b></p>	<p><b>Laboratory : Environmental Division Sydney</b></p> <p><b>Contact : Barbara Hanna</b></p> <p><b>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</b></p>
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<p><b>E-mail : joseph.ferring@erm.com</b></p> <p><b>Telephone : +61 02 8584 8888</b></p> <p><b>Facsimile : +61 02 8584 8800</b></p>	<p><b>E-mail : Barbara.Hanna@alsglobal.com</b></p> <p><b>Telephone : +61 2 8784 8555</b></p> <p><b>Facsimile : +61 2 8784 8555</b></p>
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<p><b>Project : PROJECT SYMPHONY</b></p> <p><b>Order number : 0224198</b></p> <p><b>C-O-C number : ----</b></p> <p><b>Site : LIDDELL</b></p> <p><b>Sampler : TA</b></p>	<p><b>Page : 1 of 2</b></p> <p><b>Quote number : ES2013ENVRES0354 (EN/009/13)</b></p> <p><b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b></p>
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#### Dates

<p><b>Date Samples Received : 13-NOV-2013</b></p> <p><b>Client Requested Due Date : 21-NOV-2013</b></p>	<p><b>Issue Date : 15-NOV-2013 13:49</b></p> <p><b>Scheduled Reporting Date : 21-NOV-2013</b></p>
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#### Delivery Details

<p><b>Mode of Delivery : Carrier</b></p> <p><b>No. of coolers/boxes : 1 HARD</b></p> <p><b>Security Seal : Intact.</b></p>	<p><b>Temperature : 4.9°C SYD - Ice present</b></p> <p><b>No. of samples received : 6</b></p> <p><b>No. of samples analysed : 4</b></p>
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#### 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
- Samples received in appropriately pretreated and preserved containers.
- Sample LK\_SB01\_3.0 was received broken (smashed in transit)
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample(s) damaged during transit. Please contact ALS for further information.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1324730-001	11-NOV-2013 15:00	LM_MW01_1.9		✓
ES1324730-002	11-NOV-2013 15:00	LM_MW02_3.6		✓
ES1324730-003	11-NOV-2013 15:00	LM_MW03_2.3		✓
ES1324730-004	11-NOV-2013 15:00	LM_MW01_6.3		✓
ES1324730-005	11-NOV-2013 15:00	LM_SB01_3.0	✓	
ES1324730-006	11-NOV-2013 15:00	LM_MW01_5.1	✓	

## Proactive Holding Time Report

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

## Requested Deliverables

### JOHN EWING

- \*AU Certificate of Analysis - NATA Email john.ewing@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) Email john.ewing@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA Email john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT Email john.ewing@erm.com
- Chain of Custody (CoC) Email john.ewing@erm.com
- EDI Format - ENMRG Email john.ewing@erm.com
- EDI Format - EQUIS V5 ERM Email john.ewing@erm.com
- EDI Format - ESDAT Email john.ewing@erm.com
- EDI Format - XTab Email john.ewing@erm.com

### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324730</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : TA <b>Site</b> : LIDDELL  <b>Quote number</b> : EN/009/13	<b>Page</b> : 1 of 6  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 13-NOV-2013 <b>Issue Date</b> : 21-NOV-2013  <b>No. of samples received</b> : 6 <b>No. of samples analysed</b> : 4
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics





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### **General Comments**

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LM_MW01_1.9	LM_MW02_3.6	LM_MW03_2.3	LM_MW01_6.3	----
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	----
				ES1324730-001	ES1324730-002	ES1324730-003	ES1324730-004	----
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	21.2	26.0	21.7	19.3	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	17	13	6	14	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	15	12	3	14	----
Copper	7440-50-8	5	mg/kg	8	8	<5	<5	----
Lead	7439-92-1	5	mg/kg	14	21	8	14	----
Nickel	7440-02-0	2	mg/kg	4	4	<2	5	----
Zinc	7440-66-6	5	mg/kg	28	17	<5	17	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LM_MW01_1.9	LM_MW02_3.6	LM_MW03_2.3	LM_MW01_6.3	----
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1324730-001	ES1324730-002	ES1324730-003	ES1324730-004	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
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	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LM_MW01_1.9	LM_MW02_3.6	LM_MW03_2.3	LM_MW01_6.3	----
				11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	11-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1324730-001	ES1324730-002	ES1324730-003	ES1324730-004	----
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	77.9	80.1	80.1	78.5	----
2-Chlorophenol-D4	93951-73-6	0.1	%	86.3	89.2	89.2	88.6	----
2.4.6-Tribromophenol	118-79-6	0.1	%	90.5	91.3	91.3	89.0	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	90.1	92.3	91.4	91.1	----
Anthracene-d10	1719-06-8	0.1	%	89.0	92.6	92.2	91.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	79.6	82.2	82.4	81.7	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	87.3	73.7	84.9	92.8	----
Toluene-D8	2037-26-5	0.1	%	92.0	85.4	87.2	98.2	----
4-Bromofluorobenzene	460-00-4	0.1	%	85.6	81.4	85.3	94.5	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1324730</b>	<b>Page</b>	: 1 of 10
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	<b>: LIDDELL</b>	<b>Date Samples Received</b>	: 13-NOV-2013
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	: 21-NOV-2013
<b>Sampler</b>	<b>: TA</b>	<b>No. of samples received</b>	: 6
<b>Order number</b>	<b>: 0224198</b>	<b>No. of samples analysed</b>	: 4
<b>Quote number</b>	<b>: EN/009/13</b>		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba

#### Position

Senior Spectroscopist  
Senior Organic Chemist

#### Accreditation Category

Sydney Inorganics  
Sydney Organics



### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3166254)</b>									
ES1324726-020	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.0	17.5	13.0	0% - 50%
ES1324727-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.6	21.4	9.0	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3166255)</b>									
ES1324730-004	LM_MW01_6.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	19.3	18.8	2.6	0% - 50%
ES1324858-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.6	6.7	16.9	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3165878)</b>									
ES1324722-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	15	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	26	31	16.7	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	27	7.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	15	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	79	79	0.0	0% - 50%
ES1324732-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	49	42	16.5	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	21	18	15.1	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	22.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	29	30	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	9	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	26	14.1	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3165879)</b>									
ES1324722-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324732-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3164189)</b>									
ES1324349-061	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3164189) - continued</b>									
ES1324349-061	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1324349-093	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164189)</b>							
ES1324349-061	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324349-093	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164189) - continued</b>										
ES1324349-093	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164188)</b>										
ES1324349-061	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
ES1324349-093	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3164188)</b>										
ES1324349-061	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1324349-093	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit			



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165878)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	115	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	110	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	110	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	114	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	112	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	118	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165879)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.5	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164189)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	94.0	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	99.0	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	96.4	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	98.6	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	84.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	94.3	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	93.0	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.2	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	86.5	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	93.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	91.0	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	47.4	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164189)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	102	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	111	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	106	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	112	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	95.7	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	106	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	93.2	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164189) - continued</b>								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	105	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	107	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	98.8	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	98.4	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	95.9	72.4	114
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164188)</b>								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	111	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	109	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.1	64	128
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166472)</b>								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	87.0	68.4	128
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164188)</b>								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	106	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	104	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	74.5	63	131
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166472)</b>								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.5	68.4	128
<b>EP080: BTEXN (QCLot: 3166472)</b>								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	74.3	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	81.0	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	77.9	58	118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	81.6	60	120
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	83.8	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	76.0	62	138

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
				MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165878)</b>							
ES1324722-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	107	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165878) - continued</b>								
ES1324722-008	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	110	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	105	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	100	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165879)</b>								
ES1324722-008	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164189)</b>								
ES1324349-061	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.8	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	85.8	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	79.9	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	74.0	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	74.4	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164189)</b>								
ES1324349-061	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.1	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164188)</b>								
ES1324349-061	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	75.7	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.2	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	69.9	52	132	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166472)</b>								
ES1324730-001	LM_MW01_1.9	EP080: C6 - C9 Fraction	----	32.5 mg/kg	107	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164188)</b>								
ES1324349-061	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.6	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.3	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	54.8	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166472)</b>								
ES1324730-001	LM_MW01_1.9	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	109	70	130	
<b>EP080: BTEXN (QCLot: 3166472)</b>								
ES1324730-001	LM_MW01_1.9	EP080: Benzene	71-43-2	2.5 mg/kg	76.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	90.1	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	94.1	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	95.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.4	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	98.3	70	130			



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164188)</b>										
ES1324349-061	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	75.7	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.2	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	69.9	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3164188)</b>										
ES1324349-061	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.6	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	69.3	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	54.8	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3164189)</b>										
ES1324349-061	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.8	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	85.8	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	79.9	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	74.0	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	74.4	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164189)</b>										
ES1324349-061	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.1	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3165878)</b>										
ES1324722-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	107	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	110	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	105	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	106	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	100	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3165879)</b>										
ES1324722-008	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	102	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: C6 - C9 Fraction	----	32.5 mg/kg	107	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	109	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3166472)</b>										
ES1324730-001	LM_MW01_1.9	EP080: Benzene	71-43-2	2.5 mg/kg	76.6	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	90.1	----	70	130	----	----



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080: BTEXN (QCLot: 3166472) - continued</b>										
ES1324730-001	LM_MW01_1.9	EP080: Ethylbenzene	100-41-4	2.5 mg/kg	94.1	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	95.8	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.4	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	98.3	----	70	130	----	----



## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324730</b>	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 13-NOV-2013
C-O-C number	: ----	Issue Date	: 21-NOV-2013
Sampler	: TA	No. of samples received	: 6
Order number	: 0224198	No. of samples analysed	: 4
Quote number	: EN/009/13		

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

This Interpretive Quality Control Report contains the following information:

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





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	----	----	----	19-NOV-2013	25-NOV-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	19-NOV-2013	10-MAY-2014	✓	19-NOV-2013	10-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	19-NOV-2013	09-DEC-2013	✓	20-NOV-2013	09-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	18-NOV-2013	25-NOV-2013	✓	19-NOV-2013	28-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	18-NOV-2013	25-NOV-2013	✓	19-NOV-2013	28-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	18-NOV-2013	25-NOV-2013	✓	19-NOV-2013	28-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	19-NOV-2013	25-NOV-2013	✓	19-NOV-2013	25-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LM_MW01_1.9, LM_MW03_2.3, LM_MW02_3.6, LM_MW01_6.3	11-NOV-2013	19-NOV-2013	25-NOV-2013	✓	19-NOV-2013	25-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



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## Summary of Outliers

### Outliers : Quality Control Samples

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

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

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

#### **Regular Sample Surrogates**

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.
-



CHAIN OF CUSTODY

LABORATORY: ALS Laboratory  
13000 1st Avenue, North Sydney, NSW 1585  
Ph: 02 9390 6000 E: als@als.com.au

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13000 1st Avenue, North Sydney, NSW 1585  
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LABORATORY: ALS Laboratory  
13000 1st Avenue, North Sydney, NSW 1585  
Ph: 02 9390 6000 E: als@als.com.au

CLIENT: **ERM**  
OFFICE: **Sydney**  
PROJECT: **Project Symphony**

TURNAROUND REQUIREMENTS:  
 Standard TAT (List due date)  
 Non Standard or urgent TAT (List due date)

FOR LABORATORY USE ONLY (circle)  
Catalyst Seal Intact:  Yes  No  
Free Ice / frozen Ice blocks present upon receipt:  Yes  No  
Random Sample Temperature on Receipt:  Yes  No  
Other comment:  Yes  No

ORDER NUMBER: **224698**  
PROJECT MANAGER: **T. Ferrigno**  
CONTACT PH: **0408406395**

ALS QUOTE NO.: **SY79413**  
SITE: **BAYSWATER (TIDDELL)**

RECEIVED BY: **T. Ferrigno**  
DATE/TIME: **15/11/13 14:15**

SAMPLER: **T. Armani**  
COG emailed to ALS? (YES / NO): **(NO)**  
EDD FORMAT (or default): **John.Giving@erm.com**

RELINQUISHED BY: **T. Armani**  
DATE/TIME: **15/11/13 16:50**

RELINQUISHED BY: **R. Kennedy**  
DATE/TIME: **15/11/13 14:15**

Email Reports to (will default to PM if no other addresses are listed): **John.Giving@erm.com**

Email Invoice to (will default to PM if no other addresses are listed): **John.Giving@erm.com**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION	ANALYSIS REQUIRED (When Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required))	Additional Information
	1 LT MW03.01	15/11/13	SOIL			
	2 LT MW02.01					
	3 LT MW01.01					
	4 LT MW04.01					
	5 LP SB01.0-1					
	6 LP SB02.0-1					
	7 LT MW03.3.5					
	8 LP SB01.2.7					
	9 LP SB02.3.0					
	10 LP SB02.1.9					
	11 TRP/SPL (334)					
	12 BLANK					

Environmental Division  
Sydney  
Work Order  
**ES1324840**  
Telephone : + 61-2-8784 8555



LABORATORY: ALS Laboratory  
13000 1st Avenue, North Sydney, NSW 1585  
Ph: 02 9390 6000 E: als@als.com.au

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order : ES1324840</b>	
<b>Client : ENVIRO RESOURCES MANAGEMENT</b> <b>Contact : MR JOSEPH FERRING</b> <b>Address : GROUND FLOOR</b> 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory : Environmental Division Sydney</b>  <b>Contact : Barbara Hanna</b> <b>Address : 277-289 Woodpark Road Smithfield</b> NSW Australia 2164
<b>E-mail : joseph.ferring@erm.com</b> <b>Telephone : +61 02 8584 8888</b> <b>Facsimile : +61 02 8584 8800</b>	<b>E-mail : Barbara.Hanna@alsglobal.com</b> <b>Telephone : +61 2 8784 8555</b> <b>Facsimile : +61 2 8784 8555</b>
<b>Project : Project Symphony</b> <b>Order number : 224198</b> <b>C-O-C number : ----</b> <b>Site : ----</b> <b>Sampler : TA</b>	<b>Page : 1 of 2</b>  <b>Quote number : ES2013ENVRES0369 (SY/794/13)</b>  <b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>

#### Dates

<b>Date Samples Received : 15-NOV-2013</b> <b>Client Requested Due Date : 22-NOV-2013</b>	<b>Issue Date : 21-NOV-2013 11:40</b> <b>Scheduled Reporting Date : 22-NOV-2013</b>
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#### Delivery Details

<b>Mode of Delivery : Carrier</b> <b>No. of coolers/boxes : 1 HARD</b> <b>Security Seal : Intact.</b>	<b>Temperature : 4.9° C - Ice present</b> <b>No. of samples received : 13</b> <b>No. of samples analysed : 13</b>
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Additional analysis requested for TPH/BTEX/PAH/Phenol/8 metals could not be conducted on ALS samples ! to 6 because we did not receive the appropriate container.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA200	Asbestos Identification in Soils	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture	SOIL - S-27	TRH/BTEXN/PAH/Phenols/8Metals
ES1324840-001	[ 15-NOV-2013 ]	LT_MW03_0.1	✓					
ES1324840-002	[ 15-NOV-2013 ]	LT_MW02_0.1	✓					
ES1324840-003	[ 15-NOV-2013 ]	LT_MW01_0.1	✓					
ES1324840-004	[ 15-NOV-2013 ]	LT_MW04_0.1	✓					
ES1324840-005	[ 15-NOV-2013 ]	LP_SB01_0.1	✓					
ES1324840-006	[ 15-NOV-2013 ]	LP_SB02_0.1	✓					
ES1324840-007	[ 15-NOV-2013 ]	LT_MW03_3.5					✓	
ES1324840-008	[ 15-NOV-2013 ]	LP_SB01_2.7					✓	
ES1324840-009	[ 15-NOV-2013 ]	LP_SB02_3.0					✓	
ES1324840-010	[ 15-NOV-2013 ]	LP_SB06_1.9					✓	
ES1324840-011	[ 15-NOV-2013 ]	TS4_151113		✓				
ES1324840-012	[ 15-NOV-2013 ]	TB_151113		✓				
ES1324840-013	[ 15-NOV-2013 ]	TSC4_151113		✓				

## Proactive Holding Time Report

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

## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com
- EDI Format - XTab ( XTAB )	Email	john.ewing@erm.com

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1324840</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : Project Symphony <b>Order number</b> : 224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : TA <b>Site</b> : ----  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 8  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 15-NOV-2013 <b>Issue Date</b> : 25-NOV-2013  <b>No. of samples received</b> : 13 <b>No. of samples analysed</b> : 13
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



NATA Accredited Laboratory 825  
 Accredited for compliance with  
 ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos





## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

LT_MW03_0.1	LT_MW02_0.1	LT_MW01_0.1	LT_MW04_0.1	LP_SB01_0.1
[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
ES1324840-001	ES1324840-002	ES1324840-003	ES1324840-004	ES1324840-005

Client sampling date / time

Compound	CAS Number	LOR	Unit					
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	0.1	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	414	192	268	259	160
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB02_0.1	LT_MW03_3.5	LP_SB01_2.7	LP_SB02_3.0	LP_SB06_1.9
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324840-006	ES1324840-007	ES1324840-008	ES1324840-009	ES1324840-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	----	22.7	12.0	15.8	15.0
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	0.1	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	212	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	----	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	7	12	8	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	14	17	19	6
Copper	7440-50-8	5	mg/kg	----	14	14	34	6
Lead	7439-92-1	5	mg/kg	----	15	14	15	16
Nickel	7440-02-0	2	mg/kg	----	38	31	25	<2
Zinc	7440-66-6	5	mg/kg	----	95	62	110	7
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	----	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB02_0.1	LT_MW03_3.5	LP_SB01_2.7	LP_SB02_3.0	LP_SB06_1.9
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324840-006	ES1324840-007	ES1324840-008	ES1324840-009	ES1324840-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
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	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB02_0.1	LT_MW03_3.5	LP_SB01_2.7	LP_SB02_3.0	LP_SB06_1.9
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324840-006	ES1324840-007	ES1324840-008	ES1324840-009	ES1324840-010
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	74.1	73.2	67.8	69.7
2-Chlorophenol-D4	93951-73-6	0.1	%	----	101	100	93.4	96.1
2,4,6-Tribromophenol	118-79-6	0.1	%	----	74.6	70.5	67.5	67.8
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	98.1	96.4	107	93.5
Anthracene-d10	1719-06-8	0.1	%	----	86.0	85.1	77.4	80.8
4-Terphenyl-d14	1718-51-0	0.1	%	----	82.3	81.8	80.4	79.0
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	123	123	119	110
Toluene-D8	2037-26-5	0.1	%	----	105	104	103	91.6
4-Bromofluorobenzene	460-00-4	0.1	%	----	98.5	96.5	99.0	86.2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				TS4_151113	TB_151113	TSC4_151113	----	----
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	----	----
Compound	CAS Number	LOR	Unit	ES1324840-011	ES1324840-012	ES1324840-013	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	62	<10	90	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	72	<10	102	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	43	<10	62	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	0.6	<0.2	0.8	----	----
Toluene	108-88-3	0.5	mg/kg	14.6	<0.5	20.4	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	1.6	<0.5	2.3	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	8.6	<0.5	11.9	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	3.3	<0.5	4.6	----	----
^ Sum of BTEX	----	0.2	mg/kg	28.7	<0.2	40.0	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	11.9	<0.5	16.5	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	122	99.6	114	----	----
Toluene-D8	2037-26-5	0.1	%	102	81.8	96.8	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	102	76.1	100	----	----

## Analytical Results

### Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LT_MW03_0.1 - [15-NOV-2013]	Brown clay soil with small to medium sized rocks and small coal pieces
EA200: Description	LT_MW02_0.1 - [15-NOV-2013]	Brown clay soil with some vegetation
EA200: Description	LT_MW01_0.1 - [15-NOV-2013]	Brown soil with large quantity vegetation
EA200: Description	LT_MW04_0.1 - [15-NOV-2013]	Brown clay soil with some vegetation
EA200: Description	LP_SB01_0.1 - [15-NOV-2013]	Brown soil with large quantity vegetation
EA200: Description	LP_SB02_0.1 - [15-NOV-2013]	Brown sandy soil with large quantity vegetation



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1324840</b>	<b>Page</b>	<b>: 1 of 11</b>
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	<b>: Barbara Hanna</b>
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: Project Symphony</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 15-NOV-2013</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 25-NOV-2013</b>
<b>Sampler</b>	<b>: TA</b>	<b>No. of samples received</b>	<b>: 13</b>
<b>Order number</b>	<b>: 224198</b>	<b>No. of samples analysed</b>	<b>: 13</b>
<b>Quote number</b>	<b>: SY/794/13</b>		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Edwandy Fadjar  
Peter Rennie

#### Position

Senior Spectroscopist  
Organic Coordinator  
Asbestos Identifier

#### Accreditation Category

Sydney Inorganics  
Sydney Organics  
Newcastle - Asbestos





### **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.

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3167935)</b>									
ES1324838-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.7	21.4	3.0	0% - 20%
ES1324840-009	LP_SB02_3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.8	16.7	5.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3167579)</b>									
ES1324834-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	17	11.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	15	7.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	8	35.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	78	72	7.3	0% - 50%
ES1324840-008	LP_SB01_2.7	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	18	7.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	31	33	6.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	15	19.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	7.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	16	12.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	62	72	15.3	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3167580)</b>									
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324840-008	LP_SB01_2.7	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3167871)</b>									
ES1324840-007	LT_MW03_3.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		ES1324841-006	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5
EP075(SIM): 2-Chlorophenol	95-57-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3167871) - continued</b>									
ES1324841-006	Anonymous	EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3167871)</b>									
ES1324840-007	LT_MW03_3.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324841-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3167871) - continued</b>										
ES1324841-006	Anonymous	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166134)</b>										
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1324840-010	LP_SB06_1.9	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3167870)</b>										
ES1324840-007	LT_MW03_3.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
ES1324841-006	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166134)</b>										
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1324840-010	LP_SB06_1.9	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3167870)</b>										
ES1324840-007	LT_MW03_3.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1324841-006	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3166134)</b>										
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1324840-010	LP_SB06_1.9	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	

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 Project : Project Symphony



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3166134) - continued</b>									
ES1324840-010	LP_SB06_1.9	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	126	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	120	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	111	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	108	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	116	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	123	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.8	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	77.7	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	89.0	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	92.5	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	94.4	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	80.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	81.0	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	78.1	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	87.3	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	80.9	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	110	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	98.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	20.0	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.4	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	88.2	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	95.0	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	96.3	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	95.2	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	95.6	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	98.0	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.5	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	96.6	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	82.2	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	91.9	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	94.1	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	85.2	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	84.0	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.0	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	85.1	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	94.2	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.1	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.4	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	96.7	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.0	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	75.1	63	131	
<b>EP080: BTEXN (QCLot: 3166134)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	76.3	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	77.8	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	77.8	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	78.3	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	65.6	62	138	

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>								
ES1324834-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	115	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	119	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	94.9	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579) - continued</b>								
ES1324834-001	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	101	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	113	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	103	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>								
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.4	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>								
ES1324840-007	LT_MW03_3.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.7	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.9	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.0	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	75.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	45.3	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>								
ES1324840-007	LT_MW03_3.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.1	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>								
ES1324840-007	LT_MW03_3.5	EP071: C10 - C14 Fraction	----	640 mg/kg	82.6	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	93.0	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	84.4	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>								
ES1324840-007	LT_MW03_3.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	110	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.7	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	68.5	52	132	
<b>EP080: BTEXN (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	70	130		





### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
				Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>											
ES1324834-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	115	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	119	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	94.9	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	101	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	113	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	105	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	103	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>											
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.4	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>											
ES1324840-007	LT_MW03_3.5	EP071: C10 - C14 Fraction	----	640 mg/kg	82.6	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	93.0	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	84.4	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>											
ES1324840-007	LT_MW03_3.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	110	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.7	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	68.5	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>											
ES1324840-007	LT_MW03_3.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.7	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.9	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.0	----	60	130	----	----	

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 Work Order : ES1324840  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : Project Symphony



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871) - continued</b>										
ES1324840-007	LT_MW03_3.5	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	75.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	45.3	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>										
ES1324840-007	LT_MW03_3.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.1	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324840</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 15-NOV-2013
C-O-C number	: ----	Issue Date	: 25-NOV-2013
Sampler	: TA	No. of samples received	: 13
Order number	: 224198	No. of samples analysed	: 13
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	----	----	----	20-NOV-2013	29-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
<b>Snap Lock Bag (EA200)</b> LT_MW03_0.1, LT_MW01_0.1, LP_SB01_0.1, LT_MW02_0.1, LT_MW04_0.1, LP_SB02_0.1	15-NOV-2013	---	14-MAY-2014	----	25-NOV-2013	24-MAY-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	20-NOV-2013	14-MAY-2014	✓	20-NOV-2013	14-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	20-NOV-2013	13-DEC-2013	✓	21-NOV-2013	13-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LT_MW03_3.5, LP_SB02_3.0, LP_SB01_2.7, LP_SB06_1.9	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓



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	
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LT_MW03_3.5, LP_SB02_3.0, TS4_151113, TSC4_151113	LP_SB01_2.7, LP_SB06_1.9, TB_151113,	15-NOV-2013	19-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LT_MW03_3.5, LP_SB02_3.0, TS4_151113, TSC4_151113	LP_SB01_2.7, LP_SB06_1.9, TB_151113,	15-NOV-2013	19-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



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## Summary of Outliers

### Outliers : Quality Control Samples

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

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

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

#### **Regular Sample Surrogates**

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.
-





# CHAIN OF CUSTODY

ALS Laboratory  
ph 07 4377 8000  
www.als.com.au

ALS Unit 31 Bunn Road, Bayswater, Vic 3100  
Ph 07 4377 8000  
www.als.com.au

ALS Unit 31 Bunn Road, Bayswater, Vic 3100  
Ph 07 4377 8000  
www.als.com.au

ALS Unit 31 Bunn Road, Bayswater, Vic 3100  
Ph 07 4377 8000  
www.als.com.au

**CLIENT:** ERM  
**OFFICE:** Sydney  
**PROJECT:** Project Symphony  
**ORDER NUMBER:** 0224198  
**PROJECT MANAGER:** Joyce Penning  
**SAMPLER:** Josh Young  
**CONTACT PH:**  
**SAMPLER MOBILE:**  
**EDD FORMAT (or default):**  
**RELIQUISHED BY:** John Kowak  
**DATE/TIME:** 15/11/13  
**RECEIVED BY:** [Signature]  
**DATE/TIME:** 15/11/13 1600  
**RELINQUISHED BY:** [Signature]  
**DATE/TIME:** 15/11/13 1710  
**RECEIVED BY:** [Signature]  
**DATE/TIME:** 15/11/13 1915

**FOR LABORATORY USE ONLY (Circle)**  
 Custody Seal (Intact)?  No  Yes  
 Free Ice / frozen ice blocks present upon receipt?  No  Yes  
 Random Sample Temperature on Receipt: 4.9 °C  
 Other comment:

ALS USE	SAMPLE DETAILS		CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to attract suite price) where Reagents are required, specify Total (unfiltered) or Dissolved (filtered) (suites required).										Additional Information		
	MATRIX: SOLID (S) WATER (W)	MATRIX	TYPE & PRESERVATIVE codes below	refr ID	TOTAL CONTAINERS	S-2 Metals (As, Ba, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRHCs (C4) (BTEXN, PAH, Phenols)	VOC Target Scan	PC9	pH (1:5)	Exchangeable cations (ED007)	PFO/S/PFOA	Asbestos (absence/presence)		Particle Sizing to 75um (Sieve)	Organic Matter plus Total Organic Carbon (EPO04)
		DATE / TIME															
1	LI-MW02-0.1	15/11				X		X									
2	LI-MW03-0.1					X		X									
3	LI-MW04-0.5					X		X									
4	LI-MW05-0.5					X		X									
5	TOL-15113-3JK					X		X									
6	LI-MW06-0.5					X		X									
7	LI-MW07-0.5					X		X									
8	LI-MW08-0.5					X		X									

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

Environmental Division  
Sydney  
Work Order  
**ES1324841**

Telephone: +61-2-8784 8555

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1324841**

<p><b>Client :</b> ENVIRO RESOURCES MANAGEMENT</p> <p><b>Contact :</b> MR JOSEPH FERRING</p> <p><b>Address :</b> GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</p>	<p><b>Laboratory :</b> Environmental Division Sydney</p> <p><b>Contact :</b> Barbara Hanna</p> <p><b>Address :</b> 277-289 Woodpark Road Smithfield NSW Australia 2164</p>
---	--

<p><b>E-mail :</b> joseph.ferring@erm.com</p> <p><b>Telephone :</b> +61 02 8584 8888</p> <p><b>Facsimile :</b> +61 02 8584 8800</p>	<p><b>E-mail :</b> Barbara.Hanna@alsglobal.com</p> <p><b>Telephone :</b> +61 2 8784 8555</p> <p><b>Facsimile :</b> +61 2 8784 8555</p>
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<p><b>Project :</b> PROJECT SYMPHONY</p> <p><b>Order number :</b> 0224198</p> <p><b>C-O-C number :</b> ----</p> <p><b>Site :</b> BAYSWATER/LIDDELL</p> <p><b>Sampler :</b> JK</p>	<p><b>Page :</b> 1 of 2</p> <p><b>Quote number :</b> ES2013ENVRES0369 (SY/794/13)</p> <p><b>QC Level :</b> NEPM 2013 Schedule B(3) and ALS QCS3 requirement</p>
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#### Dates

<p><b>Date Samples Received :</b> 15-NOV-2013</p> <p><b>Client Requested Due Date :</b> 22-NOV-2013</p>	<p><b>Issue Date :</b> 19-NOV-2013 13:19</p> <p><b>Scheduled Reporting Date :</b> <b>22-NOV-2013</b></p>
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#### Delivery Details

<p><b>Mode of Delivery :</b> Carrier</p> <p><b>No. of coolers/boxes :</b> 1 HARD</p> <p><b>Security Seal :</b> Intact.</p>	<p><b>Temperature :</b> 4.9° C - Ice present</p> <p><b>No. of samples received :</b> 8</p> <p><b>No. of samples analysed :</b> 8</p>
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample T01\_151113\_JK will be forwarded to Envirolab as per COC.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA200 Asbestos Identification in Solis	SOIL - S-27 TRH/BTEXN/PAH/Phenols&Metals
ES1324841-001	[ 15-NOV-2013 ]	LI_MW02_0.1	✓	✓
ES1324841-002	[ 15-NOV-2013 ]	LI_MW03_0.1	✓	✓
ES1324841-003	[ 15-NOV-2013 ]	LI_MW04_0.5	✓	✓
ES1324841-004	[ 15-NOV-2013 ]	LI_MW05_0.5	✓	✓
ES1324841-005	[ 15-NOV-2013 ]	D01_151113_JK		✓
ES1324841-006	[ 15-NOV-2013 ]	LI_MW06_0.5	✓	✓
ES1324841-007	[ 15-NOV-2013 ]	LI_MW07_0.5	✓	✓
ES1324841-008	[ 15-NOV-2013 ]	LI_MW08_0.5	✓	✓

## Proactive Holding Time Report

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

## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com
- EDI Format - XTab ( XTAB )	Email	john.ewing@erm.com

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1324841</b>	Page	: 1 of 9
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198		
C-O-C number	: ----	Date Samples Received	: 15-NOV-2013
Sampler	: JK	Issue Date	: 25-NOV-2013
Site	: BAYSWATER/LIDDELL		
Quote number	: SY/794/13	No. of samples received	: 8
		No. of samples analysed	: 8

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

<u>Signatories</u>	<u>Position</u>	<u>Accreditation Category</u>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LI_MW02_0.1	LI_MW03_0.1	LI_MW04_0.5	LI_MW05_0.5	D01_151113_JK
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324841-001	ES1324841-002	ES1324841-003	ES1324841-004	ES1324841-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.0	7.3	18.1	17.7	18.2
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	----
Asbestos Type	1332-21-4	0.1	--	-	-	-	-	----
Sample weight (dry)	----	0.01	g	460	499	322	336	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	5	8	11	20	17
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	12	23	23	24
Copper	7440-50-8	5	mg/kg	28	24	9	29	28
Lead	7439-92-1	5	mg/kg	30	15	17	26	27
Nickel	7440-02-0	2	mg/kg	8	12	8	16	25
Zinc	7440-66-6	5	mg/kg	649	128	31	67	82
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW02_0.1	LI_MW03_0.1	LI_MW04_0.5	LI_MW05_0.5	D01_151113_JK
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324841-001	ES1324841-002	ES1324841-003	ES1324841-004	ES1324841-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	1.6	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	1.8	0.8	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	1.2	0.6	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	0.8	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	7.1	1.4	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.7	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	14	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	60	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	620	180	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	480	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	1160	180	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	20	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	18	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	100	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	910	230	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	320	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	1330	230	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	100	<50	<50	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW02_0.1	LI_MW03_0.1	LI_MW04_0.5	LI_MW05_0.5	D01_151113_JK
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]
Compound	CAS Number	LOR	Unit	ES1324841-001	ES1324841-002	ES1324841-003	ES1324841-004	ES1324841-005
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	1.8	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	2.3	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	2.3	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	67.0	70.2	68.0	62.0	77.8
2-Chlorophenol-D4	93951-73-6	0.1	%	92.3	94.7	92.1	98.1	109
2,4,6-Tribromophenol	118-79-6	0.1	%	75.3	81.1	77.9	79.6	84.3
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	91.5	97.6	99.9	92.2	106
Anthracene-d10	1719-06-8	0.1	%	73.3	77.2	80.0	80.1	85.4
4-Terphenyl-d14	1718-51-0	0.1	%	74.4	80.5	76.3	75.4	86.4
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	115	108	111	106
Toluene-D8	2037-26-5	0.1	%	83.7	98.3	93.2	94.8	93.0
4-Bromofluorobenzene	460-00-4	0.1	%	71.6	94.4	91.4	93.7	91.5





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_0.5	LI_MW07_0.5	LI_MW08_0.5	---	---
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	---	---
Compound	CAS Number	LOR	Unit	ES1324841-006	ES1324841-007	ES1324841-008	---	---
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	---	1.0	%	17.1	10.6	18.0	---	---
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	---	---
Asbestos Type	1332-21-4	0.1	--	-	-	-	---	---
Sample weight (dry)	---	0.01	g	390	348	392	---	---
APPROVED IDENTIFIER:	---	-	--	S.SPOONER	S.SPOONER	S.SPOONER	---	---
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	<5	8	---	---
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	---	---
Chromium	7440-47-3	2	mg/kg	13	3	16	---	---
Copper	7440-50-8	5	mg/kg	10	10	12	---	---
Lead	7439-92-1	5	mg/kg	13	8	13	---	---
Nickel	7440-02-0	2	mg/kg	6	4	6	---	---
Zinc	7440-66-6	5	mg/kg	26	21	32	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	---	---
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	---	---
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_0.5	LI_MW07_0.5	LI_MW08_0.5	---	---
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	---	---
Compound	CAS Number	LOR	Unit	ES1324841-006	ES1324841-007	ES1324841-008	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.0	<0.5	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.6	0.6	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	1.0	<0.5	---	---
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	0.5	<0.5	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	0.7	<0.5	---	---
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	0.6	<0.5	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	<0.5	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	5.4	0.6	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.7	0.6	---	---
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	---	---
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	---	---
C15 - C28 Fraction	----	100	mg/kg	<100	280	<100	---	---
C29 - C36 Fraction	----	100	mg/kg	<100	130	<100	---	---
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	410	<50	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	<50	<50	---	---
>C16 - C34 Fraction	----	100	mg/kg	<100	360	<100	---	---
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	---	---
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	360	<50	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	---	---
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_0.5	LI_MW07_0.5	LI_MW08_0.5	---	---
				[15-NOV-2013]	[15-NOV-2013]	[15-NOV-2013]	---	---
Compound	CAS Number	LOR	Unit	ES1324841-006	ES1324841-007	ES1324841-008	---	---
<b>EP080: BTEXN - Continued</b>								
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	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	74.2	71.1	66.8	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	102	92.9	84.6	---	---
2,4,6-Tribromophenol	118-79-6	0.1	%	82.6	69.4	60.3	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	105	88.8	76.0	---	---
Anthracene-d10	1719-06-8	0.1	%	82.0	71.9	62.2	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	83.4	74.7	61.3	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	96.7	96.9	---	---
Toluene-D8	2037-26-5	0.1	%	87.9	81.5	89.7	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	85.8	66.1	84.6	---	---

## Analytical Results

### Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LI_MW02_0.1 - [15-NOV-2013]	Dark grey soil with dark grey rocks and coal pieces plus plenty of vegetation.
EA200: Description	LI_MW03_0.1 - [15-NOV-2013]	Dark grey soil with dark grey and orange rocks plus a trace of vegetation.
EA200: Description	LI_MW04_0.5 - [15-NOV-2013]	Mid orange - brown clay soil with dark grey rocks plus a trace of vegetation.
EA200: Description	LI_MW05_0.5 - [15-NOV-2013]	Mid yellow - brown clay soil with dark grey rocks plus a trace of vegetation.
EA200: Description	LI_MW06_0.5 - [15-NOV-2013]	Mid orange - brown clay soil with dark grey and red rocks plus a trace of vegetation.
EA200: Description	LI_MW07_0.5 - [15-NOV-2013]	Dark grey soil with dark grey rocks and coal pieces plus a trace of vegetation.
EA200: Description	LI_MW08_0.5 - [15-NOV-2013]	Mid grey - brown clay soil with dark grey and orange rocks plus a trace of vegetation.



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM): Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM): PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

Work Order	: <b>ES1324841</b>	Page	: 1 of 13
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 15-NOV-2013
C-O-C number	: ----	Issue Date	: 25-NOV-2013
Sampler	: JK	No. of samples received	: 8
Order number	: 0224198	No. of samples analysed	: 8
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3167935)</b>									
ES1324838-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.7	21.4	3.0	0% - 20%
ES1324840-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.8	16.7	5.6	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3167936)</b>									
ES1324841-008	LI_MW08_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.0	17.1	5.0	0% - 50%
ES1324882-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.7	7.4	9.4	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3167579)</b>									
ES1324834-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	17	11.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	15	7.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	8	35.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	78	72	7.3	0% - 50%
ES1324840-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	18	7.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	31	33	6.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	15	19.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	7.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	16	12.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	62	72	15.3	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3167950)</b>									
ES1324726-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	28	8.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	28	28	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	23	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	17	6.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	61	60	1.9	0% - 50%
ES1324726-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	13	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	15	6.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	25	25	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3167580)</b>											
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
ES1324840-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3167951)</b>											
ES1324726-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
ES1324726-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit		
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3167871)</b>											
ES1324840-007	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
ES1324841-006	LI_MW06_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3167871)</b>									
		ES1324840-007	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		





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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3167871) - continued</b>									
ES1324840-007	Anonymous	EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324841-006	LI_MW06_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166134)</b>									
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1324840-010	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166952)</b>									
ES1324716-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325013-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3167870)</b>									
ES1324840-007	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1324841-006	LI_MW06_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3167870) - continued</b>									
ES1324841-006	LI_MW06_0.5	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166134)</b>									
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1324840-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166952)</b>									
ES1324716-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325013-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3167870)</b>									
ES1324840-007	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1324841-006	LI_MW06_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3166134)</b>									
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1324840-010	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		
<b>EP080: BTEXN (QC Lot: 3166952)</b>									
ES1324716-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325013-002	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3166952) - continued</b>									
ES1325013-002	Anonymous	EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	126	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	120	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	111	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	108	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	116	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	123	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167950)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	104	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	113	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	102	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	98.9	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	111	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.9	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.8	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167951)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.4	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	77.7	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	89.0	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	92.5	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	94.4	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	80.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	81.0	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	78.1	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	87.3	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	80.9	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	110	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	98.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	20.0	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.4	80	124	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871) - continued</b>									
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	88.2	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	95.0	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	96.3	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	95.2	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	95.6	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	98.0	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.5	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	96.6	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	82.2	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	91.9	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	94.1	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	85.2	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	84.0	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.0	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	85.1	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166952)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	105	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	94.2	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	90.1	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.4	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166952)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	104	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	96.7	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.0	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	75.1	63	131	
<b>EP080: BTEXN (QCLot: 3166134)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	76.3	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	77.8	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	77.8	60	120	
	106-42-3								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EP080: BTEXN (QCLot: 3166134) - continued</b>								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	78.3	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	65.6	62	138
<b>EP080: BTEXN (QCLot: 3166952)</b>								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	103	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	102	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	106	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.2	62	138

### 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	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>							
ES1324834-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	115	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	119	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.9	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	113	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	103	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167950)</b>							
ES1324726-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.7	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	99.3	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	95.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	99.5	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>							
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.4	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167951)</b>							
ES1324726-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.0	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>								
ES1324840-007	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.7	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.9	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.0	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	75.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	45.3	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>								
ES1324840-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.1	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166952)</b>								
ES1324716-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.2	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>								
ES1324840-007	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	82.6	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	93.0	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	84.4	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166952)</b>								
ES1324716-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	94.5	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>								
ES1324840-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	110	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.7	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	68.5	52	132	
<b>EP080: BTEXN (QCLot: 3166134)</b>								
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	70	130		
<b>EP080: BTEXN (QCLot: 3166952)</b>								
ES1324716-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	86.9	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.1	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080: BTEXN (QCLot: 3166952) - continued</b>							
ES1324716-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	90.0	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.4	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	78.8	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	78.3	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	77.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3166134)</b>											
ES1324724-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.6	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	74.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.8	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.2	----	70	130	----	----		
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166952)</b>											
ES1324716-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.2	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166952)</b>											
ES1324716-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	94.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3166952)</b>											
ES1324716-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.7	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	86.9	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.1	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	90.0	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.4	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	78.8	----	70	130	----	----		
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579)</b>											
ES1324834-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	115	----	70	130	----	----	





Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167579) - continued</b>										
ES1324834-001	Anonymous	EG005T: Cadmium	7440-43-9	50 mg/kg	119	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	94.9	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	101	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	113	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	105	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	103	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167580)</b>										
ES1324834-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.4	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167870)</b>										
ES1324840-007	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	82.6	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	93.0	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	84.4	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3167870)</b>										
ES1324840-007	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	110	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.7	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	68.5	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3167871)</b>										
ES1324840-007	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	77.7	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	93.9	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.0	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	75.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	45.3	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3167871)</b>										
ES1324840-007	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.1	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.7	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3167950)</b>										
ES1324726-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.5	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.7	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	104	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	99.3	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	95.6	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	99.5	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3167951)</b>										
ES1324726-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.0	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1324841</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 15-NOV-2013
C-O-C number	: ----	Issue Date	: 25-NOV-2013
Sampler	: JK	No. of samples received	: 8
Order number	: 0224198	No. of samples analysed	: 8
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5 LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	----	----	----	20-NOV-2013	29-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
<b>Snap Lock Bag (EA200)</b> LI_MW02_0.1, LI_MW04_0.5, LI_MW06_0.5, LI_MW08_0.5 LI_MW03_0.1, LI_MW05_0.5, LI_MW07_0.5	15-NOV-2013	---	14-MAY-2014	----	25-NOV-2013	24-MAY-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5 LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	20-NOV-2013	14-MAY-2014	✓	20-NOV-2013	14-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5 LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	20-NOV-2013	13-DEC-2013	✓	21-NOV-2013	13-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5 LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓



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	
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5	LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5	LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5, LI_MW08_0.5	15-NOV-2013	21-NOV-2013	29-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5	LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5	15-NOV-2013	19-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW08_0.5		15-NOV-2013	20-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW02_0.1, LI_MW04_0.5, D01_151113_JK, LI_MW07_0.5	LI_MW03_0.1, LI_MW05_0.5, LI_MW06_0.5	15-NOV-2013	19-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW08_0.5		15-NOV-2013	20-NOV-2013	29-NOV-2013	✓	21-NOV-2013	29-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

Sub-Matrix: SOIL

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)S: Phenolic Compound Surrogates	ES1324841-004	LI_MW05_0.5	Phenol-d6	13127-88-3	62.0 %	63-123 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1324841-008	LI_MW08_0.5	Anthracene-d10	1719-06-8	62.2 %	66-128 %	Recovery less than lower data quality objective
EP075(SIM)T: PAH Surrogates	ES1324841-008	LI_MW08_0.5	4-Terphenyl-d14	1718-51-0	61.3 %	65-129 %	Recovery less than lower data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES1324841-007	LI_MW07_0.5	4-Bromofluorobenzene	460-00-4	66.1 %	71.6-130.0 %	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.

Attach to original  
1/2

S-137

**CHAIN OF CUSTODY**  
ALS Laboratory places tick →

CLIENT: **BERM**

OFFICE: **Sydney**

PROJECT: Project Symphony - Liddell

ORDER NUMBER: **00-2-4198**

PROJECT MANAGER: **Jessie Kerry**

SAMPLER: **Jesse Kohler**

CONTACT PH: **BAWSWATER / LIDDELL**

SAMPLER MOBILE: **EDD-FORMAT (for debit)**

RELINQUISHED BY: **Jessie Kerry**

DATE/TIME: **13/11/13**

RECEIVED BY: **Sme**

DATE/TIME: **18/11/13**

RELINQUISHED BY: **Sme**

DATE/TIME: **18/11/13**

RECEIVED BY: **Raminush**

DATE/TIME: **19/11/13**

FOR LABORATORY USE ONLY (Client)  
Custody Seal Intact?  Yes  No  
Fibre loss / (residue) (in the position) upon receipt?  No  Yes  
Random Sample Temperature on Receipt: **4.1**  
Other comment:

TURNAROUND REQUIREMENTS:  
 Standard TAT (List due date)  
 Next Standard or urgent TAT (List due date)  
ALS QUOTE NO.: 5779413

LABORATORY ADDRESS:  
ALS Laboratory  
150-152 Pitt Street  
Sydney NSW 2000  
Ph: 02 9252 3113  
Fax: 02 9252 3112  
E: lab@als.com.au

LABORATORY ADDRESS:  
ALS Laboratory  
150-152 Pitt Street  
Sydney NSW 2000  
Ph: 02 9252 3113  
Fax: 02 9252 3112  
E: lab@als.com.au

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (see codes below)	CONTAINER INFORMATION (refer to codes below)	ANALYSIS REQUIRED INCLUDING SITES (v/v). Site Codes must be listed to attract site price. When Metals are required, specify Total (unfiltered) or Dissolved (filtered) (both required).													Additional Information
						S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	S-2 Metals (As, Pb, Cd, Cr, Cu, Ni, Mn, Ni, Pb, V, Zn, Bi, Mo, Ti, Se)	S-24 TRIMICS (Cyanide, PAH, Phenols)	WOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED07)	PFOS/PFOA (Asbestos/Presence)	Particle Size to 75µm (Slave)	Organic Matter plus Total Organic Carbon (P004)	Comments on field containment levels, dilutions, or samples requiring specific lab analysis etc.			
1	LD MW02-0.1	13/11/13	SOL			X	X	X	X	X	X	X	X	X	X				
2	LD MW04-0.1					X	X	X	X	X	X	X	X	X	X				
3	LD SB01-0.1					X	X	X	X	X	X	X	X	X	X				
4	LD MW05-0.1					X	X	X	X	X	X	X	X	X	X				
5	LD SB04-0.1					X	X	X	X	X	X	X	X	X	X				
6	LD SB02-0.1					X	X	X	X	X	X	X	X	X	X				
7	LD SB03-0.1					X	X	X	X	X	X	X	X	X	X				
8	LD SR01-1.7					X	X	X	X	X	X	X	X	X	X				
9	LK SB02-3.0					X	X	X	X	X	X	X	X	X	X				
10	LK MW03-3.9					X	X	X	X	X	X	X	X	X	X				
11	LD MW01-0.1					X	X	X	X	X	X	X	X	X	X				

SNR  
22  
received  
22/11

Environmental Division  
Sydney  
Work Order  
**ES1325014**



Telephone: +61-2-8784 8555

ASBESTOS + PSD CURS 6/13  
LCERT @ FAN  
Sample + Analysis added HP, Committed HS.  
22/11/13





## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1325014</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact Address</b>	<b>: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Contact Address</b>	<b>: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: PROJECT SYMPHONY - LIDDEL</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: 0224198</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>		
<b>Sampler</b>	<b>: JK</b>		

#### Dates

<b>Date Samples Received</b>	<b>: 18-NOV-2013</b>	<b>Issue Date</b>	<b>: 22-NOV-2013 20:11</b>
<b>Client Requested Due Date</b>	<b>: 27-NOV-2013</b>	<b>Scheduled Reporting Date</b>	<b>: 27-NOV-2013</b>

#### Delivery Details

<b>Mode of Delivery</b>	<b>: Carrier</b>	<b>Temperature</b>	<b>: 4.1°C SYD - Ice present</b>
<b>No. of coolers/boxes</b>	<b>: 1 HARD</b>	<b>No. of samples received</b>	<b>: 21</b>
<b>Security Seal</b>	<b>: Intact.</b>	<b>No. of samples analysed</b>	<b>: 20</b>

#### 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
- Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.
- Sample LDMW02\_1.5 was received extra and placed on hold.
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Asbestos and Particle Sizing analysis will be conducted by ALS Newcastle.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample LDMW02\_0.1 was not received. This sample was received 22/11/13 and will be analysed as per COC.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

Method	Sample Container Received	Preferred Sample Container for Analysis
<b>Client sample ID</b>		
<b>EP071 : TPH - Semivolatile Fraction</b>		
LDMW02_0.1	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
<b>EP075(SIM) : PAH/Phenols (SIM)</b>		
LDMW02_0.1	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
<b>EP080 : TPH Volatiles/BTEX</b>		
LDMW02_0.1	- Snap Lock Bag	- 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL	No analysis requested	SOIL - EA150*	Particle Size Analysis by Sieving (Default sieves from SOIL - EA200	Asbestos Identification in Soils	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27	TRH/BTEXN/PAH/Phenols/8Metals
ES1325014-002	13-NOV-2013 15:00	LDMW04_0.1				✓				✓	
ES1325014-003	13-NOV-2013 15:00	LDSB01_0.1				✓				✓	
ES1325014-004	13-NOV-2013 15:00	LD_MW05_0.1				✓				✓	
ES1325014-005	13-NOV-2013 15:00	LD_SB04_0.1				✓				✓	
ES1325014-006	13-NOV-2013 15:00	LD_SB02_0.1				✓				✓	
ES1325014-007	13-NOV-2013 15:00	LDSB03_0.1				✓				✓	
ES1325014-008	13-NOV-2013 15:00	LMSB01_1.7								✓	
ES1325014-009	13-NOV-2013 15:00	LKSB02_3.0								✓	
ES1325014-010	13-NOV-2013 15:00	LKMW03_39								✓	
ES1325014-011	13-NOV-2013 15:00	LD_MW01_0.1				✓				✓	
ES1325014-012	13-NOV-2013 15:00	LK_MW03_0.1				✓					
ES1325014-013	13-NOV-2013 15:00	LK_SB02_0.1				✓					
ES1325014-014	13-NOV-2013 15:00	LK_MW01_0.1				✓					
ES1325014-015	13-NOV-2013 15:00	LK_MW01_7.0			✓						
ES1325014-016	13-NOV-2013 15:00	LK_SB01_0.1				✓					
ES1325014-018	[ 18-NOV-2013 ]	TRIP BLANK						✓			
ES1325014-019	[ 18-NOV-2013 ]	TRIP SPIKE						✓			
ES1325014-020	[ 18-NOV-2013 ]	TSC						✓			
ES1325014-021	13-NOV-2013 15:00	LD_MW02_1.5	✓								
ES1325014-022	13-NOV-2013 15:00	LDMW02_0.1				✓				✓	



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1325014-017	13-NOV-2013 15:00	R01131113	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- A4 - AU Tax Invoice ( INV ) Email joseph.ferring@erm.com
- Attachment - Report ( SUBCO ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### SYMPHONY ERARING

- \*AU Certificate of Analysis - NATA ( COA ) Email Symphony.Eraring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email Symphony.Eraring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email Symphony.Eraring@erm.com
- A4 - AU Tax Invoice ( INV ) Email Symphony.Eraring@erm.com
- Attachment - Report ( SUBCO ) Email Symphony.Eraring@erm.com
- Chain of Custody (CoC) ( COC ) Email Symphony.Eraring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email Symphony.Eraring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email Symphony.Eraring@erm.com
- EDI Format - XTab ( XTAB ) Email Symphony.Eraring@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325014</b>	Page	: 1 of 15
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY - LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: JK	No. of samples received	: 21
Site	: ----	No. of samples analysed	: 20
Quote number	: SY/794/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

#### Position

#### Accreditation Category

Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos
Raymond Commodor	Instrument Chemist	Sydney Inorganics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDMW04_0.1	LDSB01_0.1	LD_MW05_0.1	LD_SB04_0.1	LD_SB02_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-002	ES1325014-003	ES1325014-004	ES1325014-005	ES1325014-006
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	24.0	19.5	16.2	26.3	22.0
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	397	538	486	384	370
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	<5	5	<5	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	6	6	6	13
Copper	7440-50-8	5	mg/kg	14	10	15	12	13
Lead	7439-92-1	5	mg/kg	9	9	9	9	12
Nickel	7440-02-0	2	mg/kg	5	6	8	6	10
Zinc	7440-66-6	5	mg/kg	71	60	80	69	74
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	0.8	<0.5	0.6	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDMW04_0.1	LDSB01_0.1	LD_MW05_0.1	LD_SB04_0.1	LD_SB02_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-002	ES1325014-003	ES1325014-004	ES1325014-005	ES1325014-006
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	0.5	<0.5	<0.5	0.7	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	4.1	3.8	2.2	4.6	0.7
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	4.9	4.2	4.0	4.9	0.9
Pyrene	129-00-0	0.5	mg/kg	3.2	2.6	2.3	3.6	0.6
Benz(a)anthracene	56-55-3	0.5	mg/kg	1.9	1.5	1.3	2.1	<0.5
Chrysene	218-01-9	0.5	mg/kg	2.1	1.8	1.6	2.2	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.6	1.3	1.2	1.8	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	<0.5	<0.5	0.7	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	18.9	16.0	12.6	21.7	2.2
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.0	<0.5	<0.5	1.1	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.3	0.8	0.8	1.4	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.6	1.4	1.4	1.7	1.2
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	26	10	<10
C10 - C14 Fraction	----	50	mg/kg	120	100	100	220	<50
C15 - C28 Fraction	----	100	mg/kg	1350	1160	1250	2590	260
C29 - C36 Fraction	----	100	mg/kg	570	500	580	1020	160
^ C10 - C36 Fraction (sum)	----	50	mg/kg	2040	1760	1930	3830	420
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	10	<10	30	15	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	10	<10	23	14	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	240	200	200	490	<50
>C16 - C34 Fraction	----	100	mg/kg	1650	1470	1580	3130	350
>C34 - C40 Fraction	----	100	mg/kg	280	260	310	600	110
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	2170	1930	2090	4220	460
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	240	200	200	490	<50
<b>EP080: BTEXN</b>								





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDMW04_0.1	LDSB01_0.1	LD_MW05_0.1	LD_SB04_0.1	LD_SB02_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-002	ES1325014-003	ES1325014-004	ES1325014-005	ES1325014-006
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	4.7	1.2	0.6
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	1.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	7.1	1.2	0.6
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	6.2	1.2	0.6
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	105	101	104	103	112
2-Chlorophenol-D4	93951-73-6	0.1	%	108	105	109	107	119
2,4,6-Tribromophenol	118-79-6	0.1	%	93.7	102	108	87.9	124
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	117	115	118	119	123
Anthracene-d10	1719-06-8	0.1	%	88.4	87.0	85.5	90.4	107
4-Terphenyl-d14	1718-51-0	0.1	%	96.6	95.7	95.0	96.1	106
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	77.4	76.5	82.2	82.8	99.0
Toluene-D8	2037-26-5	0.1	%	83.9	78.7	87.5	81.5	108
4-Bromofluorobenzene	460-00-4	0.1	%	71.8	72.0	71.3	74.3	110



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDSBO3_0.1	LMSB01_1.7	LKSB02_3.0	LKMW03_39	LD_MW01_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-007	ES1325014-008	ES1325014-009	ES1325014-010	ES1325014-011
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.3	14.7	15.7	18.6	14.7
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	No
Asbestos Type	1332-21-4	-	--	-	----	----	----	-
Sample weight (dry)	----	0.01	g	506	----	----	----	391
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	----	----	----	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	7	15	12	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	13	14	14	5
Copper	7440-50-8	5	mg/kg	10	11	8	9	14
Lead	7439-92-1	5	mg/kg	10	13	14	13	9
Nickel	7440-02-0	2	mg/kg	8	7	12	4	6
Zinc	7440-66-6	5	mg/kg	90	70	68	18	79
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDSBO3_0.1	LMSB01_1.7	LKSB02_3.0	LKMW03_39	LD_MW01_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-007	ES1325014-008	ES1325014-009	ES1325014-010	ES1325014-011
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	3.1	<0.5	<0.5	<0.5	3.2
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	3.0	<0.5	<0.5	<0.5	3.0
Pyrene	129-00-0	0.5	mg/kg	2.2	<0.5	<0.5	<0.5	2.1
Benz(a)anthracene	56-55-3	0.5	mg/kg	1.3	<0.5	<0.5	<0.5	1.3
Chrysene	218-01-9	0.5	mg/kg	1.4	<0.5	<0.5	<0.5	1.4
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.2	<0.5	<0.5	<0.5	1.2
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	12.2	<0.5	<0.5	<0.5	12.2
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.8	0.6	0.6	0.6	0.8
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.4	1.2	1.2	1.2	1.4
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	15
C10 - C14 Fraction	----	50	mg/kg	70	<50	<50	<50	60
C15 - C28 Fraction	----	100	mg/kg	1060	<100	<100	<100	840
C29 - C36 Fraction	----	100	mg/kg	700	<100	<100	<100	400
^ C10 - C36 Fraction (sum)	----	50	mg/kg	1830	<50	<50	<50	1300
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	17
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	13
>C10 - C16 Fraction	>C10_C16	50	mg/kg	150	<50	<50	<50	140
>C16 - C34 Fraction	----	100	mg/kg	1510	<100	<100	<100	1090
>C34 - C40 Fraction	----	100	mg/kg	520	<100	<100	<100	220
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	2180	<50	<50	<50	1450
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	150	<50	<50	<50	140
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LDSBO3_0.1	LMSB01_1.7	LKSB02_3.0	LKMW03_39	LD_MW01_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-007	ES1325014-008	ES1325014-009	ES1325014-010	ES1325014-011
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	1.2	<0.5	<0.5	<0.5	2.7
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
^ Sum of BTEX	----	0.2	mg/kg	1.2	<0.2	<0.2	<0.2	4.0
^ Total Xylenes	1330-20-7	0.5	mg/kg	1.2	<0.5	<0.5	<0.5	3.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	106	106	105	109	104
2-Chlorophenol-D4	93951-73-6	0.1	%	110	115	112	117	109
2,4,6-Tribromophenol	118-79-6	0.1	%	102	126	123	126	99.8
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	119	118	115	122	118
Anthracene-d10	1719-06-8	0.1	%	94.1	104	104	109	93.6
4-Terphenyl-d14	1718-51-0	0.1	%	99.7	100	98.8	103	97.9
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	82.9	92.8	86.1	94.6	90.5
Toluene-D8	2037-26-5	0.1	%	91.2	97.2	93.7	99.8	91.7
4-Bromofluorobenzene	460-00-4	0.1	%	76.8	97.0	90.6	103	82.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LK_MW03_0.1	LK_SB02_0.1	LK_MW01_0.1	LK_MW01_7.0	LK_SB01_0.1
				13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325014-012	ES1325014-013	ES1325014-014	ES1325014-015	ES1325014-016

Client sampling date / time

### EA150: Particle Sizing

+75µm	----	1	%	----	----	----	27	----
+150µm	----	1	%	----	----	----	20	----
+300µm	----	1	%	----	----	----	15	----
+425µm	----	1	%	----	----	----	13	----
+600µm	----	1	%	----	----	----	12	----
+1180µm	----	1	%	----	----	----	10	----
+2.36mm	----	1	%	----	----	----	8	----
+4.75mm	----	1	%	----	----	----	5	----
+9.5mm	----	1	%	----	----	----	2	----
+19.0mm	----	1	%	----	----	----	<1	----
+37.5mm	----	1	%	----	----	----	<1	----
+75.0mm	----	1	%	----	----	----	<1	----

### EA150: Soil Classification based on Particle Size

Fines (<75 µm)	----	1	%	----	----	----	73	----
Sand (>75 µm)	----	1	%	----	----	----	19	----
Gravel (>2mm)	----	1	%	----	----	----	7	----
Cobbles (>6cm)	----	1	%	----	----	----	<1	----

### EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples

Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	----	No
Asbestos Type	1332-21-4	-	--	-	-	-	----	-
Sample weight (dry)	----	0.01	g	311	365	232	----	306
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	----	P.RENNIE



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	TSC	LDMW02_0.1	----
				[18-NOV-2013]	[18-NOV-2013]	[18-NOV-2013]	13-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325014-018	ES1325014-019	ES1325014-020	ES1325014-022	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	----	----	----	15.2	----
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	No	----
Asbestos Type	1332-21-4	-	--	----	----	----	-	----
Sample weight (dry)	----	0.01	g	----	----	----	270	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	S.SPOONER	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	----	----	<5	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	6	----
Copper	7440-50-8	5	mg/kg	----	----	----	9	----
Lead	7439-92-1	5	mg/kg	----	----	----	9	----
Nickel	7440-02-0	2	mg/kg	----	----	----	6	----
Zinc	7440-66-6	5	mg/kg	----	----	----	39	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	----	----	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	----	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
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	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	TSC	LDMW02_0.1	----
				[18-NOV-2013]	[18-NOV-2013]	[18-NOV-2013]	13-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325014-018	ES1325014-019	ES1325014-020	ES1325014-022	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	1.2	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	1.2	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	0.9	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	0.6	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	----	----	0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	4.9	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	48	103	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	880	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	690	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	1570	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	54	115	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	35	80	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	----	----	100	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	1310	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	440	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	1850	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	100	----
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TRIP BLANK	TRIP SPIKE	TSC	LDMW02_0.1	----
				[18-NOV-2013]	[18-NOV-2013]	[18-NOV-2013]	13-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325014-018	ES1325014-019	ES1325014-020	ES1325014-022	----
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	0.3	0.7	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	9.0	17.8	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1.1	2.1	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	5.9	10.6	0.6	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.4	4.2	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	18.7	35.4	0.6	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	8.3	14.8	0.6	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	----	85.5	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	80.0	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	57.0	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	76.2	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	80.0	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	81.3	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	92.4	85.9	93.8	87.4	----
Toluene-D8	2037-26-5	0.1	%	100	93.1	99.5	108	----
4-Bromofluorobenzene	460-00-4	0.1	%	102	90.9	94.4	90.8	----





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01131113

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Client sampling date / time

13-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325014-017	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---
<b>EP080: BTEXN</b>								
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	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	102	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	104	---	---	---	---



## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LDMW04_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LDSB01_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LD_MW05_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LD_SB04_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LD_SB02_0.1 - 13-NOV-2013 15:00	Brown soil with large quantity small coal pieces
EA200: Description	LDSBO3_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LD_MW01_0.1 - 13-NOV-2013 15:00	Dark grey soil with large quantity small coal pieces
EA200: Description	LK_MW03_0.1 - 13-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LK_SB02_0.1 - 13-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LK_MW01_0.1 - 13-NOV-2013 15:00	Brown clay soil with large quantity vegetation
EA200: Description	LK_SB01_0.1 - 13-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LDMW02_0.1 - 13-NOV-2013 15:00	Dark grey soil with grey rocks and plenty of coal pieces with a trace of vegetation.



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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	: <b>ES1325014</b>	Page	: 1 of 20
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY - LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: JK	No. of samples received	: 21
Order number	: 0224198	No. of samples analysed	: 20
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos
Raymond Commodor	Instrument Chemist	Sydney Inorganics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3173940)</b>									
ES1325007-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	49.1	48.4	1.3	0% - 20%
ES1325014-006	LD_SB02_0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.0	23.1	5.0	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3177199)</b>									
ES1325402-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	37.8	39.9	5.4	0% - 20%
ES1325402-013	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	26.5	26.6	0.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3173966)</b>									
ES1324880-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	11	12.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	37	35	4.4	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	11	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	15	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	16	28.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	89	89	0.0	0% - 50%
ES1324881-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	19	16.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	46	61.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	32	52.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	28	22.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	48	71	37.4	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3173968)</b>									
ES1325014-010	LKMW03_39	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	13	7.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	14	11.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	7	21.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	12	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	19	0.0	No Limit
		ES1325205-019	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1
		EG005T: Chromium	7440-47-3	2	mg/kg	21	20	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	7	29.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	13	8.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	25	25.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	17	6.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	53	35	41.6	0% - 50%



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 (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3178433)</b>									
EB1328297-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	19.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	16	43.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	29	11.6	No Limit
ES1325206-012	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	15	13.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	8	19.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	12	33.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	19	18	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3173967)</b>									
ES1324880-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1324881-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3173969)</b>									
ES1325014-010	LKMW03_39	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325205-019	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3178434)</b>									
EB1328297-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325206-012	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3169887)</b>									
ES1325014-002	LDMW04_0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		ES1325146-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5
EP075(SIM): 2-Chlorophenol	95-57-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3169887) - continued</b>									
ES1325146-001	Anonymous	EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3177476)</b>									
ES1325014-022	LDMW02_0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169887)</b>							
ES1325014-002	LDMW04_0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	4.1	3.5	15.2	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	4.9	3.9	22.6	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	3.2	2.6	22.3	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.9	1.5	23.7	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	2.1	1.7	19.5	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.6	1.5	9.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	18.9	15.2	# 21.7	0% - 20%





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169887) - continued</b>									
ES1325014-002	LDMW04_0.1	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.0	0.8	17.2	No Limit
ES1325146-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3177476)</b>									
ES1325014-022	LDMW02_0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.2	1.2	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.2	1.2	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.9	0.9	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.5	0.6	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.5	0.6	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.9	5.1	4.0	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3168287)</b>									
ES1324880-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325014-006	LD_SB02_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3169886)</b>									
ES1325014-002	LDMW04_0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	1350	1320	2.2	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	570	550	2.9	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	120	120	0.0	No Limit
ES1325146-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3176858)</b>									
ES1325592-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	55	56	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3177475)</b>									
ES1325014-022	LDMW02_0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	880	970	8.9	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	690	890	25.5	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325357-008	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3168287)</b>									
ES1324880-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325014-006	LD_SB02_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3169886)</b>									
ES1325014-002	LDMW04_0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	1650	1610	2.5	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	280	280	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	240	240	0.0	No Limit
ES1325146-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3176858)</b>									
ES1325592-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	83	86	3.1	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3177475)</b>									
ES1325014-022	LDMW02_0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	1310	1530	15.8	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	440	570	26.3	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	100	100	0.0	No Limit
ES1325357-008	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3168287)</b>									
ES1324880-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080: BTEXN (QC Lot: 3168287) - continued</b>										
ES1324880-002	Anonymous	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
ES1325014-006	LD_SB02_0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	0.6	0.9	32.1	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3176858)</b>										
ES1325592-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172588)</b>										
EN1304217-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1325157-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3172588)</b>										
EN1304217-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1325157-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3172588)</b>										
EN1304217-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
ES1325157-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	

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 Work Order : ES1325014  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY - LIDDEL



Sub-Matrix: **WATER**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
<b>EP080: BTEXN (QC Lot: 3172588) - continued</b>									
ES1325157-002	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173966)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	111	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.0	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	110	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	106	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	99.4	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	105	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173968)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	107	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	97.3	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	105	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	102	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	102	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	107	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3178433)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	104	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	97.5	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	99.9	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	98.1	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	103	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.5	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173967)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.4	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173969)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	81.3	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3178434)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.5	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169887)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	103	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	99.2	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	109	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	112	69	123	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169887) - continued</b>									
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	92.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	103	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	103	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	106	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	98.0	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	104	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	108	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	52.2	3.9	57	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3177476)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	83.4	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	86.7	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	102	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	101	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	74.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	90.4	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	80.8	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	83.0	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	89.5	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	70.1	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	71.1	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	18.7	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169887)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	106	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	112	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	112	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	109	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	111	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	106	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	99.8	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	112	76	122	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	106	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	107	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	103	72.4	114	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3177476)</b>									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3177476) - continued</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	91.2	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	108	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	101	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.8	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	96.9	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	97.5	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	101	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	93.9	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	96.3	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	95.0	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	98.0	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	86.5	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	83.1	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	83.1	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	80.4	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168287)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	111	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169886)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	102	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	111	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	92.2	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3176858)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	109	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3177475)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	105	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	114	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	110	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168287)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	113	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169886)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	96.2	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	111	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	75.3	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3176858)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	108	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3177475)</b>									



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3177475) - continued</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	113	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	111	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	114	63	131	
<b>EP080: BTEXN (QCLot: 3168287)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	88.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	99.6	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	101	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.2	62	138	
<b>EP080: BTEXN (QCLot: 3176858)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	122	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	110	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	110	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	114	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	89.7	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3170949)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	93.6	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	93.7	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	103	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172588)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	105	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3170949)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	99.5	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	95.2	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	99.5	67	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172588)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	112	75	127	
<b>EP080: BTEXN (QCLot: 3172588)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	89.8	70	124	





Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
<b>EP080: BTEXN (QCLot: 3172588) - continued</b>								
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	109	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	108	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	114	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	117	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	111	70	124

### 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
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173966)</b>							
ES1324880-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.1	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.6	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	96.2	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	117	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	112	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173968)</b>							
ES1325014-010	LKMW03_39	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.2	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	102	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	97.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	121	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3178433)</b>							
EB1328297-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.7	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	100	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	93.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	91.9	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173967)</b>							
ES1324880-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.5	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173969)</b>							
ES1325014-010	LKMW03_39	EG035T: Mercury	7439-97-6	5 mg/kg	91.8	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3178434)</b>							
EB1328297-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.2	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169887)</b>							
ES1325014-002	LDMW04_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	88.8	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	89.4	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.1	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	85.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	31.1	20	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3177476)</b>							
ES1325014-022	LDMW02_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	86.6	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.4	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	107	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	32.4	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169887)</b>							
ES1325014-002	LDMW04_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.8	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	76.5	70	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3177476)</b>							
ES1325014-022	LDMW02_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.4	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.8	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168287)</b>							
ES1324880-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	100	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169886)</b>							
ES1325014-002	LDMW04_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	99.9	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	102	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	88.4	52	132
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3176858)</b>							
ES1325506-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	114	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3177475)</b>							
ES1325014-022	LDMW02_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	81.7	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	86.8	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.4	52	132



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168287)</b>								
ES1324880-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.0	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169886)</b>								
ES1325014-002	LDMW04_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	128	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	93.7	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	71.7	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3176858)</b>								
ES1325506-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	114	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3177475)</b>								
ES1325014-022	LDMW02_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	105	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.8	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	60.6	52	132	
<b>EP080: BTEXN (QCLot: 3168287)</b>								
ES1324880-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	75.3	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	73.0	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.8	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	84.9	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.1	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	78.2	70	130		
<b>EP080: BTEXN (QCLot: 3176858)</b>								
ES1325506-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	104	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	120	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	113	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	109	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	105	70	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172588)</b>							
EN1304217-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172588)</b>							
EN1304217-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	70	130
<b>EP080: BTEXN (QCLot: 3172588)</b>							
EN1304217-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	72.1	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080: BTEXN (QCLot: 3172588) - continued</b>							
EN1304217-001	Anonymous	EP080: Toluene	108-88-3	25 µg/L	122	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	87.8	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	113	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	96.5	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3168287)</b>										
ES1324880-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	100	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3168287)</b>										
ES1324880-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.0	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3168287)</b>										
ES1324880-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	75.3	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	73.0	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.8	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	84.9	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.1	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	78.2	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169886)</b>										
ES1325014-002	LDMW04_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	99.9	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	102	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	88.4	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169886)</b>										
ES1325014-002	LDMW04_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	128	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	93.7	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	71.7	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169887)</b>										
ES1325014-002	LDMW04_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	88.8	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	89.4	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.1	----	60	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169887) - continued</b>										
ES1325014-002	LDMW04_0.1	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	85.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	31.1	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169887)</b>										
ES1325014-002	LDMW04_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.8	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	76.5	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173966)</b>										
ES1324880-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.1	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.6	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	105	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	109	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	96.2	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	117	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	112	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173967)</b>										
ES1324880-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.5	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3173968)</b>										
ES1325014-010	LKMW03_39	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.5	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	98.2	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	102	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	97.4	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	101	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	121	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173969)</b>										
ES1325014-010	LKMW03_39	EG035T: Mercury	7439-97-6	5 mg/kg	91.8	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3176858)</b>										
ES1325506-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	114	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3176858)</b>										
ES1325506-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	114	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3176858)</b>										
ES1325506-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	104	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	120	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	113	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	109	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	105	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3177475)</b>										



Sub-Matrix: SOIL					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3177475) - continued</b>											
ES1325014-022	LDMW02_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	81.7	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	86.8	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.4	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3177475)</b>											
ES1325014-022	LDMW02_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	105	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.8	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	60.6	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3177476)</b>											
ES1325014-022	LDMW02_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	86.6	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.4	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	87.4	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	107	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	32.4	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3177476)</b>											
ES1325014-022	LDMW02_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.4	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.8	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3178433)</b>											
EB1328297-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.5	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.2	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	94.7	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	100	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	93.6	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	91.9	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3178434)</b>											
EB1328297-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.2	----	70	130	----	----	

Sub-Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172588)</b>											
EN1304217-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	114	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172588)</b>											
EN1304217-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3172588)</b>											
EN1304217-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	72.1	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	122	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	87.8	----	70	130	----	----	



Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080: BTEXN (QCLot: 3172588) - continued</b>										
EN1304217-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	25 µg/L	113	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	85.3	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	96.5	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325014</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY - LIDDEL	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: JK	No. of samples received	: 21
Order number	: 0224198	No. of samples analysed	: 20
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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





## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA055: Moisture Content</b>							
<b>Snap Lock Bag (EA055-103)</b> LDMW02_0.1	13-NOV-2013	----	----	----	25-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSBO3_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	----	----	----	22-NOV-2013	27-NOV-2013	✓
<b>EA150: Particle Sizing</b>							
<b>Snap Lock Bag (EA150)</b> LK_MW01_7.0	13-NOV-2013	---	12-MAY-2014	----	28-NOV-2013	27-MAY-2014	✓
<b>EA150: Soil Classification based on Particle Size</b>							
<b>Snap Lock Bag (EA150)</b> LK_MW01_7.0	13-NOV-2013	---	12-MAY-2014	----	28-NOV-2013	27-MAY-2014	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
<b>Snap Lock Bag (EA200)</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSBO3_0.1, LD_MW01_0.1, LK_MW03_0.1, LK_SB02_0.1, LK_MW01_0.1, LK_SB01_0.1	13-NOV-2013	---	12-MAY-2014	----	03-DEC-2013	01-JUN-2014	✓
<b>Snap Lock Bag (EA200)</b> LDMW02_0.1	13-NOV-2013	---	12-MAY-2014	----	05-DEC-2013	03-JUN-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Snap Lock Bag (EG005T)</b> LDMW02_0.1	13-NOV-2013	26-NOV-2013	12-MAY-2014	✓	26-NOV-2013	12-MAY-2014	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSBO3_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	22-NOV-2013	12-MAY-2014	✓	24-NOV-2013	12-MAY-2014	✓



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
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Snap Lock Bag (EG035T)</b> LDMW02_0.1	13-NOV-2013	26-NOV-2013	11-DEC-2013	✓	27-NOV-2013	11-DEC-2013	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSB03_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	22-NOV-2013	11-DEC-2013	✓	25-NOV-2013	11-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Snap Lock Bag (EP071)</b> LDMW02_0.1	13-NOV-2013	26-NOV-2013	27-NOV-2013	✓	26-NOV-2013	05-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSB03_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	22-NOV-2013	27-NOV-2013	✓	25-NOV-2013	01-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Snap Lock Bag (EP075(SIM))</b> LDMW02_0.1	13-NOV-2013	26-NOV-2013	27-NOV-2013	✓	26-NOV-2013	05-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSB03_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	22-NOV-2013	27-NOV-2013	✓	23-NOV-2013	01-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Snap Lock Bag (EP075(SIM))</b> LDMW02_0.1	13-NOV-2013	26-NOV-2013	27-NOV-2013	✓	26-NOV-2013	05-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LDMW04_0.1, LDSB01_0.1, LD_MW05_0.1, LD_SB04_0.1, LD_SB02_0.1, LDSB03_0.1, LMSB01_1.7, LKSB02_3.0, LKMW03_39, LD_MW01_0.1	13-NOV-2013	22-NOV-2013	27-NOV-2013	✓	23-NOV-2013	01-JAN-2014	✓



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
<b>EP080: BTEXN</b>							
<b>Snap Lock Bag (EP080)</b> LDMW02_0.1	13-NOV-2013	25-NOV-2013	27-NOV-2013	✓	25-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LDMW04_0.1, LD_MW05_0.1, LD_SB02_0.1, LMSB01_1.7, LKMW03_39, LDSB01_0.1, LD_SB04_0.1, LDSBO3_0.1, LKSB02_3.0, LD_MW01_0.1	13-NOV-2013	21-NOV-2013	27-NOV-2013	✓	25-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK, TSC TRIP SPIKE,	18-NOV-2013	21-NOV-2013	02-DEC-2013	✓	25-NOV-2013	02-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Snap Lock Bag (EP080)</b> LDMW02_0.1	13-NOV-2013	25-NOV-2013	27-NOV-2013	✓	25-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LDMW04_0.1, LD_MW05_0.1, LD_SB02_0.1, LMSB01_1.7, LKMW03_39, LDSB01_0.1, LD_SB04_0.1, LDSBO3_0.1, LKSB02_3.0, LD_MW01_0.1	13-NOV-2013	21-NOV-2013	27-NOV-2013	✓	25-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP BLANK, TSC TRIP SPIKE,	18-NOV-2013	21-NOV-2013	02-DEC-2013	✓	25-NOV-2013	02-DEC-2013	✓

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01131113	13-NOV-2013	22-NOV-2013	20-NOV-2013	*	25-NOV-2013	01-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01131113	13-NOV-2013	22-NOV-2013	27-NOV-2013	✓	22-NOV-2013	27-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01131113	13-NOV-2013	22-NOV-2013	27-NOV-2013	✓	22-NOV-2013	27-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	22	13.6	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	6	50	12.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	6	54	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	26	11.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	50	6.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	54	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	50	6.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	54	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	22	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	50	6.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	54	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	26	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Page : 8 of 9  
Work Order : ES1325014  
Client : ENVIRO RESOURCES MANAGEMENT  
Project : PROJECT SYMPHONY - LIDDEL



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Duplicate (DUP) RPDs</b>							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES1325014-002	LDMW04_0.1	Sum of polycyclic aromatic hydrocarbons	----	21.7 %	0-20%	RPD exceeds LOR based limits

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

#### Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)T: PAH Surrogates	ES1325014-006	LD_SB02_0.1	2-Fluorobiphenyl	321-60-8	123 %	70-122 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES1325014-004	LD_MW05_0.1	4-Bromofluorobenzene	460-00-4	71.3 %	71.6-130.0 %	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

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

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber Glass Bottle - Unpreserved R01131113		22-NOV-2013	20-NOV-2013	2	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
Amber Glass Bottle - Unpreserved R01131113		22-NOV-2013	20-NOV-2013	2	----	----	----

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.





CHAIN OF CUSTODY

ALS Laboratory

LABORATORY: 21 Spence Street, Sydney NSW 1585  
Ph: 02 9550 9999 E: info@als.com.au

LABORATORY: 21 Spence Street, Sydney NSW 1585  
Ph: 02 9550 9999 E: info@als.com.au

LABORATORY: 21 Spence Street, Sydney NSW 1585  
Ph: 02 9550 9999 E: info@als.com.au

LABORATORY: 21 Spence Street, Sydney NSW 1585  
Ph: 02 9550 9999 E: info@als.com.au

CLIENT: **ERM**

OFFICE:

PROJECT: Project Symphony

ORDER NUMBER: **0224198**

PROJECT MANAGER: **Joseph Ferrying**

SAMPLER: **Odette Koval**

COC emailed to ALS? (YES / NO)

Email Reports to (will default to PM if no other addresses are listed): **John Ferrying & Sydney@erm.com.au**

Email Invoice to (will default to PM if no other addresses are listed): **John Ferrying & Sydney@erm.com.au**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:  Standard TAT (List due date)  Non Standard or urgent TAT (List due date)

ALSO QUOTE NO: SY73413

SITE: BAYSWATER / LIDDELL

CONTACT PH:

SAMPLER MOBILE:

EDD FORMAT (or default):

REINQUISHED BY: **Stas Lukarski**

DATE/TIME: **14/11/14**

RECEIVED BY: **SWC**

DATE/TIME: **18/11/13**

REINQUISHED BY: **SWC**

DATE/TIME: **18/11/13**

RECEIVED BY: **SWC**

DATE/TIME: **18/11/13**

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DATE/TIME: **18/11/13**

RECEIVED BY: **SWC**

DATE/TIME: **18/11/13**

REINQUISHED BY: **SWC**

Water Container Codes: P = Unpreserved Plastic; V = Nitro Preserved Plastic; ORC = Nitro Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
V = VOA Vol ICH Preserved; VA = VOA Vol ICH Preserved; VS = VOA Vol ICH Preserved; VAS = VOA Vol ICH Preserved; VASG = VOA Vol ICH Preserved; VASG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; D = Unpreserved Bag

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below)	refer to	TOTAL CONTAINERS	ANALYSIS REQUIRED (including SUTES (NB: Sute Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottles required) or Disolved (field filtered bottle required).							Additional Information							
							S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg))	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRH(C6-C40)/BTEXN, PAH, Phenols	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)		PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)			
1	LS-SB03-0.1	14/11/13	SOIL			EN	X	X													
2	LS-SB04-0.1																				
3	LP-SB11-0.1																				
4	LS-SB01-0.1																				
5	LP-SB12-0.1																				
6	LP-MW02-0.1																				
7	LI-MW02-9.5																				HOLD
8	LI-MW02-2.6																				
9	LI-MW01-3.8																				
10	LI-MW04-3.0																				
11	LI-MW02-2.9																				
12	LP-MW02-0.1																				

**overflow**

ASBESTOS TEST @ EN  
NO SPLITS PROVIDED FOR PSD

Telephone : +61-2-8784 8555



ES1325019

Environmental Division  
Sydney 95112  
Work Order

## Wael Saleh

---

**From:** Fadi Soro  
**Sent:** Thursday, 21 November 2013 2:13 PM  
**To:** Kirsten Garlick; Wael Saleh  
**Cc:** joseph.ferring@erm.com  
**Subject:** FW: ES1325019-010 FOR PSD

Hey Kirsten,

PSD for ES1325019-010 has been cancelled as per the below email.

Wael,

Can you please cancel PSD?

Regards

Fadi

-----Original Message-----

**From:** Joseph Ferring [mailto:Joseph.Ferring@erm.com]  
**Sent:** Thursday, 21 November 2013 2:09 PM  
**To:** Fadi Soro; Kate Fox; ERM Australia Project Symphony MacGen  
**Subject:** RE: ES1325019-010 FOR PSD

Thanks Fadi. We do not need to analyse LT\_MW02\_7.5 for PSD.

cheers

Joe Ferring  
Senior Environmental Scientist

ERM  
Building C, 33 Saunders Street Pyrmont NSW 2009 Locked Bag 24, Broadway NSW 2007 AUSTRALIA

T: +61 (0)2 8584 8890 (Direct)  
T: +61 (0)2 8584 8888 (Office)  
F: +61 (0)2 8584 8800  
M: +61 424970468  
joseph.ferring@erm.com

[www.erm.com](http://www.erm.com)

-----Original Message-----

**From:** Fadi Soro [mailto:fadi.soro@alsglobal.com]  
**Sent:** Thursday, November 21, 2013 2:02 PM  
**To:** Joseph Ferring; Kate Fox; ERM Australia Project Symphony MacGen  
**Subject:** RE: ES1325019-010 FOR PSD

Hi Joseph,

We can only do either TRH, BTEX, Metals, etc or the PSD.

So ill delete the PSD from ALS sample #10 (LT\_MW04\_3.0).

Do you still want sample LT\_MW02\_7.5 which is currently on hold analysed for TRH, BTEX, Meals?

Regards

Fadi

-----Original Message-----

From: Joseph Ferring [mailto:Joseph.Ferring@erm.com]  
Sent: Thursday, 21 November 2013 1:53 PM  
To: Fadi Soro; Kate Fox; ERM Australia Project Symphony MacGen  
Subject: RE: ES1325019-010 FOR PSD

Hi Fadi, if you do PSD on LT\_MW02\_7.5 does that mean you can't analyse for anything else (TRH, BTEX, metals, etc.)?

If so, then PSD isn't important and can be dropped. If you can still do PSD on LT\_MW02\_7.5 and the other analytes, please schedule this and delete PSD from LT\_MW04\_3.0.

Cheers,  
Joe

Joe Ferring  
Senior Environmental Scientist

ERM  
Building C, 33 Saunders Street Pyrmont NSW 2009 Locked Bag 24, Broadway NSW 2007 AUSTRALIA

T: +61 (0)2 8584 8890 (Direct)  
T: +61 (0)2 8584 8888 (Office)  
F: +61 (0)2 8584 8800  
M: +61 424970468  
joseph.ferring@erm.com

[www.erm.com](http://www.erm.com)

-----Original Message-----

From: Fadi Soro [mailto:fadi.soro@alsglobal.com]  
Sent: Thursday, November 21, 2013 1:42 PM  
To: Kate Fox; Joseph Ferring; ERM Australia Project Symphony MacGen  
Subject: RE: ES1325019-010 FOR PSD

Hi Kate,

We have enough volume to only do PSD for sample ID LT\_MW02\_7.5.

Would you like me to add PSD to LT\_MW02\_7.5 and delete it from sample ID LT\_MW04\_3.0?

Regards

Fadi

-----Original Message-----

From: Kate Fox [mailto:Kate.Fox@erm.com]  
Sent: Thursday, 21 November 2013 1:10 PM  
To: Joseph Ferring; ERM Australia Project Symphony MacGen  
Cc: Fadi Soro  
Subject: RE: ES1325019-010 FOR PSD

Hi Joe,

We don't need asbestos analysis on this sample, we already have all the required number of samples being analysed for asbestos at this area.

We do need one sample from LT to be analysed for PSD. We've got LT\_MW02\_7.5 on hold with the lab - Fadi, would that sample be suitable for PSD analysis?

So far we have sent 11 samples for PSD analysis, and have results back from two of them. I haven't heard about any problems with the other 9 samples so far.

Kate

-----Original Message-----

From: Joseph Ferring  
Sent: Thursday, November 21, 2013 11:40 AM  
To: Kate Fox; ERM Australia Project Symphony MacGen  
Cc: Fadi Soro (fadi.soro@alsglobal.com)  
Subject: FW: ES1325019-010 FOR PSD

Hey Kate, sorry for including on your personal and the Symphony MacGen address, but wanted to make sure it was chased.

Can you check whether this sample need asbestos?

It sounds like particle size distribution (PSD) can't be done due to lack of sufficient sample. Can you check to see if this has occurred on any other samples?

cheers

Joe Ferring  
Senior Environmental Scientist

ERM  
Building C, 33 Saunders Street Pyrmont NSW 2009 Locked Bag 24, Broadway NSW 2007 AUSTRALIA

T: +61 (0)2 8584 8890 (Direct)  
T: +61 (0)2 8584 8888 (Office)  
F: +61 (0)2 8584 8800  
M: +61 424970468  
joseph.ferring@erm.com

www.erm.com

-----Original Message-----

From: Fadi Soro [mailto:fadi.soro@alsglobal.com]  
Sent: Thursday, November 21, 2013 12:11 PM  
To: Joseph Ferring  
Subject: ES1325019-010 FOR PSD

Hi Joseph,

As per our phone conversation we do not have enough sample volume to analyse sample LT-MW04-3.0 for PSD.

We need 250gs for PSD. Can you confirm if the correct box was marked?

Regards

Fadi

-----Original Message-----

From: alssmlp006 [mailto:alssmlp006@alsglobal.com]  
Sent: Thursday, 21 November 2013 12:13 PM  
To: Fadi Soro  
Subject: Scan Data from FX-B0F5F3

Number of Images: 1  
Attachment File Type: PDF

Device Name: alssmlp006  
Device Location:

\*\*\*\*\*

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Please visit ERM's web site: <http://www.erm.com>

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1325019</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact Address</b>	<b>: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Contact Address</b>	<b>: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: 0224198</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>		
<b>Sampler</b>	<b>: O.K</b>		

#### Dates

<b>Date Samples Received</b>	<b>: 18-NOV-2013</b>	<b>Issue Date</b>	<b>: 21-NOV-2013 14:44</b>
<b>Client Requested Due Date</b>	<b>: 25-NOV-2013</b>	<b>Scheduled Reporting Date</b>	<b>: 25-NOV-2013</b>

#### Delivery Details

<b>Mode of Delivery</b>	<b>: Carrier</b>	<b>Temperature</b>	<b>: 4.6°C - Ice present</b>
<b>No. of coolers/boxes</b>	<b>: 1 HARD</b>	<b>No. of samples received</b>	<b>: 16</b>
<b>Security Seal</b>	<b>: Intact.</b>	<b>No. of samples analysed</b>	<b>: 15</b>

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos and PSD analysis will be conducted by ALS Newcastle.**
- **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.**
- **All will be reported on the scheduled due date 25/11/13, except for PSD analysis will be reported on 28/11/13.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA002 pH (1:5)	SOIL - EA200 Asbestos Identification in Soils	SOIL - S-18 (NO MOIST)	TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1325019-001	14-NOV-2013 15:00	LS_SB03_0.1			✓			✓
ES1325019-002	14-NOV-2013 15:00	LS_SB04_0.1			✓			✓
ES1325019-003	14-NOV-2013 15:00	LP_SB11_0.1			✓			✓
ES1325019-004	14-NOV-2013 15:00	LS_SB01_0.1			✓			✓
ES1325019-005	14-NOV-2013 15:00	LP_SB12_0.1			✓			✓
ES1325019-006	14-NOV-2013 15:00	LP_MW02_0.1			✓			✓
ES1325019-007	14-NOV-2013 15:00	LT_MW02_7.5	✓					
ES1325019-008	14-NOV-2013 15:00	LT_MW02_2.6						✓
ES1325019-009	14-NOV-2013 15:00	LT_MW01_3.6						✓
ES1325019-010	14-NOV-2013 15:00	LT_MW04_3.0		✓				✓
ES1325019-011	14-NOV-2013 15:00	LK_MW02_2.9						✓
ES1325019-012	14-NOV-2013 15:00	LK_MW02_0.1			✓			
ES1325019-014	13-NOV-2013 15:00	TB_131113				✓		
ES1325019-015	13-NOV-2013 15:00	TS_131113				✓		
ES1325019-016	13-NOV-2013 15:00	TSC_131113				✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1325019-013	14-NOV-2013 15:00	R01_141113_JK	✓

## Proactive Holding Time Report

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





## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	john.ewing@erm.com
- A4 - AU Tax Invoice ( INV )	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### SYMPHONY ERARING

- *AU Certificate of Analysis - NATA ( COA )	Email	Symphony.Eraring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	Symphony.Eraring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	Symphony.Eraring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	Symphony.Eraring@erm.com
- Chain of Custody (CoC) ( COC )	Email	Symphony.Eraring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	Symphony.Eraring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	Symphony.Eraring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	Symphony.Eraring@erm.com
- EDI Format - XTab ( XTAB )	Email	Symphony.Eraring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
-------------------------------	-------	---------------------

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325019</b>	Page	: 1 of 12
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 03-DEC-2013
Sampler	: O.K	No. of samples received	: 16
Site	: ----	No. of samples analysed	: 15
Quote number	: SY/794/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LS_SB03_0.1	LS_SB04_0.1	LP_SB11_0.1	LS_SB01_0.1	LP_SB12_0.1
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-001	ES1325019-002	ES1325019-003	ES1325019-004	ES1325019-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	14.1	17.8	26.2	12.2	17.6
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	489	533	364	570	435
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	11	10	17	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	14	19	18	24	28
Copper	7440-50-8	5	mg/kg	18	18	13	23	9
Lead	7439-92-1	5	mg/kg	14	18	16	26	19
Nickel	7440-02-0	2	mg/kg	17	13	13	10	8
Zinc	7440-66-6	5	mg/kg	66	62	54	40	31
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.8	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LS_SB03_0.1	LS_SB04_0.1	LP_SB11_0.1	LS_SB01_0.1	LP_SB12_0.1
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-001	ES1325019-002	ES1325019-003	ES1325019-004	ES1325019-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LS_SB03_0.1	LS_SB04_0.1	LP_SB11_0.1	LS_SB01_0.1	LP_SB12_0.1
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-001	ES1325019-002	ES1325019-003	ES1325019-004	ES1325019-005
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	102	94.6	93.8	94.2	96.2
2-Chlorophenol-D4	93951-73-6	0.1	%	106	97.7	96.4	97.6	100
2,4,6-Tribromophenol	118-79-6	0.1	%	79.2	74.7	71.1	67.9	67.3
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	95.6	89.8	88.3	89.5	91.2
Anthracene-d10	1719-06-8	0.1	%	83.3	77.0	77.2	77.5	79.2
4-Terphenyl-d14	1718-51-0	0.1	%	82.8	77.2	76.1	76.4	78.0
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	84.0	104	80.2	86.5	106
Toluene-D8	2037-26-5	0.1	%	93.8	95.5	89.0	95.5	98.4
4-Bromofluorobenzene	460-00-4	0.1	%	91.5	92.8	93.3	99.7	98.2



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_MW02_0.1	LT_MW02_2.6	LT_MW01_3.6	LT_MW04_3.0	LK_MW02_2.9
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-006	ES1325019-008	ES1325019-009	ES1325019-010	ES1325019-011
<b>EA002 : pH (Soils)</b>								
pH Value	----	0.1	pH Unit	----	----	----	6.5	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	11.4	11.4	21.8	25.0	18.5
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	352	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	14	11	10	13
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	17	17	81	18
Copper	7440-50-8	5	mg/kg	13	30	19	31	9
Lead	7439-92-1	5	mg/kg	13	28	11	16	14
Nickel	7440-02-0	2	mg/kg	12	48	9	55	6
Zinc	7440-66-6	5	mg/kg	120	107	42	45	44
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_MW02_0.1	LT_MW02_2.6	LT_MW01_3.6	LT_MW04_3.0	LK_MW02_2.9
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-006	ES1325019-008	ES1325019-009	ES1325019-010	ES1325019-011
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_MW02_0.1	LT_MW02_2.6	LT_MW01_3.6	LT_MW04_3.0	LK_MW02_2.9
				14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00	14-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325019-006	ES1325019-008	ES1325019-009	ES1325019-010	ES1325019-011
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	94.6	85.8	79.3	91.8	96.3
2-Chlorophenol-D4	93951-73-6	0.1	%	98.4	87.7	82.7	95.4	99.4
2,4,6-Tribromophenol	118-79-6	0.1	%	67.9	65.5	62.1	71.0	70.4
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	91.0	81.1	77.5	88.5	92.6
Anthracene-d10	1719-06-8	0.1	%	78.8	71.4	67.6	76.9	79.6
4-Terphenyl-d14	1718-51-0	0.1	%	77.7	69.3	67.8	76.1	78.7
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.2	108	106	104	106
Toluene-D8	2037-26-5	0.1	%	96.4	105	92.7	101	103
4-Bromofluorobenzene	460-00-4	0.1	%	100	105	96.9	103	100



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LK_MW02_0.1	TB_131113	TS_131113	TSC_131113	----
				14-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	13-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325019-012	ES1325019-014	ES1325019-015	ES1325019-016	----
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	0.1	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	304	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	----	<10	80	83	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	89	92	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	60	64	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	0.5	0.6	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	14.4	14.0	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	1.7	1.7	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	8.6	8.3	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	3.4	3.3	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	28.6	27.9	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	12.0	11.6	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	86.2	99.1	111	----
Toluene-D8	2037-26-5	0.1	%	----	94.8	98.6	98.8	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	95.7	101	99.9	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_141113\_JK

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Client sampling date / time

14-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325019-013	---	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---
<b>EP080: BTEXN</b>								
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	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	85.8	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	87.9	---	---	---	---



## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LS_SB03_0.1 - 14-NOV-2013 15:00	Mid grey - brown clay soil with grey and orange rocks plus plenty of vegetation.
EA200: Description	LS_SB04_0.1 - 14-NOV-2013 15:00	Mid grey - brown clay soil with grey and orange rocks plus some vegetation.
EA200: Description	LP_SB11_0.1 - 14-NOV-2013 15:00	Mid orange - brown clay soil with grey and orange rocks plus some vegetation.
EA200: Description	LS_SB01_0.1 - 14-NOV-2013 15:00	Mid grey - brown clay soil with grey and orange rocks plus some vegetation.
EA200: Description	LP_SB12_0.1 - 14-NOV-2013 15:00	Mid orange - brown clay soil with grey and red rocks plus some vegetation.
EA200: Description	LP_MW02_0.1 - 14-NOV-2013 15:00	Mid brown clay soil with grey and red rocks plus some vegetation.
EA200: Description	LK_MW02_0.1 - 14-NOV-2013 15:00	Mid orange - brown clay soil with grey and red rocks plus a trace of vegetation.



### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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	: <b>ES1325019</b>	Page	: 1 of 12
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 03-DEC-2013
Sampler	: O.K	No. of samples received	: 16
Order number	: 0224198	No. of samples analysed	: 15
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA002 : pH (Soils) (QC Lot: 3168507)</b>									
ES1325018-007	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3168511)</b>									
ES1325018-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	31.8	36.3	13.2	0% - 20%
ES1325019-009	LT_MW01_3.6	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.8	20.2	7.7	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3168400)</b>									
ES1325018-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	13	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	14	15.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	16	13.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	23	8.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	18	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	63	66	5.6	0% - 50%
ES1325019-001	LS_SB03_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	14	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	19	11.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	20	12.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	15	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	66	66	0.0	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3168401)</b>									
ES1325018-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325019-001	LS_SB03_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3169790)</b>									
ES1324977-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3169790) - continued</b>									
ES1325019-008	LT_MW02_2.6	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169790)</b>									
ES1324977-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325019-008	LT_MW02_2.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169790) - continued</b>										
ES1325019-008	LT_MW02_2.6	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3166958)</b>										
ES1325018-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1325019-004	LS_SB01_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3169789)</b>										
ES1324977-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
ES1325019-008	LT_MW02_2.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3166958)</b>										
ES1325018-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1325019-004	LS_SB01_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3169789)</b>										
ES1324977-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1325019-008	LT_MW02_2.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3166958)</b>										
ES1325018-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1325019-004	LS_SB01_0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080: BTEXN (QC Lot: 3166958) - continued</b>										
ES1325019-004	LS_SB01_0.1	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
<b>Sub-Matrix: <b>WATER</b></b>										
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1324986-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1324986-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1324986-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit			
	91-20-3	5	µg/L	<5	<5	0.0	No Limit			



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3168400)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	117	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	125	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	108	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	104	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	114	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	110	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3168401)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.1	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169790)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	98.6	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	97.3	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	93.9	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	94.6	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	83.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	84.5	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	81.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	84.8	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	86.7	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	86.0	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	87.0	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	25.4	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169790)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	95.0	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	94.8	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	102	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	104	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	103	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	105	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	90.7	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	100	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	84.4	70	118	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169790) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	101	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	93.6	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	91.7	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	88.6	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166958)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.4	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169789)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	112	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	114	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	99.4	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166958)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	89.6	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169789)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	119	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	106	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	93.5	63	131	
<b>EP080: BTEXN (QCLot: 3166958)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	84.8	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	83.9	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.7	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.9	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	89.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	83.3	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169068)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	94.4	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	101	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	91.8	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172576)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	107	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169068)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	97.0	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	97.1	73.9	138	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169068) - continued</b>								
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	98.8	67	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172576)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	112	75	127
<b>EP080: BTEXN (QCLot: 3172576)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	110	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	115	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	117	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	118	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	123	70	124

### 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3168400)</b>							
ES1325018-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	100	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	99.2	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3168401)</b>							
ES1325018-003	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	111	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169790)</b>							
ES1324977-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	90.3	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	89.5	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	76.9	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	74.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	48.5	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169790)</b>							
ES1324977-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.8	70	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169790) - continued</b>								
ES1324977-001	Anonymous	EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.1	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166958)</b>								
ES1325018-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	112	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169789)</b>								
ES1324977-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	107	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	100	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	82.1	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166958)</b>								
ES1325018-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	107	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169789)</b>								
ES1324977-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	132	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.4	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	67.1	52	132	
<b>EP080: BTEXN (QCLot: 3166958)</b>								
ES1325018-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	82.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	82.8	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.6	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	86.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	89.7	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	89.5	70	130			

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172576)</b>								
ES1324893-004	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	111	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172576)</b>								
ES1324893-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	109	70	130	
<b>EP080: BTEXN (QCLot: 3172576)</b>								
ES1324893-004	Anonymous	EP080: Benzene	71-43-2	25 µg/L	81.6	70	130	
		EP080: Toluene	108-88-3	25 µg/L	84.6	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	77.6	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	75.9	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	82.8	70	130	
EP080: Naphthalene	91-20-3	25 µg/L	96.5	70	130			



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3166958)</b>											
ES1325018-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	112	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3166958)</b>											
ES1325018-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	107	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3166958)</b>											
ES1325018-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	82.7	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	82.8	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	88.6	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	86.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	89.7	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.5	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3168400)</b>											
ES1325018-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	101	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	103	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	100	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	104	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	99.2	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3168401)</b>											
ES1325018-003	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	111	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169789)</b>											
ES1324977-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	107	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	100	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	82.1	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3169789)</b>											
ES1324977-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	132	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	89.4	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	67.1	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169790)</b>											
ES1324977-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	90.3	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	89.5	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	76.9	----	60	130	----	----	





Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3169790) - continued</b>										
ES1324977-001	Anonymous	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	74.2	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	48.5	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169790)</b>										
ES1324977-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.8	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.1	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	111	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	109	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3172576)</b>										
ES1324893-004	Anonymous	EP080: Benzene	71-43-2	25 µg/L	81.6	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	84.6	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	77.6	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	75.9	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	82.8	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	96.5	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325019</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-NOV-2013
C-O-C number	: ----	Issue Date	: 03-DEC-2013
Sampler	: O.K	No. of samples received	: 16
Order number	: 0224198	No. of samples analysed	: 15
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA002 : pH (Soils)</b>							
<b>Soil Glass Jar - Unpreserved (EA002)</b> LT_MW04_3.0	14-NOV-2013	21-NOV-2013	21-NOV-2013	✓	21-NOV-2013	21-NOV-2013	✓
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LS_SB03_0.1, LS_SB04_0.1, LP_SB11_0.1, LP_SB01_0.1, LP_SB12_0.1, LP_MW02_0.1, LT_MW02_2.6, LT_MW01_3.6, LT_MW04_3.0, LK_MW02_2.9	14-NOV-2013	----	----	----	20-NOV-2013	28-NOV-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
<b>Snap Lock Bag (EA200)</b> LS_SB03_0.1, LS_SB04_0.1, LP_SB11_0.1, LS_SB01_0.1, LP_SB12_0.1, LP_MW02_0.1, LK_MW02_0.1	14-NOV-2013	---	13-MAY-2014	----	03-DEC-2013	01-JUN-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LS_SB03_0.1, LS_SB04_0.1, LP_SB11_0.1, LS_SB01_0.1, LP_SB12_0.1, LP_MW02_0.1, LT_MW02_2.6, LT_MW01_3.6, LT_MW04_3.0, LK_MW02_2.9	14-NOV-2013	20-NOV-2013	13-MAY-2014	✓	21-NOV-2013	13-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LS_SB03_0.1, LS_SB04_0.1, LP_SB11_0.1, LS_SB01_0.1, LP_SB12_0.1, LP_MW02_0.1, LT_MW02_2.6, LT_MW01_3.6, LT_MW04_3.0, LK_MW02_2.9	14-NOV-2013	20-NOV-2013	12-DEC-2013	✓	22-NOV-2013	12-DEC-2013	✓



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	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
LS_SB03_0.1, LP_SB11_0.1, LP_SB12_0.1, LT_MW02_2.6, LT_MW04_3.0,	LS_SB04_0.1, LS_SB01_0.1, LP_MW02_0.1, LT_MW01_3.6, LK_MW02_2.9	14-NOV-2013	22-NOV-2013	28-NOV-2013	✓	22-NOV-2013	01-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LS_SB03_0.1, LP_SB11_0.1, LP_SB12_0.1, LT_MW02_2.6, LT_MW04_3.0,	LS_SB04_0.1, LS_SB01_0.1, LP_MW02_0.1, LT_MW01_3.6, LK_MW02_2.9	14-NOV-2013	22-NOV-2013	28-NOV-2013	✓	22-NOV-2013	01-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LS_SB03_0.1, LP_SB11_0.1, LP_SB12_0.1, LT_MW02_2.6, LT_MW04_3.0,	LS_SB04_0.1, LS_SB01_0.1, LP_MW02_0.1, LT_MW01_3.6, LK_MW02_2.9	14-NOV-2013	22-NOV-2013	28-NOV-2013	✓	22-NOV-2013	01-JAN-2014	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
TB_131113, TSC_131113	TS_131113,	13-NOV-2013	20-NOV-2013	27-NOV-2013	✓	22-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LS_SB03_0.1, LP_SB11_0.1, LP_SB12_0.1, LT_MW02_2.6, LT_MW04_3.0,	LS_SB04_0.1, LS_SB01_0.1, LP_MW02_0.1, LT_MW01_3.6, LK_MW02_2.9	14-NOV-2013	20-NOV-2013	28-NOV-2013	✓	22-NOV-2013	28-NOV-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
TB_131113, TSC_131113	TS_131113,	13-NOV-2013	20-NOV-2013	27-NOV-2013	✓	22-NOV-2013	27-NOV-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LS_SB03_0.1, LP_SB11_0.1, LP_SB12_0.1, LT_MW02_2.6, LT_MW04_3.0,	LS_SB04_0.1, LS_SB01_0.1, LP_MW02_0.1, LT_MW01_3.6, LK_MW02_2.9	14-NOV-2013	20-NOV-2013	28-NOV-2013	✓	22-NOV-2013	28-NOV-2013	✓

Matrix: **WATER**

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



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01_141113_JK	14-NOV-2013	21-NOV-2013	21-NOV-2013	✓	21-NOV-2013	31-DEC-2013	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_141113_JK	14-NOV-2013	22-NOV-2013	28-NOV-2013	✓	22-NOV-2013	28-NOV-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_141113_JK	14-NOV-2013	22-NOV-2013	28-NOV-2013	✓	22-NOV-2013	28-NOV-2013	✓



## Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	1	5	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
TPH - Semivolatile Fraction	EP071	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)





<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



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## Summary of Outliers

### Outliers : Quality Control Samples

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

#### *Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

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

#### *Regular Sample Surrogates*

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.
-





**CHAIN OF CUSTODY**

LADELADE 21 Burma Road Pookalla SA 5095  
Ph: 08 8559 0800 E: [als@als.com.au](mailto:als@als.com.au)

LIBRARY 37 Sturt Street Sturtford QLD 4003  
Ph: 07 3219 7222 E: [samples@als.com.au](mailto:samples@als.com.au)

GLADSTONE 40 Callaghan Drive Capton QLD 4680  
Ph: 07 347 5800 E: [gladstone@als.com.au](mailto:gladstone@als.com.au)

JACKARNA 78 Highway Blvd Kingsley QLD 4710  
Ph: 07 4844 0177 E: [mackay@als.com.au](mailto:mackay@als.com.au)

UNELDUK 2.1 Wadda Road Springside VIC 3171  
Ph: 03 8549 0006 E: [samples@als.com.au](mailto:samples@als.com.au)

WARRAMONGEE 22 Saffery Road Warramongee NSW 2820  
Ph: 02 6372 8733 E: [mudgee@als.com.au](mailto:mudgee@als.com.au)

SPERITH 10 Hoad Way, Werook WA 6000  
Ph: 08 9209 7025 E: [samples@als.com.au](mailto:samples@als.com.au)

NEWCASTLE 5 Rose Glen Road Warabeek NSW 2324  
Ph: 02 8384 9433 E: [samples@als.com.au](mailto:samples@als.com.au)

WOLLONGONG 69 Kenney Street Wollongong NSW 2520  
Ph: 02 4223 3124 E: [parramatta@als.com.au](mailto:parramatta@als.com.au)

SYDNEY 377-209 Woodglen Road Smithfield NSW 2164  
Ph: 02 8764 8556 E: [samples@als.com.au](mailto:samples@als.com.au)

CLIENT: **ERN**  
OFFICE: **Sydney**  
PROJECT: **Project Symphony**  
ORDER NUMBER: **204198**  
PROJECT MANAGER: **J. Ferlino**  
SAMPLER: **T. ARNANI**

TURNAROUND REQUIREMENTS:  
 Standard TAT (List due date)  
 Non Standard or urgent TAT (List due date):  
Standard TAT may be longer for some tests e.g. Ultra Trace Organics

ALS QUOTE NO.: **SV78413**  
SITE: **BAYSWATER LIODELL**  
CONTACT PH: \_\_\_\_\_  
SAMPLER MOBILE: **0408446395**  
EDD FORMAT (or default): \_\_\_\_\_

RECEIVED BY: **J. Ferlino**  
DATE/TIME: \_\_\_\_\_  
RECEIVED BY: **KL**  
DATE/TIME: **25/11/13 1700**

RECEIVED BY: **25/11/13 BAR**  
DATE/TIME: **19200**

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:  
**(ESB 29458)**

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION	ANALYSIS REQUIRED	Additional Information
LAB ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (codes below)	(refer to)
			TOTAL CONTAINERS	Where Metals are required, specify Total (unfiltered bottle required) or Disolved (filtered bottle required).
13	LE SB05 3.0	8/11/13	soil	
14	LE MW03 2.0			
15	LE SB06 3.0			
16	LE SB06 1.0			
17	LE SB08 3.0			
18	LE MW04 2.2			
19	LE MW06 2.5			
20	LE SB07 2.3			
21	LE MW04 4.0			
22	LE SB07 1.6			
23	LE MW03-2.8			
24	T / SPIRES			
<b>TOTAL</b>				
25 T / SPIRES Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SR = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic V = VOA Vial HCl Preserved; VS = VOA Vial Sodium Bisphosphate Preserved; V5 = VOA Vial Sodium Bisphosphate Preserved; AV = Airtight Unpreserved Vial; SO = Sulfoxide Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfur Preserved Plastic; F = Formaldehyde Preserved Glass Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.				



## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order** : ES1325458

**Amendment** : 1

**Client** : ENVIRO RESOURCES MANAGEMENT  
**Laboratory** : Environmental Division Sydney

**Contact** : MR JOSEPH FERRING  
**Address** : GROUND FLOOR  
 33 SAUNDERS STREET, PYRMONT  
 NSW 2009  
 LOCKED BAG 24  
 BROADWAY NSW, AUSTRALIA 2007

**Contact** : Barbara Hanna  
**Address** : 277-289 Woodpark Road Smithfield  
 NSW Australia 2164

**E-mail** : joseph.ferring@erm.com  
**Telephone** : +61 02 8584 8888  
**Facsimile** : +61 02 8584 8800

**E-mail** : Barbara.Hanna@alsglobal.com  
**Telephone** : +61 2 8784 8555  
**Facsimile** : +61 2 8784 8555

**Project** : Project Symphony-Liddell  
**Order number** : 0244198  
**C-O-C number** : ----  
**Site** : LIDDELL/BAYSWATER  
**Sampler** : JL

**Page** : 1 of 3

**Quote number** : ES2013ENVRES0369 (SY/794/13)

**QC Level** : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

**Date Samples Received** : 25-NOV-2013  
**Client Requested Due Date** : 10-JAN-2014

**Issue Date** : 10-JAN-2014  
**Scheduled Reporting Date** : **10-JAN-2014**

#### Delivery Details

**Mode of Delivery** : Carrier  
**No. of coolers/boxes** : 1 HARD  
**Security Seal** : Intact.

**Temperature** : 4.5°C - Ice present  
**No. of samples received** : 36  
**No. of samples analysed** : 33

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exist.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA200 Asbestos Identification in Soils	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP080 BTEXN	SOIL - S-04 TRH/BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1325458-001	21-NOV-2013 15:00	LA_MW03_0.1		✓					✓
ES1325458-002	21-NOV-2013 15:00	LP_SB05_0.1		✓					✓
ES1325458-003	21-NOV-2013 15:00	LF_SB03_0.1		✓					✓
ES1325458-004	21-NOV-2013 15:00	LE_SB07_0.5		✓					✓
ES1325458-005	21-NOV-2013 15:00	LF_SB02_0.1		✓					✓
ES1325458-006	21-NOV-2013 15:00	D01_211113_JK		✓					✓
ES1325458-007	21-NOV-2013 15:00	LF_MW01_0.1		✓					✓
ES1325458-008	21-NOV-2013 15:00	LF_SB01_0.1		✓					✓
ES1325458-009	21-NOV-2013 15:00	LF_SB04_0.1		✓					✓
ES1325458-010	21-NOV-2013 15:00	LQ_SB07_0.1		✓	✓				✓
ES1325458-013	21-NOV-2013 15:00	LE_SB05_3.0							✓
ES1325458-014	21-NOV-2013 15:00	LE_MW03_2.0							✓
ES1325458-015	21-NOV-2013 15:00	LE_SB06_3.0							✓
ES1325458-016	21-NOV-2013 15:00	LE_SB06_1.0							✓
ES1325458-017	21-NOV-2013 15:00	LE_SB08_3.0							✓
ES1325458-018	21-NOV-2013 15:00	LE_MW04_2.0							✓
ES1325458-019	21-NOV-2013 15:00	LE_MW06_2.5							✓
ES1325458-020	21-NOV-2013 15:00	LE_SB07_2.3							✓
ES1325458-021	21-NOV-2013 15:00	LE_MW04_4.0							✓
ES1325458-022	21-NOV-2013 15:00	LE_SB07_1.6							✓
ES1325458-023	21-NOV-2013 15:00	LE_MW03_2.8							✓
ES1325458-024	21-NOV-2013 15:00	TS_211113				✓			
ES1325458-025	21-NOV-2013 15:00	TB_211113					✓		
ES1325458-026	21-NOV-2013 15:00	LP_MW02_0.9	✓						
ES1325458-027	21-NOV-2013 15:00	LP_MW02_2.9							✓
ES1325458-028	21-NOV-2013 15:00	LP_MW03_1.4		✓					✓
ES1325458-029	21-NOV-2013 15:00	LP_MW03_2.9	✓						
ES1325458-030	21-NOV-2013 15:00	LP_SB07_2.9							✓
ES1325458-031	21-NOV-2013 15:00	LP_SB05_3.3	✓						
ES1325458-032	21-NOV-2013 15:00	LE_SB04_2.0							✓
ES1325458-033	21-NOV-2013 15:00	LE_SB04_3.0					✓		
ES1325458-034	21-NOV-2013 15:00	LE_SB02_1.5							✓
ES1325458-035	21-NOV-2013 15:00	LE_SB02_1.9					✓		
ES1325458-036	21-NOV-2013 15:00	TSC				✓			



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-24 TRH/BTEX/NPAH/Phenols
ES1325458-011	21-NOV-2013 15:00	R01_211113_JK	✓
ES1325458-012	20-NOV-2013 15:00	R01_201113_JK	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### JOHN EWING

- \*AU Certificate of Analysis - NATA ( COA ) Email john.ewing@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email john.ewing@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email john.ewing@erm.com
- Chain of Custody (CoC) ( COC ) Email john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG ) Email john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT ) Email john.ewing@erm.com
- EDI Format - XTab ( XTAB ) Email john.ewing@erm.com

#### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

#### SYMPHONY MACGEN

- \*AU Certificate of Analysis - NATA ( COA ) Email symphony.macgen@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email symphony.macgen@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC ) Email symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG ) Email symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT ) Email symphony.macgen@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com



## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325458</b>	Page	: 1 of 25
Amendment	: <b>1</b>		
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony-Liddell	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0244198		
C-O-C number	: ----	Date Samples Received	: 25-NOV-2013
Sampler	: JL	Issue Date	: 10-JAN-2014
Site	: LIDDELL/BAYSWATER		
Quote number	: SY/794/13	No. of samples received	: 36
		No. of samples analysed	: 33

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**
- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**
- **This report has been amended as a result of misinterpretation of sample identification numbers (IDs). All analysis results are as per the previous report**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LA_MW03_0.1	LP_SB05_0.1	LF_SB03_0.1	LE_SB07_0.5	LF_SB02_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-001	ES1325458-002	ES1325458-003	ES1325458-004	ES1325458-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	29.6	11.4	9.1	18.6	16.9
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	247	590	568	577	657
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	9	12	16	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	10	12	13	16
Copper	7440-50-8	5	mg/kg	37	7	9	29	13
Lead	7439-92-1	5	mg/kg	60	10	12	13	9
Nickel	7440-02-0	2	mg/kg	10	9	17	10	28
Zinc	7440-66-6	5	mg/kg	439	44	50	58	43
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LA_MW03_0.1	LP_SB05_0.1	LF_SB03_0.1	LE_SB07_0.5	LF_SB02_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-001	ES1325458-002	ES1325458-003	ES1325458-004	ES1325458-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	2.5	1.2	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	3.7	3.6	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	2.6	3.2	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	1.5	1.6	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	1.8	1.8	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.5	2.8	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.5	1.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.0	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	1.2	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	14.1	18.7	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.8	2.2	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.1	2.4	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.4	2.6	1.2	1.2	1.2
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	230	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	230	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	300	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	300	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LA_MW03_0.1	LP_SB05_0.1	LF_SB03_0.1	LE_SB07_0.5	LF_SB02_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-001	ES1325458-002	ES1325458-003	ES1325458-004	ES1325458-005
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	86.2	96.4	93.4	83.4	71.1
2-Chlorophenol-D4	93951-73-6	0.1	%	83.4	99.6	98.4	77.0	64.8
2,4,6-Tribromophenol	118-79-6	0.1	%	98.0	118	105	105	99.4
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	99.4	110	104	94.0	88.3
Anthracene-d10	1719-06-8	0.1	%	81.0	99.8	92.9	95.4	92.8
4-Terphenyl-d14	1718-51-0	0.1	%	83.3	91.7	85.9	88.2	86.4
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	116	91.9	114	93.0	103
Toluene-D8	2037-26-5	0.1	%	112	89.6	118	90.4	95.3
4-Bromofluorobenzene	460-00-4	0.1	%	104	87.0	111	93.1	91.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				D01_211113_JK	LF_MW01_0.1	LF_SB01_0.1	LF_SB04_0.1	LQ_SB07_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-006	ES1325458-007	ES1325458-008	ES1325458-009	ES1325458-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.2	15.1	17.4	13.1	15.2
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	583	460	593	608	477
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	13	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	14	18	14	17
Copper	7440-50-8	5	mg/kg	17	11	18	11	17
Lead	7439-92-1	5	mg/kg	6	<5	5	13	<5
Nickel	7440-02-0	2	mg/kg	37	20	26	21	31
Zinc	7440-66-6	5	mg/kg	45	40	52	58	78
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	----	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				D01_211113_JK	LF_MW01_0.1	LF_SB01_0.1	LF_SB04_0.1	LQ_SB07_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-006	ES1325458-007	ES1325458-008	ES1325458-009	ES1325458-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<b>1970</b>	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<b>150</b>	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<b>2120</b>	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<b>80</b>	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<b>2070</b>	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<b>2150</b>	<50	<50



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				D01_211113_JK	LF_MW01_0.1	LF_SB01_0.1	LF_SB04_0.1	LQ_SB07_0.1
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-006	ES1325458-007	ES1325458-008	ES1325458-009	ES1325458-010
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	80	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	106
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	78.4	94.8	92.7	86.0	90.3
2-Chlorophenol-D4	93951-73-6	0.1	%	73.3	101	96.2	88.4	86.2
2,4,6-Tribromophenol	118-79-6	0.1	%	94.1	42.6	106	101	12.1
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	89.7	105	106	99.7	102
Anthracene-d10	1719-06-8	0.1	%	85.8	93.0	95.2	92.2	92.2
4-Terphenyl-d14	1718-51-0	0.1	%	80.0	86.8	87.0	84.9	85.8
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	90.1	106	101	94.6	106
Toluene-D8	2037-26-5	0.1	%	95.5	91.7	100	96.0	96.2
4-Bromofluorobenzene	460-00-4	0.1	%	93.6	91.3	93.3	88.7	94.1





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB05_3.0	LE_MW03_2.0	LE_SB06_3.0	LE_SB06_1.0	LE_SB08_3.0
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-013	ES1325458-014	ES1325458-015	ES1325458-016	ES1325458-017
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.3	24.6	17.5	22.6	19.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	14	11	6	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	18	12	9	24
Copper	7440-50-8	5	mg/kg	<5	12	8	16	5
Lead	7439-92-1	5	mg/kg	8	11	14	11	12
Nickel	7440-02-0	2	mg/kg	<2	16	8	9	12
Zinc	7440-66-6	5	mg/kg	6	28	44	33	28
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	1.8	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2.3	<0.5	1.6	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB05_3.0	LE_MW03_2.0	LE_SB06_3.0	LE_SB06_1.0	LE_SB08_3.0
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-013	ES1325458-014	ES1325458-015	ES1325458-016	ES1325458-017
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	4.1	<0.5	2.4	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	16	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	830	<50	450	<50
C15 - C28 Fraction	----	100	mg/kg	<100	1960	<100	900	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	2790	<50	1350	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	31	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	1590	<50	800	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	1210	<100	550	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	2800	<50	1350	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	1590	<50	800	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB05_3.0	LE_MW03_2.0	LE_SB06_3.0	LE_SB06_1.0	LE_SB08_3.0
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-013	ES1325458-014	ES1325458-015	ES1325458-016	ES1325458-017
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	87.4	79.3	65.9	79.3	81.0
2-Chlorophenol-D4	93951-73-6	0.1	%	78.2	51.3	63.7	77.2	71.3
2,4,6-Tribromophenol	118-79-6	0.1	%	105	99.3	88.8	99.4	96.6
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	101	81.1	84.2	96.0	96.2
Anthracene-d10	1719-06-8	0.1	%	95.7	90.0	84.0	81.0	89.2
4-Terphenyl-d14	1718-51-0	0.1	%	89.1	84.9	78.4	81.7	83.2
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	123	101	93.8	98.1	104
Toluene-D8	2037-26-5	0.1	%	125	92.5	86.6	96.0	98.2
4-Bromofluorobenzene	460-00-4	0.1	%	122	95.8	89.8	102	98.0



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW04_2.0	LE_MW06_2.5	LE_SB07_2.3	LE_MW04_4.0	LE_SB07_1.6
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-018	ES1325458-019	ES1325458-020	ES1325458-021	ES1325458-022
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.5	15.9	19.2	17.4	19.5
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	7	8	<5	17
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	5	9	12	6	11
Copper	7440-50-8	5	mg/kg	<5	<5	14	<5	26
Lead	7439-92-1	5	mg/kg	8	11	17	11	21
Nickel	7440-02-0	2	mg/kg	<2	4	8	<2	12
Zinc	7440-66-6	5	mg/kg	10	23	34	<5	57
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW04_2.0	LE_MW06_2.5	LE_SB07_2.3	LE_MW04_4.0	LE_SB07_1.6
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-018	ES1325458-019	ES1325458-020	ES1325458-021	ES1325458-022
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<b>50</b>	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<b>240</b>	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<b>290</b>	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<b>14</b>	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<b>14</b>	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<b>100</b>	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<b>220</b>	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<b>320</b>	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<b>100</b>	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW04_2.0	LE_MW06_2.5	LE_SB07_2.3	LE_MW04_4.0	LE_SB07_1.6
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-018	ES1325458-019	ES1325458-020	ES1325458-021	ES1325458-022
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	92.0	94.4	79.8	72.2	89.0
2-Chlorophenol-D4	93951-73-6	0.1	%	96.1	100	75.6	70.6	94.8
2,4,6-Tribromophenol	118-79-6	0.1	%	104	106	98.4	84.8	97.1
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	108	108	96.6	87.1	102
Anthracene-d10	1719-06-8	0.1	%	94.4	94.4	91.4	79.5	89.5
4-Terphenyl-d14	1718-51-0	0.1	%	89.2	89.9	85.7	74.1	84.7
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	99.5	97.7	92.2	101
Toluene-D8	2037-26-5	0.1	%	101	90.4	86.6	92.6	102
4-Bromofluorobenzene	460-00-4	0.1	%	98.1	93.4	88.8	86.3	103



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW03_2.8	TS_211113	TB_211113	LP_MW02_2.9	LP_MW03_1.4
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-023	ES1325458-024	ES1325458-025	ES1325458-027	ES1325458-028
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.9	----	----	17.9	12.9
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	No
Asbestos Type	1332-21-4	-	--	----	----	----	----	-
Sample weight (dry)	----	0.01	g	----	----	----	----	533
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	----	----	12	17
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	<1
Chromium	7440-47-3	2	mg/kg	12	----	----	10	17
Copper	7440-50-8	5	mg/kg	6	----	----	6	24
Lead	7439-92-1	5	mg/kg	15	----	----	11	14
Nickel	7440-02-0	2	mg/kg	4	----	----	3	62
Zinc	7440-66-6	5	mg/kg	18	----	----	14	75
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	----	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW03_2.8	TS_211113	TB_211113	LP_MW02_2.9	LP_MW03_1.4
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-023	ES1325458-024	ES1325458-025	ES1325458-027	ES1325458-028
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	<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	<0.5	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	----	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	----	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	<50	<50
<b>EP080: BTEXN</b>								





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW03_2.8	TS_211113	TB_211113	LP_MW02_2.9	LP_MW03_1.4
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-023	ES1325458-024	ES1325458-025	ES1325458-027	ES1325458-028
<b>EP080: BTEXN - Continued</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	0.6	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	17.4	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	10.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	4.2	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	14.7	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	34.8	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.6	----	----	99.8	100
2-Chlorophenol-D4	93951-73-6	0.1	%	108	----	----	108	108
2,4,6-Tribromophenol	118-79-6	0.1	%	92.0	----	----	91.3	89.0
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	107	----	----	108	108
Anthracene-d10	1719-06-8	0.1	%	94.8	----	----	95.2	98.1
4-Terphenyl-d14	1718-51-0	0.1	%	117	----	----	126	124
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	97.7	101	89.3	101	104
Toluene-D8	2037-26-5	0.1	%	92.7	86.2	78.4	91.4	90.4
4-Bromofluorobenzene	460-00-4	0.1	%	92.2	89.4	74.8	89.0	87.3



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB07_2.9	LE_SB04_2.0	LE_SB04_3.0	LE_SB02_1.5	LE_SB02_1.9
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-030	ES1325458-032	ES1325458-033	ES1325458-034	ES1325458-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.0	16.2	14.3	17.9	21.7
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	22	----	<5	----
Cadmium	7440-43-9	1	mg/kg	3	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	67	20	----	8	----
Copper	7440-50-8	5	mg/kg	42	17	----	<5	----
Lead	7439-92-1	5	mg/kg	6	11	----	11	----
Nickel	7440-02-0	2	mg/kg	103	6	----	<2	----
Zinc	7440-66-6	5	mg/kg	46	46	----	11	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB07_2.9	LE_SB04_2.0	LE_SB04_3.0	LE_SB02_1.5	LE_SB02_1.9
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-030	ES1325458-032	ES1325458-033	ES1325458-034	ES1325458-035
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	<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	<0.5	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	----	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	----	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<b>90</b>	<50	<b>60</b>	<b>250</b>
C15 - C28 Fraction	----	100	mg/kg	<100	<b>280</b>	<100	<b>230</b>	<b>700</b>
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<b>370</b>	<50	<b>290</b>	<b>950</b>
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<b>190</b>	<50	<b>140</b>	<b>510</b>
>C16 - C34 Fraction	----	100	mg/kg	<100	<b>180</b>	<100	<b>140</b>	<b>420</b>
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<b>370</b>	<50	<b>280</b>	<b>930</b>
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<b>190</b>	<50	<b>140</b>	<b>510</b>
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB07_2.9	LE_SB04_2.0	LE_SB04_3.0	LE_SB02_1.5	LE_SB02_1.9
				21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00	21-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325458-030	ES1325458-032	ES1325458-033	ES1325458-034	ES1325458-035
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	103	96.4	----	105	----
2-Chlorophenol-D4	93951-73-6	0.1	%	112	104	----	114	----
2.4.6-Tribromophenol	118-79-6	0.1	%	90.2	87.2	----	97.8	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	113	104	----	113	----
Anthracene-d10	1719-06-8	0.1	%	103	93.0	----	101	----
4-Terphenyl-d14	1718-51-0	0.1	%	127	119	----	128	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	105	99.8	101	95.5	95.4
Toluene-D8	2037-26-5	0.1	%	93.0	92.4	88.5	88.0	91.6
4-Bromofluorobenzene	460-00-4	0.1	%	88.7	87.7	84.7	85.6	88.9



## Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

<b>TSC</b>	----	----	----	----
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Client sampling date / time

21-NOV-2013 15:00	----	----	----	----
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<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<b>ES1325458-036</b>	----	----	----	----
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### EP080: BTEXN

<b>Benzene</b>	71-43-2	0.2	mg/kg	<b>0.8</b>	----	----	----	----
<b>Toluene</b>	108-88-3	0.5	mg/kg	<b>19.3</b>	----	----	----	----
<b>Ethylbenzene</b>	100-41-4	0.5	mg/kg	<b>2.2</b>	----	----	----	----
<b>meta- &amp; para-Xylene</b>	108-38-3 106-42-3	0.5	mg/kg	<b>11.0</b>	----	----	----	----
<b>ortho-Xylene</b>	95-47-6	0.5	mg/kg	<b>4.2</b>	----	----	----	----
<b>Total Xylenes</b>	1330-20-7	0.5	mg/kg	<b>15.2</b>	----	----	----	----
<b>Sum of BTEX</b>	----	0.2	mg/kg	<b>37.5</b>	----	----	----	----
<b>Naphthalene</b>	91-20-3	1	mg/kg	<b>&lt;1</b>	----	----	----	----

### EP080S: TPH(V)/BTEX Surrogates

<b>1,2-Dichloroethane-D4</b>	17060-07-0	0.1	%	<b>101</b>	----	----	----	----
<b>Toluene-D8</b>	2037-26-5	0.1	%	<b>88.6</b>	----	----	----	----
<b>4-Bromofluorobenzene</b>	460-00-4	0.1	%	<b>91.4</b>	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_211113_JK	R01_201113_JK	---	---	---
				21-NOV-2013 15:00	20-NOV-2013 15:00	---	---	---
				ES1325458-011	ES1325458-012	---	---	---
Compound	CAS Number	LOR	Unit					
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	---	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	<50	---	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_211113_JK	R01_201113_JK	---	---	---
				21-NOV-2013 15:00	20-NOV-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1325458-011	ES1325458-012	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	35.1	37.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	80.7	83.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	99.1	83.2	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	90.4	112	----	----	----
Anthracene-d10	1719-06-8	0.1	%	109	90.3	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	104	107	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	101	----	----	----
Toluene-D8	2037-26-5	0.1	%	109	98.6	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	102	88.7	----	----	----



### Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

<b>R01_211113_JK</b>	<b>R01_201113_JK</b>	----	----	----
21-NOV-2013 15:00	20-NOV-2013 15:00	----	----	----
<b>ES1325458-011</b>	<b>ES1325458-012</b>	----	----	----

Client sampling date / time

Compound CAS Number LOR Unit

EP080S: TPH(V)/BTEX Surrogates - Continued

### Analytical Results

#### Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LA_MW03_0.1 - 21-NOV-2013 15:00	Dark grey-brown soil with some vegetation and small coal pieces
EA200: Description	LP_SB05_0.1 - 21-NOV-2013 15:00	Light brown clay soil
EA200: Description	LF_SB03_0.1 - 21-NOV-2013 15:00	Light brown clay soil
EA200: Description	LE_SB07_0.5 - 21-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LF_SB02_0.1 - 21-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	D01_211113_JK - 21-NOV-2013 15:00	Mid brown clay soil with some vegetation
EA200: Description	LF_MW01_0.1 - 21-NOV-2013 15:00	Mix of light and dark brown and grey soil
EA200: Description	LF_SB01_0.1 - 21-NOV-2013 15:00	Mix of light and dark brown and grey soil
EA200: Description	LF_SB04_0.1 - 21-NOV-2013 15:00	Mid brown clay soil
EA200: Description	LQ_SB07_0.1 - 21-NOV-2013 15:00	Mix of light brown and grey soil
EA200: Description	LP_MW03_1.4 - 21-NOV-2013 15:00	Mid brown clay soil with small to medium sized brown rocks





## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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

<b>Work Order</b>	<b>: ES1325458</b>	Page	: 1 of 20
<b>Amendment</b>	<b>: 1</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: Project Symphony-Liddell	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL/BAYSWATER	<b>Date Samples Received</b>	: 25-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 10-JAN-2014
<b>Sampler</b>	: JL	<b>No. of samples received</b>	: 36
<b>Order number</b>	: 0244198	<b>No. of samples analysed</b>	: 33
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3186321)</b>									
ES1325444-019	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.0	10.5	4.7	0% - 50%
ES1325444-038	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.7	13.7	7.1	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3186322)</b>									
ES1325458-005	LF_SB02_0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.9	19.8	15.9	0% - 50%
ES1325458-018	LE_MW04_2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.5	16.0	3.2	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3186324)</b>									
ES1325458-032	LE_SB04_2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.2	15.2	6.0	0% - 50%
ES1325574-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.4	22.2	1.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3183821)</b>									
ES1325458-001	LA_MW03_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	17	18.5	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	12	35.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	44	17.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	60	42	35.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	439	446	1.5	0% - 20%
ES1325458-013	LE_SB05_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	5	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	6	0.0	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3183824)</b>									
ES1325458-023	LE_MW03_2.8	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	11	14.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	6	37.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	11	51.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	11	32.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	28	47.6	No Limit
ES1325575-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	20	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	5	36.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3183824) - continued</b>									
ES1325575-001	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	13	14	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	145	128	11.9	0% - 20%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3183823)</b>									
ES1325458-001	LA_MW03_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3183825)</b>									
ES1325458-023	LE_MW03_2.8	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325575-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3185535)</b>									
ES1325580-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325580-007	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3181216)</b>									
ES1325458-001	LA_MW03_0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		ES1325458-013	LE_SB05_3.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5
EP075(SIM): 2-Chlorophenol	95-57-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2.4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2.4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2.6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3182017)</b>									
ES1325458-023	LE_MW03_2.8	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3182017) - continued</b>									
ES1325458-023	LE_MW03_2.8	EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325575-005	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181216)</b>									
ES1325458-001	LA_MW03_0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	2.5	2.2	13.7	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	3.7	3.2	14.6	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.6	2.1	19.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.5	1.2	22.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.8	1.5	21.6	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.5	1.3	14.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181216) - continued</b>									
ES1325458-001	LA_MW03_0.1	EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	14.1	11.5	# 20.3	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.8	<0.5	48.2	No Limit
ES1325458-013	LE_SB05_3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3182017)</b>									
ES1325458-023	LE_MW03_2.8	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3182017) - continued</b>									
ES1325458-023	LE_MW03_2.8	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325575-005	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181215)</b>									
ES1325458-001	LA_MW03_0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	230	180	20.7	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181265)</b>									
ES1325458-001	LA_MW03_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181468)</b>									
ES1325458-023	LE_MW03_2.8	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325458-035	LE_SB02_1.9	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3182016)</b>									
ES1325458-023	LE_MW03_2.8	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325575-005	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit





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 (%)
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181215)</b>									
ES1325458-001	LA_MW03_0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	300	220	30.8	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181265)</b>									
ES1325458-001	LA_MW03_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181468)</b>									
ES1325458-023	LE_MW03_2.8	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325458-035	LE_SB02_1.9	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3182016)</b>									
ES1325458-023	LE_MW03_2.8	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325575-005	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3181265)</b>									
ES1325458-001	LA_MW03_0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325458-013	LE_SB05_3.0	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		
<b>EP080: BTEXN (QC Lot: 3181468)</b>									
ES1325458-023	LE_MW03_2.8	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	106-42-3								



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 (%)	
<b>EP080: BTEXN (QC Lot: 3181468) - continued</b>										
ES1325458-023	LE_MW03_2.8	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
ES1325458-035	LE_SB02_1.9	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
<b>Sub-Matrix: WATER</b>										
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3186190)</b>										
ES1325458-011	R01_211113_JK	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
ES1325573-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3186190)</b>										
ES1325458-011	R01_211113_JK	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
ES1325573-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3186190)</b>										
ES1325458-011	R01_211113_JK	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
ES1325573-006	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit			
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit			



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183821)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	114	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	104	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	115	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	118	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	116	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	109	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	118	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	106	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	114	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	112	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	110	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	110	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183823)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.9	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.2	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185535)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	# 127	57.4	117	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181216)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	96.7	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	99.9	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	104	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	107	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	78.7	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	100	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	96.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.7	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	95.7	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	92.3	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	95.3	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	29.3	3.9	57	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3182017)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	94.4	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.3	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	101	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	102	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	79.3	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	89.2	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	89.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	93.4	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	89.0	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	85.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	81.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	12.2	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181216)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	98.1	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	108	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	106	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	109	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	110	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	111	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	102	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	102	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	97.8	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	101	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	94.3	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	95.1	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	91.8	72.4	114	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3182017)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	95.3	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	103	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	104	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	100	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	101	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	94.4	73	121	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3182017) - continued</b>									
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	98.4	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	77.2	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	84.1	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	92.7	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	86.9	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	104	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	106	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181215)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	97.4	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	99.4	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	87.4	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181265)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.2	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.0	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3182016)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	111	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	112	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	99.3	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181215)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	92.9	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	99.2	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	66.5	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181265)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.8	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.2	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3182016)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	107	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	110	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	91.7	63	131	
<b>EP080: BTEXN (QCLot: 3181265)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	75.2	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	77.7	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	72.1	58	118	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080: BTEXN (QCLot: 3181265) - continued</b>									
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	77.2	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	81.3	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	86.2	62	138	
<b>EP080: BTEXN (QCLot: 3181468)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.1	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.7	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	92.4	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	94.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.0	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3179769)</b>									
EP075(SIM): Phenol	108-95-2	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	44.0 ----	24.5 ----	61.9 ----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	75.0 ----	63.8 ----	110 ----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	68.7 ----	55.9 ----	112 ----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4 2	µg/L µg/L	---- <2.0	10 µg/L ----	70.2 ----	42.5 ----	114 ----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	70.9 ----	62.7 ----	117 ----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	71.3 ----	59.9 ----	112 ----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	82.1 ----	59.3 ----	122 ----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	88.2 ----	64.3 ----	118 ----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	92.4 ----	63 ----	119 ----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	85.7 ----	58.7 ----	118 ----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2 1	µg/L µg/L	---- <1.0	5 µg/L ----	76.8 ----	50 ----	108 ----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS	Low	High		
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3179769) - continued</b>									
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	59.4	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3179769)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	88.1	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	88.7	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	95.1	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	95.1	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	99.9	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	88.7	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	103	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	104	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	95.3	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	107	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	93.9	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	99.1	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	94.5	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	91.4	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	91.0	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	103	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3179768)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	103	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	102	62	120	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	114	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3179768)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	97.3	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	106	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	105	67	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	119	75	127	
<b>EP080: BTEXN (QCLot: 3186190)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	88.6	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	107	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	99.7	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.0	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	98.4	70	124	

### 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
						Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183821)</b>							
ES1325458-001	LA_MW03_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	109	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	94.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	98.6	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>							
ES1325458-023	LE_MW03_2.8	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	102	70	130





Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824) - continued</b>							
ES1325458-023	LE_MW03_2.8	EG005T: Nickel	7440-02-0	50 mg/kg	109	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	111	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183823)</b>							
ES1325458-001	LA_MW03_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>							
ES1325458-023	LE_MW03_2.8	EG035T: Mercury	7439-97-6	5 mg/kg	98.7	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185535)</b>							
ES1325580-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	127	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181216)</b>							
ES1325458-001	LA_MW03_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.5	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	97.4	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	84.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	37.1	20	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3182017)</b>							
ES1325458-023	LE_MW03_2.8	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.5	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	95.6	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	76.8	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	89.7	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	42.8	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181216)</b>							
ES1325458-001	LA_MW03_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	74.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	89.1	70	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3182017)</b>							
ES1325458-023	LE_MW03_2.8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.1	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.0	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181215)</b>							
ES1325458-001	LA_MW03_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	93.3	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	102	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	91.2	52	132
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181265)</b>							
ES1325458-001	LA_MW03_0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	102	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>							
ES1325458-023	LE_MW03_2.8	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.8	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3182016)</b>							



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3182016) - continued</b>							
ES1325458-023	LE_MW03_2.8	EP071: C10 - C14 Fraction	----	640 mg/kg	79.2	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	89.3	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	80.8	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181215)</b>							
ES1325458-001	LA_MW03_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	121	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	94.7	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	70.4	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181265)</b>							
ES1325458-001	LA_MW03_0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	102	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>							
ES1325458-023	LE_MW03_2.8	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	84.2	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3182016)</b>							
ES1325458-023	LE_MW03_2.8	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	106	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	86.0	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	65.1	52	132
<b>EP080: BTEXN (QCLot: 3181265)</b>							
ES1325458-001	LA_MW03_0.1	EP080: Benzene	71-43-2	2.5 mg/kg	99.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	96.9	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.2	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	102	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	99.9	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	84.0	70	130
<b>EP080: BTEXN (QCLot: 3181468)</b>							
ES1325458-023	LE_MW03_2.8	EP080: Benzene	71-43-2	2.5 mg/kg	72.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	75.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	79.1	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	75.6	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)</b>							
ES1325458-011	R01_211113_JK	EP080: C6 - C9 Fraction	----	325 µg/L	114	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)</b>							
ES1325458-011	R01_211113_JK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	70	130
<b>EP080: BTEXN (QCLot: 3186190)</b>							
ES1325458-011	R01_211113_JK	EP080: Benzene	71-43-2	25 µg/L	73.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	87.1	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.9	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	87.0	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.3	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	99.4	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181215)</b>										
ES1325458-001	LA_MW03_0.1	EP071: C10 - C14 Fraction	----	640 mg/kg	93.3	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	102	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	91.2	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181215)</b>										
ES1325458-001	LA_MW03_0.1	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	121	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	94.7	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	70.4	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181216)</b>										
ES1325458-001	LA_MW03_0.1	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.5	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	97.4	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	75.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	84.3	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	37.1	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181216)</b>										
ES1325458-001	LA_MW03_0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	74.3	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	89.1	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181265)</b>										
ES1325458-001	LA_MW03_0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	102	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181265)</b>										
ES1325458-001	LA_MW03_0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	102	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080: BTEXN (QCLot: 3181265)</b>											
ES1325458-001	LA_MW03_0.1	EP080: Benzene	71-43-2	2.5 mg/kg	99.0	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	96.9	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	98.2	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	102	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	99.9	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	84.0	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>											
ES1325458-023	LE_MW03_2.8	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>											
ES1325458-023	LE_MW03_2.8	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	84.2	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3181468)</b>											
ES1325458-023	LE_MW03_2.8	EP080: Benzene	71-43-2	2.5 mg/kg	72.2	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.8	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.5	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	79.1	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.6	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	75.6	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3182016)</b>											
ES1325458-023	LE_MW03_2.8	EP071: C10 - C14 Fraction	----	640 mg/kg	79.2	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	89.3	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	80.8	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3182016)</b>											
ES1325458-023	LE_MW03_2.8	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	106	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	86.0	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	65.1	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3182017)</b>											
ES1325458-023	LE_MW03_2.8	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.5	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	95.6	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	76.8	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	89.7	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	42.8	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3182017)</b>											
ES1325458-023	LE_MW03_2.8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.1	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183821)</b>											
ES1325458-001	LA_MW03_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	109	----	70	130	----	----	



Sub-Matrix: SOIL					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EG035T: Total Metals by ICP-AES (QCLot: 3183821) - continued</b>											
ES1325458-001	LA_MW03_0.1	EG005T: Cadmium	7440-43-9	50 mg/kg	105	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	101	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	107	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	94.4	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	111	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	98.6	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183823)</b>											
ES1325458-001	LA_MW03_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>											
ES1325458-023	LE_MW03_2.8	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	109	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	102	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	109	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	111	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>											
ES1325458-023	LE_MW03_2.8	EG035T: Mercury	7439-97-6	5 mg/kg	98.7	----	70	130	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185535)</b>											
ES1325580-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	127	----	70	130	----	----	

Sub-Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186190)</b>											
ES1325458-011	R01_211113_JK	EP080: C6 - C9 Fraction	----	325 µg/L	114	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186190)</b>											
ES1325458-011	R01_211113_JK	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	117	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3186190)</b>											
ES1325458-011	R01_211113_JK	EP080: Benzene	71-43-2	25 µg/L	73.0	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	87.1	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.9	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	87.0	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	88.3	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	99.4	----	70	130	----	----	



## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325458</b>	Page	: 1 of 13
Amendment	: <b>1</b>		
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony-Liddell	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL/BAYSWATER		
C-O-C number	: ---	Date Samples Received	: 25-NOV-2013
Sampler	: JL	Issue Date	: 10-JAN-2014
Order number	: 0244198		
Quote number	: SY/794/13	No. of samples received	: 36
		No. of samples analysed	: 33

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LE_SB05_3.0, LE_SB06_3.0, LE_SB08_3.0, LE_MW06_2.5, LE_MW04_4.0, LE_MW03_2.8, LP_MW03_1.4, LE_SB04_2.0, LE_SB02_1.5,	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1, LE_MW03_2.0, LE_SB06_1.0, LE_MW04_2.0, LE_SB07_2.3, LE_SB07_1.6, LP_MW02_2.9, LP_SB07_2.9, LE_SB04_3.0, LE_SB02_1.9	21-NOV-2013	----	----	----	29-NOV-2013	05-DEC-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
<b>Snap Lock Bag (EA200)</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LP_MW03_1.4	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1,	21-NOV-2013	---	20-MAY-2014	----	04-DEC-2013	02-JUN-2014	✓



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
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b>							
LA_MW03_0.1, LP_SB05_0.1, LF_SB03_0.1, LE_SB07_0.5, LF_SB02_0.1, D01_211113_JK, LF_MW01_0.1, LF_SB01_0.1, LF_SB04_0.1, LQ_SB07_0.1, LE_SB05_3.0, LE_MW03_2.0, LE_SB06_3.0, LE_SB06_1.0, LE_SB08_3.0, LE_MW04_2.0, LE_MW06_2.5, LE_SB07_2.3, LE_MW04_4.0, LE_SB07_1.6, LE_MW03_2.8, LP_MW02_2.9, LP_MW03_1.4, LP_SB07_2.9, LE_SB04_2.0, LE_SB02_1.5	21-NOV-2013	28-NOV-2013	20-MAY-2014	✓	29-NOV-2013	20-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b>							
LA_MW03_0.1, LP_SB05_0.1, LF_SB03_0.1, LE_SB07_0.5, LF_SB02_0.1, D01_211113_JK, LF_MW01_0.1, LF_SB01_0.1, LF_SB04_0.1, LQ_SB07_0.1, LE_SB05_3.0, LE_MW03_2.0, LE_SB06_3.0, LE_SB06_1.0, LE_SB08_3.0, LE_MW04_2.0, LE_MW06_2.5, LE_SB07_2.3, LE_MW04_4.0, LE_SB07_1.6, LE_MW03_2.8, LP_MW02_2.9, LP_MW03_1.4, LP_SB07_2.9, LE_SB04_2.0, LE_SB02_1.5	21-NOV-2013	28-NOV-2013	19-DEC-2013	✓	29-NOV-2013	19-DEC-2013	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>							
<b>Soil Glass Jar - Unpreserved (EP066)</b>							
LQ_SB07_0.1	21-NOV-2013	29-NOV-2013	05-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓





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	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LE_SB05_3.0, LE_SB06_3.0, LE_SB08_3.0, LE_MW06_2.5, LE_MW04_4.0,	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1, LE_MW03_2.0, LE_SB06_1.0, LE_MW04_2.0, LE_SB07_2.3, LE_SB07_1.6	21-NOV-2013	28-NOV-2013	05-DEC-2013	✓	29-NOV-2013	07-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
LE_MW03_2.8, LP_MW03_1.4, LE_SB04_2.0, LE_SB02_1.5,	LP_MW02_2.9, LP_SB07_2.9, LE_SB04_3.0, LE_SB02_1.9	21-NOV-2013	29-NOV-2013	05-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LE_SB05_3.0, LE_SB06_3.0, LE_SB08_3.0, LE_MW06_2.5, LE_MW04_4.0,	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1, LE_MW03_2.0, LE_SB06_1.0, LE_MW04_2.0, LE_SB07_2.3, LE_SB07_1.6	21-NOV-2013	28-NOV-2013	05-DEC-2013	✓	29-NOV-2013	07-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LE_MW03_2.8, LP_MW03_1.4, LE_SB04_2.0,	LP_MW02_2.9, LP_SB07_2.9, LE_SB02_1.5	21-NOV-2013	29-NOV-2013	05-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓



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	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LE_SB05_3.0, LE_SB06_3.0, LE_SB08_3.0, LE_MW06_2.5, LE_MW04_4.0,	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1, LE_MW03_2.0, LE_SB06_1.0, LE_MW04_2.0, LE_SB07_2.3, LE_SB07_1.6	21-NOV-2013	28-NOV-2013	05-DEC-2013	✓	29-NOV-2013	07-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
LE_MW03_2.8, LP_MW03_1.4, LE_SB04_2.0,	LP_MW02_2.9, LP_SB07_2.9, LE_SB04_1.5	21-NOV-2013	29-NOV-2013	05-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LA_MW03_0.1, LF_SB03_0.1, LF_SB02_0.1, LF_MW01_0.1, LF_SB04_0.1, LE_SB05_3.0, LE_SB06_3.0, LE_SB08_3.0, LE_MW06_2.5, LE_MW04_4.0, LE_MW03_2.8, TB_211113, LP_MW03_1.4, LE_SB04_2.0, LE_SB02_1.5, TSC	LP_SB05_0.1, LE_SB07_0.5, D01_211113_JK, LF_SB01_0.1, LQ_SB07_0.1, LE_MW03_2.0, LE_SB06_1.0, LE_MW04_2.0, LE_SB07_2.3, LE_SB07_1.6, TS_211113, LP_MW02_2.9, LP_SB07_2.9, LE_SB04_3.0, LE_SB02_1.9,	21-NOV-2013	28-NOV-2013	05-DEC-2013	✓	30-NOV-2013	05-DEC-2013	✓



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
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b>							
LA_MW03_0.1, LP_SB05_0.1, LF_SB03_0.1, LE_SB07_0.5, LF_SB02_0.1, D01_211113_JK, LF_MW01_0.1, LF_SB01_0.1, LF_SB04_0.1, LQ_SB07_0.1, LE_SB05_3.0, LE_MW03_2.0, LE_SB06_3.0, LE_SB06_1.0, LE_SB08_3.0, LE_MW04_2.0, LE_MW06_2.5, LE_SB07_2.3, LE_MW04_4.0, LE_SB07_1.6, LE_MW03_2.8, TB_211113, LP_MW02_2.9, LP_MW03_1.4, LP_SB07_2.9, LE_SB04_2.0, LE_SB04_3.0, LE_SB02_1.5, LE_SB02_1.9	21-NOV-2013	28-NOV-2013	05-DEC-2013	✓	30-NOV-2013	05-DEC-2013	✓

Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b>							
R01_201113_JK	20-NOV-2013	27-NOV-2013	27-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>Amber Glass Bottle - Unpreserved (EP071)</b>							
R01_211113_JK	21-NOV-2013	27-NOV-2013	28-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b>							
R01_201113_JK	20-NOV-2013	27-NOV-2013	27-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b>							
R01_211113_JK	21-NOV-2013	27-NOV-2013	28-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b>							
R01_201113_JK	20-NOV-2013	27-NOV-2013	27-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b>							
R01_211113_JK	21-NOV-2013	27-NOV-2013	28-NOV-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>							
R01_201113_JK	20-NOV-2013	30-NOV-2013	04-DEC-2013	✓	30-NOV-2013	04-DEC-2013	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>							
R01_211113_JK	21-NOV-2013	30-NOV-2013	05-DEC-2013	✓	30-NOV-2013	05-DEC-2013	✓

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 Work Order : ES1325458 Amendment 1  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : Project Symphony-Liddell



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_201113_JK	<b>20-NOV-2013</b>	<b>30-NOV-2013</b>	04-DEC-2013	✓	<b>30-NOV-2013</b>	04-DEC-2013	✓
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_211113_JK	<b>21-NOV-2013</b>	<b>30-NOV-2013</b>	05-DEC-2013	✓	<b>30-NOV-2013</b>	05-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	6	60	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	38	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	2	38	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
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<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.





## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Duplicate (DUP) RPDs</b>							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	ES1325458-001	LA_MW03_0.1	Sum of polycyclic aromatic hydrocarbons	----	20.3 %	0-20%	RPD exceeds LOR based limits
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP066: Polychlorinated Biphenyls (PCB)	3801855-002	----	Total Polychlorinated biphenyls	----	127 %	57.4-117%	Recovery greater than upper control limit

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

#### Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)S: Phenolic Compound Surrogates	ES1325458-014	LE_MW03_2.0	2-Chlorophenol-D4	93951-73-6	51.3 %	66-122 %	Recovery less than lower data quality objective
EP075(SIM)S: Phenolic Compound Surrogates	ES1325458-015	LE_SB06_3.0	2-Chlorophenol-D4	93951-73-6	63.7 %	66-122 %	Recovery less than lower data quality objective
EP075(SIM)S: Phenolic Compound Surrogates	ES1325458-005	LF_SB02_0.1	2-Chlorophenol-D4	93951-73-6	64.8 %	66-122 %	Recovery less than lower data quality objective
EP075(SIM)S: Phenolic Compound Surrogates	ES1325458-010	LQ_SB07_0.1	2.4.6-Tribromophenol	118-79-6	12.1 %	40-138 %	Recovery less than lower data quality objective

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)T: PAH Surrogates	ES1325458-012	R01_201113_JK	2-Fluorobiphenyl	321-60-8	112 %	20-104 %	Recovery greater than upper data quality objective

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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



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

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1325574</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MR JOE FERRING</b>	<b>Contact</b>	<b>: Barbara Hanna</b>
<b>Address</b>	<b>: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: 0224198</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: BAYSWATER/LIDDELL</b>		
<b>Sampler</b>	<b>: T.ARMANI</b>		

#### Dates

Date Samples Received	: 25-NOV-2013	Issue Date	: 26-NOV-2013 16:06
Client Requested Due Date	: 02-DEC-2013	Scheduled Reporting Date	: <b>02-DEC-2013</b>

#### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.6°C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 17
Security Seal	: Intact.	No. of samples analysed	: 17

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **PSD analysis will be conducted by ALS Newcastle.**
- **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.**
- **All analysis will be reported on the scheduled due date 02/12/13, except for PSD analysis will be reported on 05/12/13.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA002 pH (1:5)	SOIL - EA010 (solids): Electrical Conductivity (1:5) Electrical Conductivity (1:5)	SOIL - EA150* Particle Size Analysis by Sieving (Default sieves from SOIL - EP004 (Caribon)	Total Organic Carbon (Calc.)	SOIL - EP080 BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1325574-001	22-NOV-2013 15:00	LI_MW02_3.0	✓						✓
ES1325574-002	22-NOV-2013 15:00	LI_MW02_4.8		✓	✓	✓			
ES1325574-003	22-NOV-2013 15:00	LI_MW03_3.0							✓
ES1325574-004	22-NOV-2013 15:00	LI_MW04_4.0							✓
ES1325574-005	22-NOV-2013 15:00	TRIP BLANK						✓	
ES1325574-006	22-NOV-2013 15:00	TRIP SPIKE 14						✓	
ES1325574-007	20-NOV-2013 15:00	LP_MW04_3.0							✓
ES1325574-008	20-NOV-2013 15:00	LP_SB09_3.0							✓
ES1325574-009	20-NOV-2013 15:00	LP_SB10_3.0							✓
ES1325574-010	20-NOV-2013 15:00	LP_SB10_2.0							✓
ES1325574-011	20-NOV-2013 15:00	LE_MW01_3.0	✓	✓					✓
ES1325574-012	20-NOV-2013 15:00	LE_MW01_2.8			✓	✓			
ES1325574-013	20-NOV-2013 15:00	LE_MW02_4.0							✓
ES1325574-014	15-NOV-2013 15:00	TRIP SPIKE 3					✓		
ES1325574-015	22-NOV-2013 15:00	TRIP BLANK						✓	
ES1325574-016	15-NOV-2013 15:00	TSC 3					✓		
ES1325574-017	22-NOV-2013 15:00	TSC 14						✓	

## Proactive Holding Time Report

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



## Requested Deliverables

### MR JOE FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Attachment - Report ( SUBCO )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA ( COA )	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	symphony.macgen@erm.com
- Attachment - Report ( SUBCO )	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC )	Email	symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	symphony.macgen@erm.com
- EDI Format - XTab ( XTAB )	Email	symphony.macgen@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
-------------------------------	-------	---------------------



CHAIN OF CUSTODY

LABORATORY ADDRESS: 21 Burnside Street, Adelaide SA 5065

LABORATORY ADDRESS: 1100 North East Road, Adelaide SA 5062

LABORATORY ADDRESS: 1100 North East Road, Adelaide SA 5062

LABORATORY ADDRESS: 1100 North East Road, Adelaide SA 5062

Client: FRM, Project: Sydney, Order Number: 022498, Project Manager: J. Ferring, Sampler: T. Armani, Date: 25/11/13, Time: 8:40

Table with columns: Lab ID, Sample ID, Date/Time, Matrix, Type & Preservative, Container Information, Analysis Required, Additional Information. Includes handwritten entries for samples 1-6.

Environmental Division Sydney, Work Order ES1325574, Telephone: +61-2-8784 8555



No Split Provided for PSD



**CHAIN OF CUSTODY**

LABORATORY: 45 Clarence Street, Clayton QLD 4030  
Ph: 07 3247 2282 E: sales@als.com.au  
ALS Laboratory:  
please tick →

LABORATORY: 21 Birnie Road, Rosalie QLD 4086  
Ph: 06 3395 0080 E: admin@als.com.au

LABORATORY: 32 Shind Street, Shind QLD 4003  
Ph: 07 3247 2282 E: sales@als.com.au

LABORATORY: 25 Sarsfield Road, St Albans QLD 4090  
Ph: 07 3247 2282 E: sales@als.com.au

LABORATORY: 76 McRobert Road, Nether QLD 4270  
Ph: 07 4944 0177 E: nether@als.com.au

LABORATORY: 5 Ryan Gum Point Way, Westbrook NSW 2254  
Ph: 02 4861 9133 E: sales@westbrook.als.com.au

LABORATORY: 14-15 Dunoon Court, Darra QLD 4518  
Ph: 07 4190 8888 E: darra@als.com.au

LABORATORY: 66 Kelly Street, Wollongong NSW 2500  
Ph: 02 4223 7175 E: wolla@als.com.au

CLIENT: **ERM**

OFFICE: **Sydney**

PROJECT: **Project Synphony**

ORDER NUMBER: **0224198**

PROJECT MANAGER: **J. Percing**

SAMPLER: **T. Armani**

COC emailed to ALS? ( YES / NO)

Email Reports to (will default to PM if no other addresses are listed):

Email Invoice to (will default to PM if no other addresses are listed):

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

**TURNAROUND REQUIREMENTS:**

Standard TAT may be longer for some tests e.g.:  
Ultra Trace Organics

ALS QUOTE NO.: **SY779413**

SITE: **BAYSWATER (DEBELL)**

CONTACT PH:

SAMPLER MOBILE: **0408406395**

EDD FORMAT (if default):

RELINQUISHED BY: **T. ARMANI**

DATE/TIME:

Standard TAT (List due date):

Non Standard or urgent TAT (List due date):

COC: **3**

OF: **3**

RECEIVED BY: **SMC**

DATE/TIME: **25/11/13 11:10**

RELINQUISHED BY: **PA**

DATE/TIME: **25-11-13 17:00**

RECEIVED BY: **PA**

DATE/TIME: **26/11/13 19:00**

**FOR LABORATORY USE ONLY (Circle)**

Cleanly Sealed Inlet? Yes No  
Free ice / frozen ice blocks present upon receipt? Yes No  
Random Sample Temperature on Receipt °C

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to extract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).													Additional Information																			
		TYPE & PRESERVATIVE codes below	TOTAL CONTAINERS (refer to MATRIX)	17 Metals (As, Ba, Be, Bi, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	S-24 TRHCs (As, Cd, Cr, Ni, Pb, Zn, Hg)	Mo, Ti, Se	PCB	pH (1:5)	VOC Target Scan	Phenols (C40/BTEXN, PAH)	PCB	PH (1:5)	PROS/FOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (PO4)		Comments on filter, container levels, dilutions, or samples resulting acidic or																		
7	LP-MWD4-3.0		1 JAR	X																																
8	LP-SB09-3.0		1 Jar																																	
9	LP-SB10-3.0		1 Jar																																	
10	LP-SB10-2.0		1 Jar																																	
11	LE-MWD1-3.0		1 Jar																																	
12	LE-MWD1-2.8		1 Jar																																	
13	LE-MWD2-4.0		1 Jar																																	
14	Temp spike 3																																			
15	Temp blank																																			
16	TSC 3																																			

BTEX  
TRM/BTEX

(ES1325579)

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; OAC = Nitric Preserved Oxic; S = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Special bottle; SP = Sulfuric Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Slur; B = Unpreserved Bag.

# Certificate of Analysis

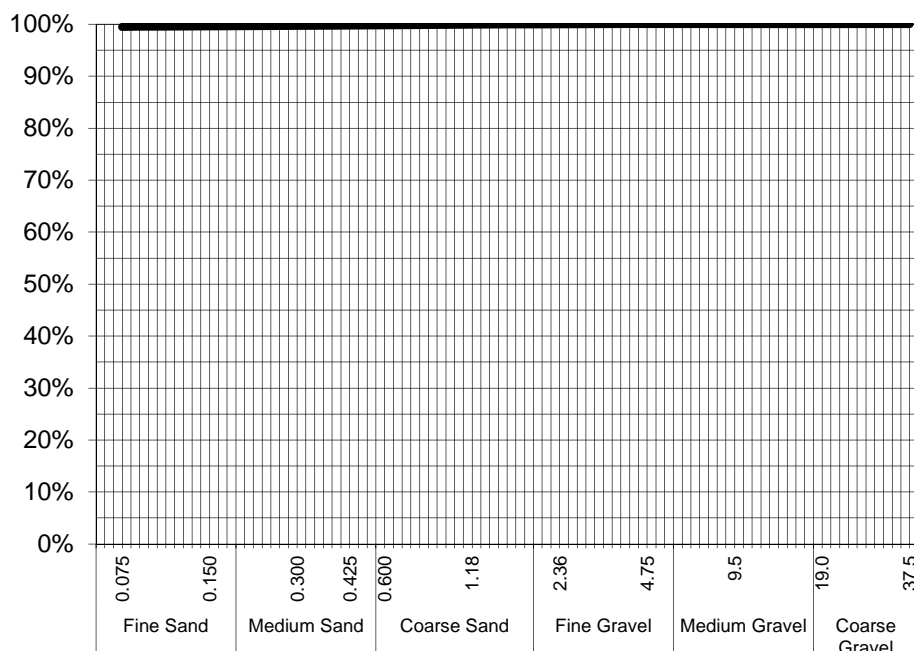
ALS Laboratory Group Pty Ltd  
 5 Rosegum Road  
 Warabrook, NSW 2304  
 pH 02 4968 9433  
 fax 02 4968 0349  
 samples.newcastle@alsenviro.com

**ALS Environmental**  
**Newcastle, NSW**



**CLIENT:** Joe Ferring **DATE REPORTED:** 6-Dec-2013  
**COMPANY:** Enviro Resources Management **DATE RECEIVED:** 25-Nov-2013  
**ADDRESS:** Grnd Floor, 33 Saunders Street **REPORT NO:** ES1325574-002 / PSD  
 Pyrmont, NSW Australia 2009  
**PROJECT:** Project Symphony **SAMPLE ID:** LI\_MW02\_4.8

## Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	100%

*Samples analysed as received.*

### Sample Comments:

**Loss on Pretreatment:** NA

**Sample Description:** Fines

**Test Method:** AS1289.3.6.1

**Analysed:** 5-Dec-13

**Limit of Reporting:** 1%

**NATA Accreditation: 825 Site: Newcastle**  
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 Accredited for compliance with ISO/IEC 17025. This document shall not be  
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**Hamish Murray**  
 Laboratory Supervisor, Newcastle  
**Authorised Signatory**



# Certificate of Analysis

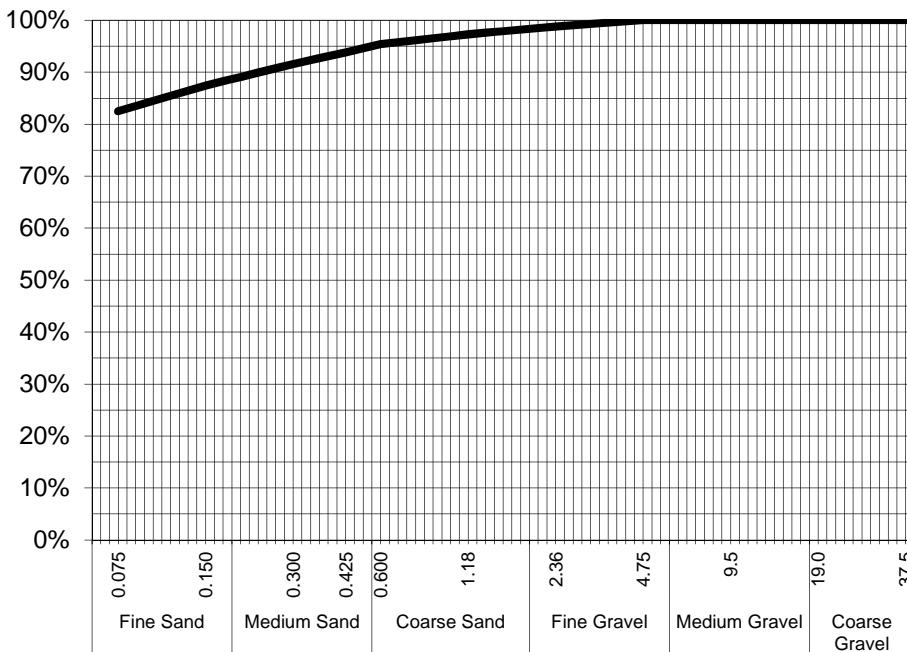
ALS Laboratory Group Pty Ltd  
 5 Rosegum Road  
 Warabrook, NSW 2304  
 pH 02 4968 9433  
 fax 02 4968 0349  
 samples.newcastle@alsenviro.com

**ALS Environmental**  
**Newcastle, NSW**



**CLIENT:** Joe Ferring **DATE REPORTED:** 6-Dec-2013  
**COMPANY:** Enviro Resources Management **DATE RECEIVED:** 25-Nov-2013  
**ADDRESS:** Grnd Floor, 33 Saunders Street **REPORT NO:** ES1325574-012 / PSD  
 Pyrmont, NSW Australia 2009  
**PROJECT:** Project Symphony **SAMPLE ID:** LE\_MW01\_2.8

**Particle Size Distribution**



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	95%
0.425	94%
0.300	92%
0.150	87%
0.075	83%

Samples analysed as received.

**Sample Comments:**

**Analysed:** 5-Dec-13

**Loss on Pretreatment:** NA

**Limit of Reporting:** 1%

**Sample Description:** Fines and sand

**Test Method:** AS1289.3.6.1

**NATA Accreditation: 825 Site: Newcastle**  
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**Hamish Murray**  
 Laboratory Supervisor, Newcastle  
**Authorised Signatory**

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325574</b>	Page	: 1 of 15
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198	Date Samples Received	: 25-NOV-2013
C-O-C number	: ----	Issue Date	: 06-DEC-2013
Sampler	: T.ARMANI	No. of samples received	: 17
Site	: BAYSWATER/LIDDELL	No. of samples analysed	: 17
Quote number	: SY/794/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



## 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.

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LI_MW02_3.0	LI_MW02_4.8	LI_MW03_3.0	LI_MW04_3.0	TB_221113
				22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-001	ES1325574-002	ES1325574-003	ES1325574-004	ES1325574-005
<b>EA150: Particle Sizing</b>								
+75µm	----	1	%	----	<1	----	----	----
+150µm	----	1	%	----	<1	----	----	----
+300µm	----	1	%	----	<1	----	----	----
+425µm	----	1	%	----	<1	----	----	----
+600µm	----	1	%	----	<1	----	----	----
+1180µm	----	1	%	----	<1	----	----	----
+2.36mm	----	1	%	----	<1	----	----	----
+4.75mm	----	1	%	----	<1	----	----	----
+9.5mm	----	1	%	----	<1	----	----	----
+19.0mm	----	1	%	----	<1	----	----	----
+37.5mm	----	1	%	----	<1	----	----	----
+75.0mm	----	1	%	----	<1	----	----	----
<b>EA002 : pH (Soils)</b>								
pH Value	----	0.1	pH Unit	5.1	----	----	----	----
<b>EA010: Conductivity</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	906	----	----	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.8	----	17.7	22.3	----
<b>EA150: Soil Classification based on Particle Size</b>								
Fines (<75 µm)	----	1	%	----	100	----	----	----
Sand (>75 µm)	----	1	%	----	<1	----	----	----
Gravel (>2mm)	----	1	%	----	<1	----	----	----
Cobbles (>6cm)	----	1	%	----	<1	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	----	6	12	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	----
Chromium	7440-47-3	2	mg/kg	13	----	16	20	----
Copper	7440-50-8	5	mg/kg	<5	----	28	32	----
Lead	7439-92-1	5	mg/kg	8	----	21	25	----
Nickel	7440-02-0	2	mg/kg	2	----	3	8	----
Zinc	7440-66-6	5	mg/kg	12	----	19	44	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	0.1	<0.1	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LI_MW02_3.0	LI_MW02_4.8	LI_MW03_3.0	LI_MW04_3.0	TB_221113
				22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-001	ES1325574-002	ES1325574-003	ES1325574-004	ES1325574-005
<b>EP004: Organic Matter</b>								
Organic Matter	----	0.5	%	----	<0.5	----	----	----
Total Organic Carbon	----	0.5	%	----	<0.5	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<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	<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW02_3.0	LI_MW02_4.8	LI_MW03_3.0	LI_MW04_3.0	TB_221113
				22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-001	ES1325574-002	ES1325574-003	ES1325574-004	ES1325574-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	1.2	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	112	----	104	108	----
2-Chlorophenol-D4	93951-73-6	0.1	%	114	----	102	114	----
2,4,6-Tribromophenol	118-79-6	0.1	%	104	----	96.4	113	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	108	----	82.5	112	----
Anthracene-d10	1719-06-8	0.1	%	100	----	76.4	102	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	LI_MW02_3.0	LI_MW02_4.8	LI_MW03_3.0	LI_MW04_3.0	TB_221113
Client sampling date / time	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00	22-NOV-2013 15:00
Compound	ES1325574-001	ES1325574-002	ES1325574-003	ES1325574-004	ES1325574-005

Compound	CAS Number	LOR	Unit	ES1325574-001	ES1325574-002	ES1325574-003	ES1325574-004	ES1325574-005
<b>EP075(SIM)T: PAH Surrogates - Continued</b>								
4-Terphenyl-d14	1718-51-0	0.1	%	96.1	----	72.4	97.6	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	99.6	----	93.7	83.5	93.7
Toluene-D8	2037-26-5	0.1	%	95.4	----	97.8	99.5	89.4
4-Bromofluorobenzene	460-00-4	0.1	%	94.4	----	97.8	98.4	91.4



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TS_221113	LP_MW04_3.0	LP_SB09_3.0	LP_SB10_3.0	LP_SB10_2.0
				22-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-006	ES1325574-007	ES1325574-008	ES1325574-009	ES1325574-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	----	15.8	15.8	12.7	15.9
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	----	12	<5	10	9
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	13	11	9	11
Copper	7440-50-8	5	mg/kg	----	14	<5	7	13
Lead	7439-92-1	5	mg/kg	----	16	8	12	25
Nickel	7440-02-0	2	mg/kg	----	19	2	11	15
Zinc	7440-66-6	5	mg/kg	----	57	33	40	44
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	----	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TS_221113	LP_MW04_3.0	LP_SB09_3.0	LP_SB10_3.0	LP_SB10_2.0
				22-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-006	ES1325574-007	ES1325574-008	ES1325574-009	ES1325574-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
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	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<b>80</b>	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	<b>640</b>	<100	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<b>380</b>	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<b>1020</b>	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<b>90</b>	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<b>60</b>	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	<50	<b>60</b>	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<b>880</b>	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<b>180</b>	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<b>1120</b>	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<b>60</b>	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<b>0.5</b>	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<b>14.6</b>	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<b>1.8</b>	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<b>9.2</b>	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<b>3.7</b>	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				TS_221113	LP_MW04_3.0	LP_SB09_3.0	LP_SB10_3.0	LP_SB10_2.0
				22-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-006	ES1325574-007	ES1325574-008	ES1325574-009	ES1325574-010
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	29.8	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	12.9	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	106	105	108	104
2-Chlorophenol-D4	93951-73-6	0.1	%	----	111	110	112	111
2,4,6-Tribromophenol	118-79-6	0.1	%	----	114	114	112	116
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	109	104	106	105
Anthracene-d10	1719-06-8	0.1	%	----	100	95.8	99.8	95.6
4-Terphenyl-d14	1718-51-0	0.1	%	----	95.5	91.8	96.0	93.4
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	98.0	102	107	97.3	93.7
Toluene-D8	2037-26-5	0.1	%	91.8	97.9	104	93.0	85.6
4-Bromofluorobenzene	460-00-4	0.1	%	91.2	97.2	99.2	92.3	81.7



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LE_MW01_3.0	LE_MW01_2.8	LE_MW02_4.0	TS3_151113	TB_221113
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	15-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-011	ES1325574-012	ES1325574-013	ES1325574-014	ES1325574-015
<b>EA150: Particle Sizing</b>								
+75µm	----	1	%	----	18	----	----	----
+150µm	----	1	%	----	13	----	----	----
+300µm	----	1	%	----	8	----	----	----
+425µm	----	1	%	----	6	----	----	----
+600µm	----	1	%	----	5	----	----	----
+1180µm	----	1	%	----	3	----	----	----
+2.36mm	----	1	%	----	1	----	----	----
+4.75mm	----	1	%	----	<1	----	----	----
+9.5mm	----	1	%	----	<1	----	----	----
+19.0mm	----	1	%	----	<1	----	----	----
+37.5mm	----	1	%	----	<1	----	----	----
+75.0mm	----	1	%	----	<1	----	----	----
<b>EA002 : pH (Soils)</b>								
pH Value	----	0.1	pH Unit	6.2	----	----	----	----
<b>EA010: Conductivity</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	382	----	----	----	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	22.4	----	18.6	----	----
<b>EA150: Soil Classification based on Particle Size</b>								
Fines (<75 µm)	----	1	%	----	82	----	----	----
Sand (>75 µm)	----	1	%	----	16	----	----	----
Gravel (>2mm)	----	1	%	----	1	----	----	----
Cobbles (>6cm)	----	1	%	----	<1	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	<5	----	5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	----	----
Chromium	7440-47-3	2	mg/kg	13	----	8	----	----
Copper	7440-50-8	5	mg/kg	6	----	<5	----	----
Lead	7439-92-1	5	mg/kg	11	----	9	----	----
Nickel	7440-02-0	2	mg/kg	4	----	3	----	----
Zinc	7440-66-6	5	mg/kg	15	----	12	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LE_MW01_3.0	LE_MW01_2.8	LE_MW02_4.0	TS3_151113	TB_221113
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	15-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-011	ES1325574-012	ES1325574-013	ES1325574-014	ES1325574-015
<b>EP004: Organic Matter</b>								
Organic Matter	----	0.5	%	----	0.7	----	----	----
Total Organic Carbon	----	0.5	%	----	<0.5	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	<2	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
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	----	<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	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_MW01_3.0	LE_MW01_2.8	LE_MW02_4.0	TS3_151113	TB_221113
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	15-NOV-2013 15:00	22-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325574-011	ES1325574-012	ES1325574-013	ES1325574-014	ES1325574-015
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
^ 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	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	31	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	34	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	25	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	4.7	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	2.8	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	1.1	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	----	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	3.9	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	9.1	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	108	----	105	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	112	----	110	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	117	----	113	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	LE_MW01_3.0	LE_MW01_2.8	LE_MW02_4.0	TS3_151113	TB_221113
Client sampling date / time	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	15-NOV-2013 15:00	22-NOV-2013 15:00
Compound	ES1325574-011	ES1325574-012	ES1325574-013	ES1325574-014	ES1325574-015

Compound	CAS Number	LOR	Unit	ES1325574-011	ES1325574-012	ES1325574-013	ES1325574-014	ES1325574-015
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	105	----	103	----	----
Anthracene-d10	1719-06-8	0.1	%	98.7	----	95.6	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	95.9	----	93.1	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.8	----	89.9	96.4	95.4
Toluene-D8	2037-26-5	0.1	%	99.1	----	86.0	92.7	93.8
4-Bromofluorobenzene	460-00-4	0.1	%	99.8	----	86.1	91.4	90.4



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				TSC3_151113	TSC14_221113	---	---	---
				15-NOV-2013 15:00	22-NOV-2013 15:00	---	---	---
Compound	CAS Number	LOR	Unit	ES1325574-016	ES1325574-017	---	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	---	10	mg/kg	82	90	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	92	100	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	62	68	---	---	---
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	0.5	0.6	---	---	---
Toluene	108-88-3	0.5	mg/kg	14.9	15.8	---	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	1.8	1.9	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	9.2	9.8	---	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	3.6	3.9	---	---	---
^ Sum of BTEX	---	0.2	mg/kg	---	32.0	---	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	12.8	---	---	---	---
^ Sum of BTEX	---	0.2	mg/kg	30.0	---	---	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	---	13.7	---	---	---
Naphthalene	91-20-3	1	mg/kg	<1	<1	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	99.4	---	---	---
Toluene-D8	2037-26-5	0.1	%	100	93.3	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	98.5	95.4	---	---	---



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0



## QUALITY CONTROL REPORT

Work Order	: <b>ES1325574</b>	Page	: 1 of 12
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 25-NOV-2013
C-O-C number	: ----	Issue Date	: 06-DEC-2013
Sampler	: T.ARMANI	No. of samples received	: 17
Order number	: 0224198	No. of samples analysed	: 17
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



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Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA002 : pH (Soils) (QC Lot: 3183264)</b>									
ES1325553-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	6.9	6.8	0.0	0% - 20%
ES1325686-002	Anonymous	EA002: pH Value	----	0.1	pH Unit	4.7	4.8	0.0	0% - 20%
<b>EA002 : pH (Soils) (QC Lot: 3185860)</b>									
ES1325574-011	LE_MW01_3.0	EA002: pH Value	----	0.1	pH Unit	6.2	6.3	0.0	0% - 20%
ES1325738-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.2	7.2	0.0	0% - 20%
<b>EA010: Conductivity (QC Lot: 3183265)</b>									
ES1325572-001	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	164	146	11.5	0% - 20%
ES1325686-002	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	183	199	8.7	0% - 20%
<b>EA010: Conductivity (QC Lot: 3185862)</b>									
ES1325574-011	LE_MW01_3.0	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	382	371	2.9	0% - 20%
ES1325738-001	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	437	440	0.7	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3186324)</b>									
ES1325458-032	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.2	15.2	6.0	0% - 50%
ES1325574-011	LE_MW01_3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.4	22.2	1.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3183824)</b>									
ES1325458-023	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	11	14.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	6	37.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	11	51.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	11	32.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	28	47.6	No Limit
ES1325575-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	20	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	5	36.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	14	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	145	128	11.9	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3185235)</b>									
ES1325574-008	LP_SB09_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3185235) - continued</b>									
ES1325574-008	LP_SB09_3.0	EG005T: Lead	7439-92-1	5	mg/kg	8	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	33	0.0	No Limit
ES1325579-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	18.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	5	51.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	11	37.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	21	34	44.3	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3183825)</b>									
ES1325458-023	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325575-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3185236)</b>									
ES1325574-008	LP_SB09_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325579-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP004: Organic Matter (QC Lot: 3182961)</b>									
ES1325477-001	Anonymous	EP004: Organic Matter	----	0.5	%	1.9	1.4	34.2	No Limit
		EP004: Total Organic Carbon	----	0.5	%	1.1	0.8	34.2	No Limit
ES1325477-011	Anonymous	EP004: Organic Matter	----	0.5	%	4.5	4.5	0.0	No Limit
		EP004: Total Organic Carbon	----	0.5	%	2.6	2.6	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3181364)</b>									
ES1325419-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3181364) - continued</b>									
ES1325574-007	LP_MW04_3.0	EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181364)</b>									
ES1325419-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.2	0.8	40.1	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.1	0.8	39.2	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.6	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	<0.5	27.4	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.5	1.6	95.1	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.7	<0.5	34.7	No Limit		
ES1325574-007	LP_MW04_3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3181364) - continued</b>									
ES1325574-007	LP_MW04_3.0	EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181332)</b>									
ES1325419-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181363)</b>									
ES1325419-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181332)</b>									
ES1325419-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181363)</b>									
ES1325419-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3181332)</b>									
ES1325419-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1325574-007	LP_MW04_3.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EA010: Conductivity (QCLot: 3183265)</b>									
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	101	70	130	
<b>EA010: Conductivity (QCLot: 3185862)</b>									
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	100	70	130	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	118	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	106	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	114	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	112	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	110	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	117	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	110	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.9	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	107	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	110	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	100	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.2	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.4	66	112	
<b>EP004: Organic Matter (QCLot: 3182961)</b>									
EP004: Organic Matter	----	0.5	%	<0.5	4.58 %	98.7	85	105	
EP004: Total Organic Carbon	----	0.5	%	<0.5	2.66 %	98.6	84	106	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181364)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	105	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	106	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	90.7	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	108	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	97.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	112	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	106	68	112	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181364) - continued</b>									
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	106	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	105	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	92.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	89.8	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	24.5	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181364)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	115	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	114	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	115	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	114	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	115	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	107	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	112	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	104	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	108	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	112	76	122	
EP075(SIM): Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	112	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	107	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	102	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181332)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	99.1	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181363)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	115	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	112	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	104	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181332)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.4	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181363)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	122	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	105	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	103	63	131	
<b>EP080: BTEXN (QCLot: 3181332)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	105	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	86.5	62	128	





Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High
<b>EP080: BTEXN (QCLot: 3181332) - continued</b>								
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	85.7	58	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	88.1	60	120
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	84.9	62	138

### 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	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>							
ES1325458-023	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	109	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	111	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>							
ES1325574-008	LP_SB09_3.0	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	95.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	96.6	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>							
ES1325458-023	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.7	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>							
ES1325574-008	LP_SB09_3.0	EG035T: Mercury	7439-97-6	5 mg/kg	98.6	70	130
<b>EP004: Organic Matter (QCLot: 3182961)</b>							
ES1325477-001	Anonymous	EP004: Organic Matter	----	0.46 %	# Not Determined	----	----
		EP004: Total Organic Carbon	----	0.27 %	# Not Determined	----	----



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181364)</b>								
ES1325419-002	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	110	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	106	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	79.3	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	103	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	53.6	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181364)</b>								
ES1325419-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	112	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	114	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181332)</b>								
ES1325419-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	103	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181363)</b>								
ES1325419-002	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	85.9	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	84.3	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.2	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181332)</b>								
ES1325419-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.9	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181363)</b>								
ES1325419-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	108	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	76.8	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.5	52	132	
<b>EP080: BTEXN (QCLot: 3181332)</b>								
ES1325419-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	70.7	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	77.5	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.2	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	80.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.8	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	80.8	70	130			

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report					
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181332)</b>										



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181332) - continued</b>											
ES1325419-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	103	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181332)</b>											
ES1325419-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.9	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3181332)</b>											
ES1325419-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	70.7	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	77.5	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.2	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	80.6	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.8	----	70	130	----	----	
	EP080: Naphthalene	91-20-3		2.5 mg/kg	80.8	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181363)</b>											
ES1325419-002	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	85.9	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	84.3	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.2	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181363)</b>											
ES1325419-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	108	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	76.8	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.5	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3181364)</b>											
ES1325419-002	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	110	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	106	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	79.3	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	103	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	53.6	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3181364)</b>											
ES1325419-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	112	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	114	----	70	130	----	----	
<b>EP004: Organic Matter (QCLot: 3182961)</b>											
ES1325477-001	Anonymous	EP004: Organic Matter	----	0.46 %	# Not Determined	----	----	----	----	----	
		EP004: Total Organic Carbon	----	0.27 %	# Not Determined	----	----	----	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824)</b>											
ES1325458-023	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	109	----	70	130	----	----	



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3183824) - continued</b>										
ES1325458-023	Anonymous	EG005T: Lead	7439-92-1	125 mg/kg	102	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	109	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	111	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3183825)</b>										
ES1325458-023	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.7	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>										
ES1325574-008	LP_SB09_3.0	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	103	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	104	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	95.8	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	96.6	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>										
ES1325574-008	LP_SB09_3.0	EG035T: Mercury	7439-97-6	5 mg/kg	98.6	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325574</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOE FERRING	Contact	: Barbara Hanna
Address	: GRND FLOOR, 33 SAUNDERS STREET PYRMONT NSW AUSTRALIA 2009	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 25-NOV-2013
C-O-C number	: ----	Issue Date	: 06-DEC-2013
Sampler	: T.ARMANI	No. of samples received	: 17
Order number	: 0224198	No. of samples analysed	: 17
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA002 : pH (Soils)</b>							
Soil Glass Jar - Unpreserved (EA002) LE_MW01_3.0	20-NOV-2013	29-NOV-2013	27-NOV-2013	*	29-NOV-2013	29-NOV-2013	✓
Soil Glass Jar - Unpreserved (EA002) LI_MW02_3.0	22-NOV-2013	28-NOV-2013	29-NOV-2013	✓	28-NOV-2013	28-NOV-2013	✓
<b>EA010: Conductivity</b>							
Soil Glass Jar - Unpreserved (EA010) LE_MW01_3.0	20-NOV-2013	29-NOV-2013	27-NOV-2013	*	29-NOV-2013	27-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA010) LI_MW02_4.8	22-NOV-2013	28-NOV-2013	29-NOV-2013	✓	28-NOV-2013	26-DEC-2013	✓
<b>EA055: Moisture Content</b>							
Soil Glass Jar - Unpreserved (EA055-103) LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0, LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	----	----	----	29-NOV-2013	04-DEC-2013	✓
Soil Glass Jar - Unpreserved (EA055-103) LI_MW02_3.0, LI_MW04_3.0, LI_MW03_3.0	22-NOV-2013	----	----	----	29-NOV-2013	06-DEC-2013	✓
<b>EA150: Particle Sizing</b>							
Snap Lock Bag (EA150) LE_MW01_2.8	20-NOV-2013	---	19-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓
Snap Lock Bag (EA150) LI_MW02_4.8	22-NOV-2013	---	21-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓
<b>EA150: Soil Classification based on Particle Size</b>							
Snap Lock Bag (EA150) LE_MW01_2.8	20-NOV-2013	---	19-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓
Snap Lock Bag (EA150) LI_MW02_4.8	22-NOV-2013	---	21-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓



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
<b>EG005T: Total Metals by ICP-AES</b>							
Soil Glass Jar - Unpreserved (EG005T) LP_MW04_3.0	20-NOV-2013	28-NOV-2013	19-MAY-2014	✓	29-NOV-2013	19-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG005T) LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0 LP_SB10_3.0, LE_MW01_3.0	20-NOV-2013	29-NOV-2013	19-MAY-2014	✓	29-NOV-2013	19-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG005T) LI_MW02_3.0, LI_MW04_3.0 LI_MW03_3.0	22-NOV-2013	28-NOV-2013	21-MAY-2014	✓	29-NOV-2013	21-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
Soil Glass Jar - Unpreserved (EG035T) LP_MW04_3.0	20-NOV-2013	28-NOV-2013	18-DEC-2013	✓	29-NOV-2013	18-DEC-2013	✓
Soil Glass Jar - Unpreserved (EG035T) LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0 LP_SB10_3.0, LE_MW01_3.0	20-NOV-2013	29-NOV-2013	18-DEC-2013	✓	29-NOV-2013	18-DEC-2013	✓
Soil Glass Jar - Unpreserved (EG035T) LI_MW02_3.0, LI_MW04_3.0 LI_MW03_3.0	22-NOV-2013	28-NOV-2013	20-DEC-2013	✓	29-NOV-2013	20-DEC-2013	✓
<b>EP004: Organic Matter</b>							
Soil Glass Jar - Unpreserved (EP004) LE_MW01_2.8	20-NOV-2013	28-NOV-2013	18-DEC-2013	✓	28-NOV-2013	18-DEC-2013	✓
Soil Glass Jar - Unpreserved (EP004) LI_MW02_4.8	22-NOV-2013	28-NOV-2013	20-DEC-2013	✓	28-NOV-2013	20-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
Soil Glass Jar - Unpreserved (EP071) LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0 LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP071) LI_MW02_3.0, LI_MW04_3.0 LI_MW03_3.0	22-NOV-2013	29-NOV-2013	06-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
Soil Glass Jar - Unpreserved (EP075(SIM)) LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0 LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	29-NOV-2013	08-JAN-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) LI_MW02_3.0, LI_MW04_3.0 LI_MW03_3.0	22-NOV-2013	29-NOV-2013	06-DEC-2013	✓	29-NOV-2013	08-JAN-2014	✓



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
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0, LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LI_MW02_3.0, LI_MW04_3.0, LI_MW03_3.0	22-NOV-2013	29-NOV-2013	06-DEC-2013	✓	29-NOV-2013	08-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS3_151113, TSC3_151113	15-NOV-2013	28-NOV-2013	29-NOV-2013	✓	30-NOV-2013	29-NOV-2013	*
<b>Soil Glass Jar - Unpreserved (EP080)</b> LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0, LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	28-NOV-2013	04-DEC-2013	✓	30-NOV-2013	04-DEC-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW02_3.0, LI_MW04_3.0, TS_221113, TSC14_221113, LI_MW03_3.0, TB_221113, TB_221113	22-NOV-2013	28-NOV-2013	06-DEC-2013	✓	30-NOV-2013	06-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> TS3_151113, TSC3_151113	15-NOV-2013	28-NOV-2013	29-NOV-2013	✓	30-NOV-2013	29-NOV-2013	*
<b>Soil Glass Jar - Unpreserved (EP080)</b> LP_MW04_3.0, LP_SB10_3.0, LE_MW01_3.0, LP_SB09_3.0, LP_SB10_2.0, LE_MW02_4.0	20-NOV-2013	28-NOV-2013	04-DEC-2013	✓	30-NOV-2013	04-DEC-2013	✓
<b>Soil Glass Jar - Unpreserved (EP080)</b> LI_MW02_3.0, LI_MW04_3.0, TS_221113, TSC14_221113, LI_MW03_3.0, TB_221113, TB_221113	22-NOV-2013	28-NOV-2013	06-DEC-2013	✓	30-NOV-2013	06-DEC-2013	✓





## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Electrical Conductivity (1:5)	EA010	4	35	11.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Electrical Conductivity (1:5)	EA010	2	35	5.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Electrical Conductivity (1:5)	EA010	2	35	5.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Organic Matter	EP004	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (1:5)	EA010	SOIL	(APHA 21st ed., 2510) Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 104)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

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Work Order : ES1325574  
Client : ENVIRO RESOURCES MANAGEMENT  
Project : PROJECT SYMPHONY



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP004: Organic Matter	ES1325477-001	Anonymous	Organic Matter	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP004: Organic Matter	ES1325477-001	Anonymous	Total Organic Carbon	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA002 : pH (Soils)</b>							
Soil Glass Jar - Unpreserved LE_MW01_3.0		29-NOV-2013	27-NOV-2013	2	----	----	----
<b>EA010: Conductivity</b>							
Soil Glass Jar - Unpreserved LE_MW01_3.0		29-NOV-2013	27-NOV-2013	2	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Soil Glass Jar - Unpreserved TS3_151113,	TSC3_151113	----	----	----	30-NOV-2013	29-NOV-2013	1
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
Soil Glass Jar - Unpreserved TS3_151113,	TSC3_151113	----	----	----	30-NOV-2013	29-NOV-2013	1
<b>EP080: BTEXN</b>							



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EP080: BTEXN - Analysis Holding Time Compliance</b>						
<b>Soil Glass Jar - Unpreserved</b> TS3_151113, TSC3_151113	----	----	----	30-NOV-2013	29-NOV-2013	1

### **Outliers : Frequency of Quality Control Samples**

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

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



## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b> : <b>ES1325579</b>	
<b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory</b> : Environmental Division Sydney  <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : BAYSWATER/LIDDELL <b>Sampler</b> : J.GIRVIN
<b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Site</b> : BAYSWATER/LIDDELL <b>Sampler</b> : J.GIRVIN	<b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555  <b>Page</b> : 1 of 2  <b>Quote number</b> : ES2013ENVRES0369 (SY/794/13)  <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

<b>Date Samples Received</b> : 25-NOV-2013 <b>Client Requested Due Date</b> : 02-DEC-2013	<b>Issue Date</b> : 29-NOV-2013 14:58 <b>Scheduled Reporting Date</b> : <b>02-DEC-2013</b>
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#### Delivery Details

<b>Mode of Delivery</b> : Carrier <b>No. of coolers/boxes</b> : 1 HARD <b>Security Seal</b> : Intact.	<b>Temperature</b> : 4.5°C - Ice present <b>No. of samples received</b> : 9 <b>No. of samples analysed</b> : 9
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-27 TRH/BTEX/NPAH/Phenols/8Metals
ES1325579-001	20-NOV-2013 15:00	LO_SB06_3.0	✓
ES1325579-002	20-NOV-2013 15:00	LO_SB07_3.0	✓
ES1325579-003	20-NOV-2013 15:00	LO_SB09_3.0	✓
ES1325579-004	20-NOV-2013 15:00	LP_MW01_3.0	✓
ES1325579-005	20-NOV-2013 15:00	LP_SB11_1.2	✓
ES1325579-006	20-NOV-2013 15:00	LP_SB11_3.0	✓
ES1325579-007	20-NOV-2013 15:00	LP_SB12_0.8	✓
ES1325579-008	20-NOV-2013 15:00	LP_SB12_3.0	✓
ES1325579-009	20-NOV-2013 15:00	LN_MW04_3.0	✓

## Proactive Holding Time Report

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

## Requested Deliverables

### MR JOSEPH FERRING

- \*AU Certificate of Analysis - NATA ( COA ) Email joseph.ferring@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email joseph.ferring@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC ) Email joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG ) Email joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT ) Email joseph.ferring@erm.com
- EDI Format - XTab ( XTAB ) Email joseph.ferring@erm.com

### SYMPHONY MACGEN

- \*AU Certificate of Analysis - NATA ( COA ) Email symphony.macgen@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email symphony.macgen@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC ) Email symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG ) Email symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT ) Email symphony.macgen@erm.com
- EDI Format - XTab ( XTAB ) Email symphony.macgen@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1325579</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : J.GIRVIN <b>Site</b> : BAYSWATER/LIDDELL  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 9  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 25-NOV-2013 <b>Issue Date</b> : 02-DEC-2013  <b>No. of samples received</b> : 9 <b>No. of samples analysed</b> : 9
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



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## General Comments

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB06_3.0	LO_SB07_3.0	LO_SB09_3.0	LP_MW01_3.0	LP_SB11_1.2
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325579-001	ES1325579-002	ES1325579-003	ES1325579-004	ES1325579-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	12.6	19.8	14.1	16.7	17.1
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	23	6	13	13	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	13	12	23	13
Copper	7440-50-8	5	mg/kg	57	34	32	25	5
Lead	7439-92-1	5	mg/kg	25	13	17	16	9
Nickel	7440-02-0	2	mg/kg	26	31	28	19	4
Zinc	7440-66-6	5	mg/kg	114	60	88	66	21
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB06_3.0	LO_SB07_3.0	LO_SB09_3.0	LP_MW01_3.0	LP_SB11_1.2
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325579-001	ES1325579-002	ES1325579-003	ES1325579-004	ES1325579-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LO_SB06_3.0	LO_SB07_3.0	LO_SB09_3.0	LP_MW01_3.0	LP_SB11_1.2
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325579-001	ES1325579-002	ES1325579-003	ES1325579-004	ES1325579-005
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	97.0	98.3	103	99.0	96.5
2-Chlorophenol-D4	93951-73-6	0.1	%	106	109	115	109	107
2.4.6-Tribromophenol	118-79-6	0.1	%	92.4	96.7	100	92.3	90.0
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	112	112	117	114	112
Anthracene-d10	1719-06-8	0.1	%	99.2	99.6	103	101	98.8
4-Terphenyl-d14	1718-51-0	0.1	%	125	128	97.9	125	120
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	99.7	97.6	97.2	94.2	95.6
Toluene-D8	2037-26-5	0.1	%	89.7	89.1	83.1	84.4	79.7
4-Bromofluorobenzene	460-00-4	0.1	%	84.9	84.4	82.2	80.9	82.4



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB11_3.0	LP_SB12_0.8	LP_SB12_3.0	LN_MW04_3.0	----
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325579-006	ES1325579-007	ES1325579-008	ES1325579-009	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.8	10.8	17.6	14.0	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	7	11	19	12	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	8	13	39	18	----
Copper	7440-50-8	5	mg/kg	<5	12	8	37	----
Lead	7439-92-1	5	mg/kg	8	14	18	18	----
Nickel	7440-02-0	2	mg/kg	3	20	10	27	----
Zinc	7440-66-6	5	mg/kg	21	55	21	90	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB11_3.0	LP_SB12_0.8	LP_SB12_3.0	LN_MW04_3.0	----
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325579-006	ES1325579-007	ES1325579-008	ES1325579-009	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
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	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB11_3.0	LP_SB12_0.8	LP_SB12_3.0	LN_MW04_3.0	----
				20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	20-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325579-006	ES1325579-007	ES1325579-008	ES1325579-009	----
<b>EP080: BTEXN - Continued</b>								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	102	106	105	107	----
2-Chlorophenol-D4	93951-73-6	0.1	%	112	114	112	114	----
2,4,6-Tribromophenol	118-79-6	0.1	%	96.2	95.6	96.3	94.0	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	110	113	111	114	----
Anthracene-d10	1719-06-8	0.1	%	98.0	101	98.3	101	----
4-Terphenyl-d14	1718-51-0	0.1	%	124	128	128	125	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	105	98.7	98.9	98.1	----
Toluene-D8	2037-26-5	0.1	%	90.9	81.7	83.6	83.7	----
4-Bromofluorobenzene	460-00-4	0.1	%	86.2	83.4	82.5	83.4	----





## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM): Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM): PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1325579</b>	<b>Page</b>	: 1 of 11
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: BAYSWATER/LIDDELL	<b>Date Samples Received</b>	: 25-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 02-DEC-2013
<b>Sampler</b>	: J.GIRVIN	<b>No. of samples received</b>	: 9
<b>Order number</b>	: 0224198	<b>No. of samples analysed</b>	: 9
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba  
Pabi Subba

#### Position

Senior Spectroscopist  
Senior Organic Chemist  
Senior Organic Chemist

#### Accreditation Category

Sydney Inorganics  
Sydney Inorganics  
Sydney Organics



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## General Comments

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

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

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

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

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## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3186325)</b>									
ES1325575-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.6	14.0	16.7	0% - 50%
ES1325579-006	LP_SB11_3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.8	14.6	6.1	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3185235)</b>									
ES1325574-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	7	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	33	0.0	No Limit
ES1325579-006	LP_SB11_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	9	18.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	5	51.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	11	37.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	21	34	44.3	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3185236)</b>									
ES1325574-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325579-006	LP_SB11_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3183181)</b>									
ES1325472-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325579-003	LO_SB09_3.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3183181) - continued</b>									
ES1325579-003	LO_SB09_3.0	EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183181)</b>									
ES1325472-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	2.0	2.3	11.9	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.6	1.8	13.1	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.4	1.6	12.6	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	1.0	16.4	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.1	1.2	14.2	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.7	0.7	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.2	9.2	11.5	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.8	0.8	0.0	No Limit
ES1325579-003	LO_SB09_3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183181) - continued</b>										
ES1325579-003	LO_SB09_3.0	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3181468)</b>										
ES1325458-023	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1325458-035	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3183180)</b>										
ES1325472-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	320	350	9.4	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	100	120	16.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
ES1325579-003	LO_SB09_3.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3181468)</b>										
ES1325458-023	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1325458-035	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3183180)</b>										
ES1325472-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	360	420	13.1	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	70	60	0.0	No Limit	
ES1325579-003	LO_SB09_3.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3181468)</b>										
ES1325458-023	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1325458-035	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	

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 Work Order : ES1325579  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3181468) - continued</b>									
ES1325458-035	Anonymous	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.9	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	107	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	110	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	100	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.4	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183181)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	98.3	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	98.2	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	104	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	105	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	89.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	99.3	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	100	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	106	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	101	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	100	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	95.9	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	33.7	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183181)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	106	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	111	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	111	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	107	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100	70	118	





Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183181) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	110	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	104	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	108	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	105	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.0	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183180)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	92.7	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	101	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	93.5	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.2	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183180)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	93.8	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	101	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	85.8	63	131	
<b>EP080: BTEXN (QCLot: 3181468)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.6	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.1	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.7	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	92.4	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	94.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.0	62	138	

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>								
ES1325574-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235) - continued</b>								
ES1325574-008	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	104	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	95.8	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	96.6	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>								
ES1325574-008	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.6	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183181)</b>								
ES1325472-002	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.1	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	94.4	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	85.9	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.2	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	38.1	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183181)</b>								
ES1325472-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.0	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>								
ES1325458-023	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.8	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183180)</b>								
ES1325472-002	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	99.3	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	105	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	92.9	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>								
ES1325458-023	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	84.2	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183180)</b>								
ES1325472-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	128	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	97.4	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	73.8	52	132	
<b>EP080: BTEXN (QCLot: 3181468)</b>								
ES1325458-023	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	72.2	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.8	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.5	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	79.1	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.6	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	75.6	70	130			



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3181468)</b>											
ES1325458-023	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3181468)</b>											
ES1325458-023	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	84.2	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3181468)</b>											
ES1325458-023	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	72.2	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.8	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.5	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	79.1	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.6	----	70	130	----	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	75.6	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183180)</b>											
ES1325472-002	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	99.3	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	105	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	92.9	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183180)</b>											
ES1325472-002	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	128	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	97.4	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	73.8	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183181)</b>											
ES1325472-002	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	92.1	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	94.4	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	85.9	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	95.2	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	38.1	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183181)</b>											
ES1325472-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235)</b>											
ES1325574-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	105	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	103	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	104	----	70	130	----	----	



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3185235) - continued</b>										
ES1325574-008	Anonymous	EG005T: Lead	7439-92-1	125 mg/kg	95.8	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	96.6	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3185236)</b>										
ES1325574-008	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.6	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325579</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 25-NOV-2013
C-O-C number	: ----	Issue Date	: 02-DEC-2013
Sampler	: J.GIRVIN	No. of samples received	: 9
Order number	: 0224198	No. of samples analysed	: 9
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0	LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	----	----	----	29-NOV-2013	04-DEC-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0	LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	29-NOV-2013	19-MAY-2014	✓	29-NOV-2013	19-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0	LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	29-NOV-2013	18-DEC-2013	✓	29-NOV-2013	18-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b>								
LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0	LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓



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
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0 LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0 LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	29-NOV-2013	04-DEC-2013	✓	30-NOV-2013	08-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0 LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	28-NOV-2013	04-DEC-2013	✓	30-NOV-2013	04-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LO_SB06_3.0, LO_SB09_3.0, LP_SB11_1.2, LP_SB12_0.8, LN_MW04_3.0 LO_SB07_3.0, LP_MW01_3.0, LP_SB11_3.0, LP_SB12_3.0	20-NOV-2013	28-NOV-2013	04-DEC-2013	✓	30-NOV-2013	04-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement





## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



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## Summary of Outliers

### **Outliers : Quality Control Samples**

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

#### ***Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes***

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

#### ***Regular Sample Surrogates***

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

### **Outliers : Analysis Holding Time Compliance**

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

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

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

- No Quality Control Sample Frequency Outliers exist.
-



CHAIN OF CUSTODY

ALS Laboratory

100 LAGOON AVENUE, SYDNEY NSW 1585  
Tel: 61 2 9339 8000  
Fax: 61 2 9339 8001  
www.als.com.au

100 LAGOON AVENUE, SYDNEY NSW 1585  
Tel: 61 2 9339 8000  
Fax: 61 2 9339 8001  
www.als.com.au

CLIENT: ERM TURNAROUND REQUIREMENTS:  Standard TAT (List due date)  Non Standard or urgent TAT (List due date)

PROJECT: Project Symphony 10224198 ALS QUOTE NO.: SYR9413 BAYSWATER MODEL 70424970468

ORDER NUMBER: 70424970468 CONTRACT PH: 70424970468 RELINQUISHED BY: 2.0 RECEIVED BY: SA

SAMPLER: R122 O'Brien SAMPLER MOBILE: 042880911 DATE/TIME: 28/11/13 10:30 DATE/TIME: 28/11/13 17:00

COC emailed to ALS? (YES / NO) (NO) EDD FORMAT (or default): DATE/TIME: 26.11.13 DATE/TIME: 28/11/13

Email Reports to (will default to PM if no other addresses are listed): DATE/TIME: 26.11.13 DATE/TIME: 28/11/13

Comments/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION	ANALYSIS REQUIRED (Including SHUTES (NR, Site Code must be listed to allow safe pile)) Where Metals are required, specify Total (unless both required) or Dissolved (if filtered bottle required)										Additional Information						
			MATRIX	TYPE & PRESERVATIVE (codes below)	(refer to)	TOTAL CONTAINERS	S-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se)	S-24 TRH (C6-C40) (BTEXN, PAH, Phenols)	VOC Target Scan	PCB	pH (1:5)		Exchangeable cations (ED007)	PFOS/PFOA	Asbestos (absence/presence)	Particle Sizing to 75µm (Sieve)	Organic Matter plus Total Organic Carbon (EP004)	
	LD-MW05-2.0	26.11.13 09.05	SOIL				1	X	X										
	LD-MW05-4.0	26.11.13 11.00	SOIL				1	X	X										
	LD-SB04-3.0	26.11.13 16.30	SOIL				1	X	X										
	LD-MW01-3.0	26.11.13 16.50	SOIL				1	X	X										



Environmental Division  
Sydney  
Work Order  
ES1325838

Telephone: +61-2-8784 8555

Water Contaminant Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; S = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved; A = Amber Glass Unpreserved; A = Amber Glass Unpreserved Plastic; V = VOA Volatil Preserved; VA = VOA Vol Soluble Benzofuran Preserved; VS = VOA Vol Soluble Preserved; AV = Air-tight Unpreserved Vial SG = Soluble Preserved Amber Glass; F = HCl Preserved Plastic; HD = HD Preserved Specimen bottle; SP = Soluble Preserved Plastic; F = Furanolignyl Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Double Bag for Acid Sulphide Solids; U = Unpreserved Bin

08/12/13

## Jacob Waugh

---

**From:** Kate Fox <Kate.Fox@erm.com>  
**Sent:** Friday, 29 November 2013 10:48 AM  
**To:** Jacob Waugh  
**Cc:** Joseph Ferring; Barbara Hanna; ERM Australia Project Symphony MacGen  
**Subject:** RE: ES1325838 - COC Clarification

Thanks Jacob,

Yes please keep this sample on hold, I will double check with the field scientist and have him email you directly if we do want analysis carried out.

Thanks,  
Kate

---

**From:** Jacob Waugh [mailto:Jacob.Waugh@alsglobal.com]  
**Sent:** Friday, November 29, 2013 8:52 AM  
**To:** Kate Fox  
**Cc:** Joseph Ferring; Barbara Hanna  
**Subject:** ES1325838 - COC Clarification

Hi Kate,

The attached COC has a sample LD\_MW05\_4.0 that has ticked for S-2 and S-24 suite analysis but then on the side of the COC it states 'Hold'. Can you please confirm which is correct?

Initially the sample receipt team added the analysis to this sample but since nothing has been started yet I'm going to cancel it for now assuming that the 'hold' note takes precedence. Please get back to me if this is not correct and this sample is needed for analysis.

## Jacob Waugh

**Laboratory Co-ordinator**  
**ALS | Environmental Division**

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

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## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1325838**

<p><b>Client : ENVIRO RESOURCES MANAGEMENT</b></p> <p><b>Contact : MR JOSEPH FERRING</b></p> <p><b>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b></p>	<p><b>Laboratory : Environmental Division Sydney</b></p> <p><b>Contact : Barbara Hanna</b></p> <p><b>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</b></p>
---	--

<p><b>E-mail : joseph.ferring@erm.com</b></p> <p><b>Telephone : +61 02 8584 8888</b></p> <p><b>Facsimile : +61 02 8584 8800</b></p>	<p><b>E-mail : Barbara.Hanna@alsglobal.com</b></p> <p><b>Telephone : +61 2 8784 8555</b></p> <p><b>Facsimile : +61 2 8784 8555</b></p>
---	--

<p><b>Project : PROJECT SYMPHONY 10224198</b></p> <p><b>Order number : ----</b></p> <p><b>C-O-C number : ----</b></p> <p><b>Site : LIDDELL</b></p> <p><b>Sampler : RO</b></p>	<p><b>Page : 1 of 2</b></p> <p><b>Quote number : ES2013ENVRES0369 (SY/794/13)</b></p> <p><b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b></p>
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#### Dates

<p><b>Date Samples Received : 27-NOV-2013</b></p> <p><b>Client Requested Due Date : 05-DEC-2013</b></p>	<p><b>Issue Date : 29-NOV-2013 08:59</b></p> <p><b>Scheduled Reporting Date : <b>05-DEC-2013</b></b></p>
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#### Delivery Details

<p><b>Mode of Delivery : Carrier</b></p> <p><b>No. of coolers/boxes : 1 HARD</b></p> <p><b>Security Seal : Intact.</b></p>	<p><b>Temperature : 5.3°C - Ice present</b></p> <p><b>No. of samples received : 4</b></p> <p><b>No. of samples analysed : 3</b></p>
--	---

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **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.**
- **The COC is unclear whether sample ES1325838-002 (LD\_MW05\_4.0) is for analysis or hold. This sample has been placed on hold for now so please contact ALS if it does require analysis.**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - S-27 TRH/BTEX/NP/AH/Phenols/8Metals
ES1325838-001	25-NOV-2013 09:05	LD_MW05_2.0		✓
ES1325838-002	25-NOV-2013 09:05	LD_MW05_4.0	✓	
ES1325838-003	25-NOV-2013 16:30	LD_SB04_3.0		✓
ES1325838-004	25-NOV-2013 16:50	LD_MW01_3.0		✓

## Proactive Holding Time Report

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

## Requested Deliverables

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1325838</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY 10224198 <b>Order number</b> : ---- <b>C-O-C number</b> : ---- <b>Sampler</b> : RO <b>Site</b> : LIDDELL  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 6  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 27-NOV-2013 <b>Issue Date</b> : 05-DEC-2013  <b>No. of samples received</b> : 4 <b>No. of samples analysed</b> : 3
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics





### **General Comments**

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LD_MW05_2.0	LD_SB04_3.0	LD_MW01_3.0	---	---
				25-NOV-2013 09:05	25-NOV-2013 16:30	25-NOV-2013 16:50	---	---
Compound	CAS Number	LOR	Unit	ES1325838-001	ES1325838-003	ES1325838-004	---	---
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	---	1.0	%	23.0	21.1	21.3	---	---
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	9	17	9	---	---
Cadmium	7440-43-9	1	mg/kg	<1	1	<1	---	---
Chromium	7440-47-3	2	mg/kg	17	32	26	---	---
Copper	7440-50-8	5	mg/kg	17	14	11	---	---
Lead	7439-92-1	5	mg/kg	10	24	14	---	---
Nickel	7440-02-0	2	mg/kg	9	24	16	---	---
Zinc	7440-66-6	5	mg/kg	37	38	18	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	---	---
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	---	---
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	---	---



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LD_MW05_2.0	LD_SB04_3.0	LD_MW01_3.0	---	---
				25-NOV-2013 09:05	25-NOV-2013 16:30	25-NOV-2013 16:50	---	---
Compound	CAS Number	LOR	Unit	ES1325838-001	ES1325838-003	ES1325838-004	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	<0.5	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	---	---
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	---	---
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	---	---
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	---	---
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	<50	<50	---	---
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	---	---
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	---	---
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	---	---
<b>EP080: BTEXN</b>								
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	---	---
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	---	---
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	---	---
^ Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	---	---



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LD_MW05_2.0	LD_SB04_3.0	LD_MW01_3.0	----	----
				25-NOV-2013 09:05	25-NOV-2013 16:30	25-NOV-2013 16:50	----	----
Compound	CAS Number	LOR	Unit	ES1325838-001	ES1325838-003	ES1325838-004	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	86.0	94.3	90.7	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	88.5	100	96.9	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	106	116	111	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	92.5	97.7	97.8	----	----
Anthracene-d10	1719-06-8	0.1	%	91.5	93.0	92.8	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	85.0	87.7	86.9	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.6	85.6	84.5	----	----
Toluene-D8	2037-26-5	0.1	%	106	93.7	88.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	100	95.3	85.1	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1325838</b>	<b>Page</b>	: 1 of 11
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY 10224198	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL	<b>Date Samples Received</b>	: 27-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 05-DEC-2013
<b>Sampler</b>	: RO	<b>No. of samples received</b>	: 4
<b>Order number</b>	: ----	<b>No. of samples analysed</b>	: 3
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba  
Phalak Inthaksone

#### Position

Senior Spectroscopist  
Senior Organic Chemist  
Laboratory Manager - Organics

#### Accreditation Category

Sydney Inorganics  
Sydney Organics  
Sydney Organics



### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3190919)</b>									
ES1325830-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.2	14.6	3.2	0% - 50%
ES1325831-012	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.6	15.3	14.4	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3190920)</b>									
ES1325840-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.8	26.3	6.0	0% - 20%
ES1325843-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.6	10.0	14.8	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3192312)</b>									
ES1325741-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	10	11.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	44	6.5	No Limit
ES1325840-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3192313)</b>									
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325840-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3189089)</b>									
EW1303350-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3189089) - continued</b>									
EW1303350-001	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325838-003	LD_SB04_3.0	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3189089)</b>							
EW1303350-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325838-003	LD_SB04_3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3189089) - continued</b>									
ES1325838-003	LD_SB04_3.0	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3189034)</b>									
ES1325616-036	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325966-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3189088)</b>									
EW1303350-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325838-003	LD_SB04_3.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3189034)</b>									
ES1325616-036	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325966-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	13	<10	28.8	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3189088)</b>									
EW1303350-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325838-003	LD_SB04_3.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3189034)</b>									
ES1325616-036	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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 Work Order : ES1325838  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY 10224198



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3189034) - continued</b>									
ES1325966-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.6	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.2	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	101	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	94.2	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	103	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.1	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	72.9	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189089)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	92.1	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	95.3	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	103	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	104	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	82.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	87.8	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	95.5	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.3	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	94.0	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	89.8	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	90.6	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	26.3	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189089)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.3	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	105	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	99.6	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	107	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	108	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.9	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	102	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	96.9	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189089) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	105	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	97.3	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	100	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	99.8	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	98.4	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189034)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.6	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189088)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	99.3	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	93.6	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	89.3	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189034)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	92.8	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189088)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	101	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	90.8	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	74.5	63	131	
<b>EP080: BTEXN (QCLot: 3189034)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.8	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.2	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.8	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.6	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.0	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.5	62	138	

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>								
ES1325741-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.5	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312) - continued</b>								
ES1325741-001	Anonymous	EG005T: Copper	7440-50-8	125 mg/kg	106	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	98.0	70	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	98.7	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	92.8	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>								
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	81.2	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189089)</b>								
EW1303350-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.4	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.3	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	84.6	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	83.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.6	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189089)</b>								
EW1303350-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.3	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.5	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189034)</b>								
ES1325616-036	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	124	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189088)</b>								
EW1303350-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	89.4	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	89.9	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	74.9	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189034)</b>								
ES1325616-036	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	120	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189088)</b>								
EW1303350-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	114	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	80.9	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	61.0	52	132	
<b>EP080: BTEXN (QCLot: 3189034)</b>								
ES1325616-036	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	98.5	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	104	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	99.4	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	102	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	97.8	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	87.5	70	130		



### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189034)</b>											
ES1325616-036	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	124	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189034)</b>											
ES1325616-036	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	120	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3189034)</b>											
ES1325616-036	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	98.5	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	104	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	99.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	102	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	97.8	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	87.5	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189088)</b>											
EW1303350-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	89.4	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	89.9	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	74.9	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189088)</b>											
EW1303350-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	114	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	80.9	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	61.0	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189089)</b>											
EW1303350-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	82.4	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.3	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	84.6	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	83.4	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	51.6	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189089)</b>											
EW1303350-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.3	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.5	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>											
ES1325741-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.5	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	100	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----	

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 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY 10224198



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312) - continued</b>										
ES1325741-001	Anonymous	EG005T: Lead	7439-92-1	125 mg/kg	98.0	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	98.7	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	92.8	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>										
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	81.2	----	70	130	----	----



## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325838</b>	Page	: 1 of 5
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY 10224198	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 27-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: RO	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 3
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
Soil Glass Jar - Unpreserved (EA055-103) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	----	----	----	03-DEC-2013	09-DEC-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>								
Soil Glass Jar - Unpreserved (EG005T) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	04-DEC-2013	24-MAY-2014	✓	04-DEC-2013	24-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Soil Glass Jar - Unpreserved (EG035T) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	04-DEC-2013	23-DEC-2013	✓	05-DEC-2013	23-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP071) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	04-DEC-2013	09-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
Soil Glass Jar - Unpreserved (EP075(SIM)) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	04-DEC-2013	09-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Soil Glass Jar - Unpreserved (EP075(SIM)) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	04-DEC-2013	09-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓
<b>EP080: BTEXN</b>								
Soil Glass Jar - Unpreserved (EP080) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	02-DEC-2013	09-DEC-2013	✓	02-DEC-2013	09-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
Soil Glass Jar - Unpreserved (EP080) LD_MW05_2.0, LD_MW01_3.0	LD_SB04_3.0	25-NOV-2013	02-DEC-2013	09-DEC-2013	✓	02-DEC-2013	09-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



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## Summary of Outliers

### Outliers : Quality Control Samples

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

#### *Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

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

#### *Regular Sample Surrogates*

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.
-

1 of 2 CUP SERS = ASBESTOS LCERT @ EN.

**ALS** CHAIN OF CUSTODY

ALS Laboratory  
16000 15th St. #100  
San Diego, CA 92128  
Tel: 619-441-5991 Fax: 619-441-5992

CLIENT: **ERM**

OFFICE: **Spokane**

PROJECT: **Project Synology**

ORDER NUMBER: **0224198**

PROJECT MANAGER: **Joseph Camp**

SAMPLER: **Joshua Karval**

COC emailed to ALS? (YES/NO) **YES**

Standard TAT (List date date):  Standard TAT (List date date):  Non Standard or urgent TAT (List date date):

ALS QUOTE NO.: **SV79413**

SITE: **BAYSWATER (DIDELL)**

CONTACT PH: **25/11/13**

SAMPLER MOBILE: **25/11/13**

EDD FORMAT (or default): **25/11/13**

RELINQUISHED BY: **Joshua Karval**

DATE/TIME: **25/11/13**

RECEIVED BY: **SPK**

DATE/TIME: **28/11/13 18:30**

RELINQUISHED BY: **SPK**

DATE/TIME: **28/11/13 12:00**

RECEIVED BY: **Ran Walsh**

DATE/TIME: **28/11/13 19:20**

FOR LABORATORY USE ONLY (Circle)

Quality Seal intact?  Yes  No

Free Ice / frozen Ice bricks present upon receipt?  Yes  No

Random Sample Temperature on Receipt: **63** °C

Other comment:

ALS USE	SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to allow suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
				TYPE & PRESERVATIVE codes below	TOTAL CONTAINERS (refer to)		
1	LO-MW15-0.5	25/11/13	SOIL			17 Metals (As, Ba, Pb, Zn, Hg), S-2 Metals (As, Cd, Cr, Cu, Ni, Mn, Ni, Pb, V, Zn, B, Mo, Ti, Se), S-24 TRH(CS, COHYTEXN, PAH, Phenols), VOC Target Scan, PCB, pH (1:5), <del>Exchangeable Cations (EP007)</del> , PPOS/PPFA, Asbestos (absence/presence), Particle Sizing to 75µm (Stave), Organic Matter plus Total Organic Carbon (EP004)	Comments on likely contaminant levels, dilutions, or samples requiring specific GC analysis etc.
2	LE-MW5-3.0		S			X	
3	LO L 25/11/13-JR		W			X	
4	LA-SB02-3.0					X	
5	LA MW01-2.1					X	
6	LOI-251113-TA					X	
7	LA MW02-3.0					X	
8	LOI-251113-TA					X	
9	LA MW03-3.2					X	
10	LA MW03-3.9					X	
	LA-SB02-3.0					X	
	LA SB01-3.0					X	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; CRG = Nitric Preserved Plastic; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved; AG = Amber Glass Unpreserved; AP = Amber Glass Unpreserved Plastic; V = VOA Via HCl Preserved; VB = VOA Via Sodium Hydroxide Preserved; VS = VOA Via Sodium Hydroxide Preserved; AV = Air-Weight Unpreserved; AC = Air-Weight Unpreserved Plastic; H = HCl Preserved Plastic; HS = HCl Preserved Plastic; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved; Z = Zinc Acetate Preserved Plastic; E = EDTA Preserved Plastic; ST = Sterile Bottle; ASS = Plastic Bottle for Acid Soluble Solids; B = Unpreserved Bin.

Environmental Division  
Sydney  
Work Order  
**ES1325840**



Telephone : +61-2-8784 8555

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1325840**

<p><b>Client : ENVIRO RESOURCES MANAGEMENT</b></p> <p><b>Contact : MR JOSEPH FERRING</b></p> <p><b>Address : GROUND FLOOR</b> 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</p>	<p><b>Laboratory : Environmental Division Sydney</b></p> <p><b>Contact : Barbara Hanna</b></p> <p><b>Address : 277-289 Woodpark Road Smithfield</b> NSW Australia 2164</p>
---	--

<p><b>E-mail : joseph.ferring@erm.com</b></p> <p><b>Telephone : +61 02 8584 8888</b></p> <p><b>Facsimile : +61 02 8584 8800</b></p>	<p><b>E-mail : Barbara.Hanna@alsglobal.com</b></p> <p><b>Telephone : +61 2 8784 8555</b></p> <p><b>Facsimile : +61 2 8784 8555</b></p>
---	--

<p><b>Project : PROJECT SYMPHONY</b></p> <p><b>Order number : 0224198</b></p> <p><b>C-O-C number : ----</b></p> <p><b>Site : ----</b></p> <p><b>Sampler : ----</b></p>	<p><b>Page : 1 of 3</b></p> <p><b>Quote number : ES2013ENVRES0369 (SY/794/13)</b></p>
--	---

**QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement**

#### Dates

<p><b>Date Samples Received : 28-NOV-2013</b></p> <p><b>Client Requested Due Date : 05-DEC-2013</b></p>	<p><b>Issue Date : 28-NOV-2013 21:14</b></p> <p><b>Scheduled Reporting Date : 05-DEC-2013</b></p>
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#### Delivery Details

<p><b>Mode of Delivery : Carrier</b></p> <p><b>No. of coolers/boxes : 1 HARD</b></p> <p><b>Security Seal : Intact.</b></p>	<p><b>Temperature : 3.3°C - Ice present</b></p> <p><b>No. of samples received : 10</b></p> <p><b>No. of samples analysed : 10</b></p>
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos and PSD analysis will be conducted by ALS Newcastle.**
- **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.**
- **All analysis will be reported on the scheduled due date 05/12/13, except for PSD analysis will be reported on 09/12/13**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA002 pH (1:5)	SOIL - EA010 (solids): Electrical Conductivity (1:5) Electrical Conductivity (1:5)	SOIL - EA150* Particle Size Analysis by Sieving (Default sieves from SOIL - EA200	Asbestos Identification in Soils	SOIL - S-27 TRH/BTEX/NP/PAH/Phenols/8Metals
ES1325840-001	25-NOV-2013 15:00	LD_MW15_0.5				✓	✓
ES1325840-002	25-NOV-2013 15:00	LI_MW5_3.0					✓
ES1325840-004	25-NOV-2013 15:00	LA_SB02_3.0					✓
ES1325840-005	25-NOV-2013 15:00	LA_MW01_2.1					✓
ES1325840-006	25-NOV-2013 15:00	D01_251113_TA					✓
ES1325840-007	25-NOV-2013 15:00	LA_MW02_3.0					✓
ES1325840-008	25-NOV-2013 15:00	LA_MW03_3.0	✓				✓
ES1325840-009	25-NOV-2013 15:00	LA_MW03_3.9		✓	✓		
ES1325840-010	25-NOV-2013 15:00	LA_SB01_3.0					✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-04 TRH/BTEXN
ES1325840-003	25-NOV-2013 15:00	R01_2511113_JA	✓

## Proactive Holding Time Report

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





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### *Requested Deliverables*

#### **SYMPHONY ERARING**

- |  |       |                          |
|--|-------|--------------------------|
| - *AU Certificate of Analysis - NATA ( COA )                   | Email | Symphony.Eraring@erm.com |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )  | Email | Symphony.Eraring@erm.com |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )          | Email | Symphony.Eraring@erm.com |
| - A4 - AU Sample Receipt Notification - Environmental HT ( SRN | Email | Symphony.Eraring@erm.com |
| - A4 - AU Tax Invoice ( INV )                                  | Email | Symphony.Eraring@erm.com |
| - Chain of Custody (CoC) ( COC )                               | Email | Symphony.Eraring@erm.com |
| - EDI Format - ENMRG ( ENMRG )                                 | Email | Symphony.Eraring@erm.com |
| - EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )                   | Email | Symphony.Eraring@erm.com |
| - EDI Format - ESDAT ( ESDAT )                                 | Email | Symphony.Eraring@erm.com |

#### **THE ACCOUNTS PAYABLE**

- |                               |       |                     |
|-------------------------------|-------|---------------------|
| - A4 - AU Tax Invoice ( INV ) | Email | au.accounts@erm.com |
|-------------------------------|-------|---------------------|
-

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325840</b>	Page	: 1 of 10
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224198	Date Samples Received	: 28-NOV-2013
C-O-C number	: ----	Issue Date	: 10-DEC-2013
Sampler	: ----	No. of samples received	: 10
Site	: LIDDELL	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

## Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LD_MW15_0.5	LI_MW5_3.0	LA_SB02_3.0	LA_MW01_2.1	D01_251113_TA
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325840-001	ES1325840-002	ES1325840-004	ES1325840-005	ES1325840-006
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	24.8	16.2	19.0	15.6	15.8
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	458	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	12	6	<5	9	10
Cadmium	7440-43-9	1	mg/kg	<1	1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	24	3	14	15
Copper	7440-50-8	5	mg/kg	7	34	<5	14	14
Lead	7439-92-1	5	mg/kg	13	29	<5	22	53
Nickel	7440-02-0	2	mg/kg	4	32	<2	8	10
Zinc	7440-66-6	5	mg/kg	18	143	<5	34	41
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LD_MW15_0.5	LI_MW5_3.0	LA_SB02_3.0	LA_MW01_2.1	D01_251113_TA
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325840-001	ES1325840-002	ES1325840-004	ES1325840-005	ES1325840-006
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LD_MW15_0.5	LI_MW5_3.0	LA_SB02_3.0	LA_MW01_2.1	D01_251113_TA
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325840-001	ES1325840-002	ES1325840-004	ES1325840-005	ES1325840-006
<b>EP080: BTEXN - Continued</b>								
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	106	106	109	110	109
2-Chlorophenol-D4	93951-73-6	0.1	%	103	107	113	109	107
2,4,6-Tribromophenol	118-79-6	0.1	%	91.0	87.7	83.8	84.2	79.0
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	97.4	100	100	99.1	96.5
Anthracene-d10	1719-06-8	0.1	%	89.3	91.1	89.5	88.5	85.4
4-Terphenyl-d14	1718-51-0	0.1	%	79.1	81.6	78.8	78.2	75.8
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	117	107	100	110
Toluene-D8	2037-26-5	0.1	%	90.9	110	95.9	86.0	104
4-Bromofluorobenzene	460-00-4	0.1	%	94.7	109	95.0	85.7	101



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LA_MW02_3.0	LA_MW03_3.0	LA_MW03_3.9	LA_SB01_3.0	----
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325840-007	ES1325840-008	ES1325840-009	ES1325840-010	----
<b>EA150: Particle Sizing</b>								
+75µm	----	1	%	----	----	46	----	----
+150µm	----	1	%	----	----	38	----	----
+300µm	----	1	%	----	----	34	----	----
+425µm	----	1	%	----	----	33	----	----
+600µm	----	1	%	----	----	33	----	----
+1180µm	----	1	%	----	----	31	----	----
+2.36mm	----	1	%	----	----	28	----	----
+4.75mm	----	1	%	----	----	22	----	----
+9.5mm	----	1	%	----	----	18	----	----
+19.0mm	----	1	%	----	----	<1	----	----
+37.5mm	----	1	%	----	----	<1	----	----
+75.0mm	----	1	%	----	----	<1	----	----
<b>EA002 : pH (Soils)</b>								
pH Value	----	0.1	pH Unit	----	4.6	----	----	----
<b>EA010: Conductivity</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	215	----	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	14.6	11.8	----	19.2	----
<b>EA150: Soil Classification based on Particle Size</b>								
Fines (<75 µm)	----	1	%	----	----	54	----	----
Sand (>75 µm)	----	1	%	----	----	18	----	----
Gravel (>2mm)	----	1	%	----	----	28	----	----
Cobbles (>6cm)	----	1	%	----	----	<1	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	16	8	----	11	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	15	8	----	13	----
Copper	7440-50-8	5	mg/kg	12	8	----	11	----
Lead	7439-92-1	5	mg/kg	14	11	----	9	----
Nickel	7440-02-0	2	mg/kg	7	5	----	4	----
Zinc	7440-66-6	5	mg/kg	28	20	----	25	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	<0.1	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LA_MW02_3.0	LA_MW03_3.0	LA_MW03_3.9	LA_SB01_3.0	----
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325840-007	ES1325840-008	ES1325840-009	ES1325840-010	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	<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	<0.5	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	<50	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LA_MW02_3.0	LA_MW03_3.0	LA_MW03_3.9	LA_SB01_3.0	----
				25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	25-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325840-007	ES1325840-008	ES1325840-009	ES1325840-010	----
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	<50	----
<b>EP080: BTEXN</b>								
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	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	<1	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.1	111	----	106	----
2-Chlorophenol-D4	93951-73-6	0.1	%	85.6	112	----	110	----
2,4,6-Tribromophenol	118-79-6	0.1	%	78.7	79.9	----	84.1	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	92.3	98.6	----	104	----
Anthracene-d10	1719-06-8	0.1	%	86.1	86.2	----	91.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	76.3	76.7	----	82.4	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	114	115	----	108	----
Toluene-D8	2037-26-5	0.1	%	99.7	107	----	98.4	----
4-Bromofluorobenzene	460-00-4	0.1	%	99.8	103	----	98.8	----



## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

<b>R01_2511113_JA</b>	----	----	----	----
25-NOV-2013 15:00	----	----	----	----

Client sampling date / time

<b>Compound</b>	<b>CAS Number</b>	<b>LOR</b>	<b>Unit</b>	<b>ES1325840-003</b>	----	----	----	----
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### EP080/071: Total Petroleum Hydrocarbons

<b>C6 - C9 Fraction</b>	----	20	µg/L	<20	----	----	----	----
<b>C10 - C14 Fraction</b>	----	50	µg/L	<50	----	----	----	----
<b>C15 - C28 Fraction</b>	----	100	µg/L	<100	----	----	----	----
<b>C29 - C36 Fraction</b>	----	50	µg/L	<50	----	----	----	----
<b>C10 - C36 Fraction (sum)</b>	----	50	µg/L	<50	----	----	----	----

### EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

<b>C6 - C10 Fraction</b>	C6_C10	20	µg/L	<20	----	----	----	----
<b>C6 - C10 Fraction minus BTEX (F1)</b>	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
<b>&gt;C10 - C16 Fraction</b>	>C10_C16	100	µg/L	<100	----	----	----	----
<b>&gt;C16 - C34 Fraction</b>	----	100	µg/L	<100	----	----	----	----
<b>&gt;C34 - C40 Fraction</b>	----	100	µg/L	<100	----	----	----	----
<b>&gt;C10 - C40 Fraction (sum)</b>	----	100	µg/L	<100	----	----	----	----

### EP080: BTEXN

<b>Benzene</b>	71-43-2	1	µg/L	<1	----	----	----	----
<b>Toluene</b>	108-88-3	2	µg/L	<2	----	----	----	----
<b>Ethylbenzene</b>	100-41-4	2	µg/L	<2	----	----	----	----
<b>meta- &amp; para-Xylene</b>	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
<b>ortho-Xylene</b>	95-47-6	2	µg/L	<2	----	----	----	----
<b>Total Xylenes</b>	1330-20-7	2	µg/L	<2	----	----	----	----
<b>Sum of BTEX</b>	----	1	µg/L	<1	----	----	----	----
<b>Naphthalene</b>	91-20-3	5	µg/L	<5	----	----	----	----

### EP080S: TPH(V)/BTEX Surrogates

<b>1,2-Dichloroethane-D4</b>	17060-07-0	0.1	%	<b>99.5</b>	----	----	----	----
<b>Toluene-D8</b>	2037-26-5	0.1	%	<b>107</b>	----	----	----	----
<b>4-Bromofluorobenzene</b>	460-00-4	0.1	%	<b>98.9</b>	----	----	----	----

## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LD_MW15_0.5 - 25-NOV-2013 15:00	Mid yellow - brown clay soil with grey and red rocks plus a trace of vegetation.



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM): Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM): PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

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

# Certificate of Analysis

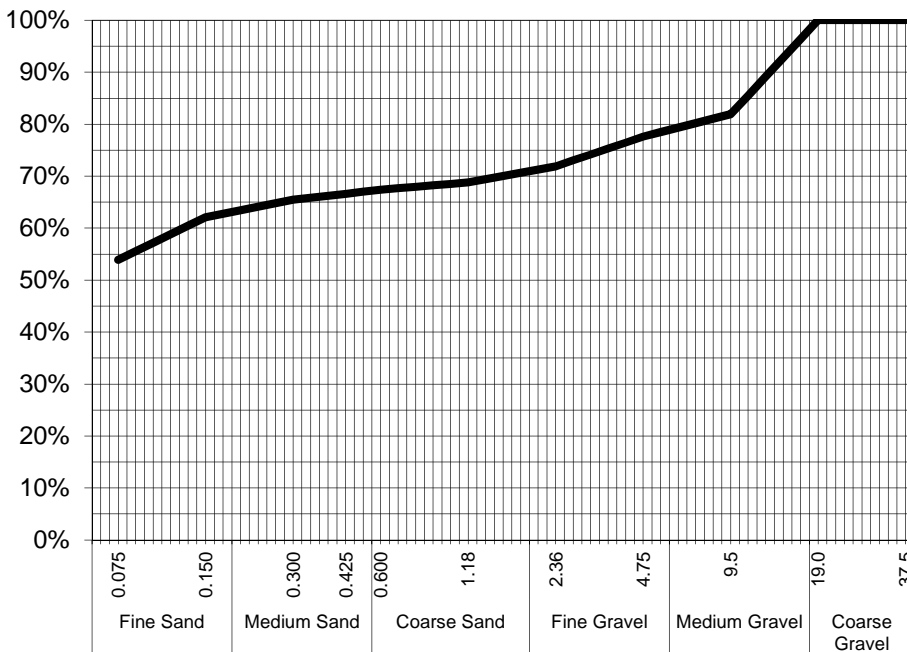
ALS Laboratory Group Pty Ltd  
 5 Rosegum Road  
 Warabrook, NSW 2304  
 pH 02 4968 9433  
 fax 02 4968 0349  
 samples.newcastle@alsenviro.com

**ALS Environmental**  
**Newcastle, NSW**



**CLIENT:** Joseph Ferring **DATE REPORTED:** 10-Dec-2013  
**COMPANY:** Enviro Resources Management **DATE RECEIVED:** 28-Nov-2013  
**ADDRESS:** Ground Floor **REPORT NO:** ES1325840-009 / PSD  
 33 Saunders Street, Pyrmont  
 NSW 2009  
**PROJECT:** Project Symphony **SAMPLE ID:** LA\_MW03\_3.9

## Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	82%
4.75	78%
2.36	72%
1.18	69%
0.600	67%
0.425	67%
0.300	66%
0.150	62%
0.075	54%

Samples analysed as received.

## Sample Comments:

**Analysed:** 9-Dec-13

**Loss on Pretreatment:** NA

**Limit of Reporting:** 1%

**Sample Description:** Fines, gravel and sand

**Test Method:** AS1289.3.6.1

**NATA Accreditation: 825 Site: Newcastle**  
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**Hamish Murray**  
 Laboratory Supervisor, Newcastle  
**Authorised Signatory**

## QUALITY CONTROL REPORT

Work Order	: <b>ES1325840</b>	Page	: 1 of 14
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 28-NOV-2013
C-O-C number	: ----	Issue Date	: 10-DEC-2013
Sampler	: ----	No. of samples received	: 10
Order number	: 0224198	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



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Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA002 : pH (Soils) (QC Lot: 3188456)</b>									
ES1325837-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.1	7.0	1.6	0% - 20%
ES1325966-002	Anonymous	EA002: pH Value	----	0.1	pH Unit	7.4	7.4	0.0	0% - 20%
<b>EA010: Conductivity (QC Lot: 3190686)</b>									
ES1325840-009	LA_MW03_3.9	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	215	216	0.5	0% - 20%
ES1326181-006	Anonymous	EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	277	279	0.7	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3190920)</b>									
ES1325840-001	LD_MW15_0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.8	26.3	6.0	0% - 20%
ES1325843-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.6	10.0	14.8	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3192312)</b>									
ES1325741-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	10	11.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	44	6.5	No Limit
ES1325840-004	LA_SB02_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3192313)</b>									
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325840-004	LA_SB02_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3187765)</b>									
ES1325840-001	LD_MW15_0.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3187765) - continued</b>									
ES1325840-001	LD_MW15_0.5	EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325843-003	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3187765)</b>									
ES1325840-001	LD_MW15_0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325843-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3187765) - continued</b>									
ES1325843-003	Anonymous	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3185626)</b>									
ES1325781-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325840-001	LD_MW15_0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187764)</b>									
ES1325840-001	LD_MW15_0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325843-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3185626)</b>									
ES1325781-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325840-001	LD_MW15_0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187764)</b>									
ES1325840-001	LD_MW15_0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325843-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3185626)</b>									
ES1325781-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP080: BTEXN (QC Lot: 3185626) - continued</b>									
ES1325781-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325840-001	LD_MW15_0.5	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	91-20-3	1	mg/kg	<1	<1	0.0	No Limit		
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3190938)</b>									
ES1325845-008	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	710	650	8.5	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	60	<50	24.6	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3190938)</b>									
ES1325845-008	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	680	580	15.3	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES1325845-006	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
	106-42-3								

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 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: **WATER**

*Laboratory Duplicate (DUP) Report*

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
<b>EP080: BTEXN (QC Lot: 3188144) - continued</b>									
ES1325845-006	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EA010: Conductivity (QCLot: 3190686)</b>									
EA010: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	1412 µS/cm	100	70	130	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.6	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.2	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	101	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	94.2	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	103	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.1	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	72.9	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	114	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	115	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	102	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	107	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	81.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	106	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	95.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.0	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	86.4	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.6	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	86.5	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	16.3	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	111	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	109	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	116	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	113	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	115	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.3	73	121	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765) - continued</b>									
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	109	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	91.8	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	113	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	94.0	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	101	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	94.0	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3185626)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	94.5	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	97.6	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	95.9	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	85.8	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3185626)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	93.2	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	99.0	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.8	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	72.7	63	131	
<b>EP080: BTEXN (QCLot: 3185626)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	108	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.8	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.1	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	88.3	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.7	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.3	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	96.2	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.4	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.3	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	101	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144) - continued</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	107	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.6	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	102	67	127	
<b>EP080: BTEXN (QCLot: 3188144)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	86.6	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	84.9	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.0	70	120	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	83.5	69	121	
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.4	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	92.3	70	124	

### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>							
ES1325741-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	98.0	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.7	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	92.8	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>							
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	81.2	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>							
ES1325840-001	LD_MW15_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	91.4	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	91.4	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	34.0	20	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>							
ES1325840-001	LD_MW15_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	115	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3185626)</b>							
ES1325781-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	96.2	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>							
ES1325840-001	LD_MW15_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	73.1	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.8	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	71.1	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3185626)</b>							
ES1325781-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.5	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>							
ES1325840-001	LD_MW15_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.0	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.2	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	57.1	52	132
<b>EP080: BTEXN (QCLot: 3185626)</b>							
ES1325781-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	73.1	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	75.5	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	71.9	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	74.7	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	74.2	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>							
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>							
ES1325845-010	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	103	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	104	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	95.4	67	153
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>							
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>							
ES1325845-010	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	77	153



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	Spike Recovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938) - continued</b>								
ES1325845-010	Anonymous	EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	67	153	
<b>EP080: BTEXN (QCLot: 3188144)</b>								
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.0	70	130	
		EP080: Toluene	108-88-3	25 µg/L	109	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	110	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.9	70	130	
	EP080: Naphthalene	91-20-3		25 µg/L	106	70	130	

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3185626)</b>											
ES1325781-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	96.2	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3185626)</b>											
ES1325781-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.5	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3185626)</b>											
ES1325781-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	73.1	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	75.5	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	71.9	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	74.7	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.6	----	70	130	----	----	
	EP080: Naphthalene	91-20-3		2.5 mg/kg	74.2	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>											
ES1325840-001	LD_MW15_0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	73.1	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.8	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	71.1	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>											
ES1325840-001	LD_MW15_0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.0	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.2	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	57.1	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>											





Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765) - continued</b>										
ES1325840-001	LD_MW15_0.5	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	91.4	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	91.4	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	34.0	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>										
ES1325840-001	LD_MW15_0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	115	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3192312)</b>										
ES1325741-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.5	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	100	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	98.0	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	98.7	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	92.8	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3192313)</b>										
ES1325741-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	81.2	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>										
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>										
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3188144)</b>										
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.0	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	110	----	70	130	----	----
		EP080: ortho-Xylene	106-42-3	25 µg/L	98.9	----	70	130	----	----
		EP080: Naphthalene	95-47-6	25 µg/L	106	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>										
ES1325845-010	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	103	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	104	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	95.4	----	67	153	----	----

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 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>										
ES1325845-010	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	----	67	153	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325840</b>	Page	: 1 of 8
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 28-NOV-2013
C-O-C number	: ----	Issue Date	: 10-DEC-2013
Sampler	: ----	No. of samples received	: 10
Order number	: 0224198	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA002 : pH (Soils)</b>							
<b>Soil Glass Jar - Unpreserved (EA002)</b> LA_MW03_3.0	25-NOV-2013	02-DEC-2013	02-DEC-2013	✓	02-DEC-2013	02-DEC-2013	✓
<b>EA010: Conductivity</b>							
<b>Snap Lock Bag (EA010)</b> LA_MW03_3.9	25-NOV-2013	04-DEC-2013	02-DEC-2013	*	04-DEC-2013	01-JAN-2014	✓
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LD_MW15_0.5, LI_MW5_3.0, LA_SB02_3.0, LA_MW01_2.1, D01_251113_TA, LA_MW02_3.0, LA_MW03_3.0, LA_SB01_3.0	25-NOV-2013	----	----	----	03-DEC-2013	09-DEC-2013	✓
<b>EA150: Particle Sizing</b>							
<b>Snap Lock Bag (EA150)</b> LA_MW03_3.9	25-NOV-2013	---	24-MAY-2014	----	10-DEC-2013	07-JUN-2014	✓
<b>EA150: Soil Classification based on Particle Size</b>							
<b>Snap Lock Bag (EA150)</b> LA_MW03_3.9	25-NOV-2013	---	24-MAY-2014	----	10-DEC-2013	07-JUN-2014	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
<b>Snap Lock Bag (EA200)</b> LD_MW15_0.5	25-NOV-2013	---	24-MAY-2014	----	09-DEC-2013	07-JUN-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>							
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LD_MW15_0.5, LI_MW5_3.0, LA_SB02_3.0, LA_MW01_2.1, D01_251113_TA, LA_MW02_3.0, LA_MW03_3.0, LA_SB01_3.0	25-NOV-2013	04-DEC-2013	24-MAY-2014	✓	04-DEC-2013	24-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LD_MW15_0.5, LI_MW5_3.0, LA_SB02_3.0, LA_MW01_2.1, D01_251113_TA, LA_MW02_3.0, LA_MW03_3.0, LA_SB01_3.0	25-NOV-2013	04-DEC-2013	23-DEC-2013	✓	05-DEC-2013	23-DEC-2013	✓



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
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LD_MW15_0.5, LA_SB02_3.0, D01_251113_TA, LA_MW03_3.0, LI_MW5_3.0, LA_MW01_2.1, LA_MW02_3.0, LA_SB01_3.0	25-NOV-2013	03-DEC-2013	09-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LD_MW15_0.5, LA_SB02_3.0, D01_251113_TA, LA_MW03_3.0, LI_MW5_3.0, LA_MW01_2.1, LA_MW02_3.0, LA_SB01_3.0	25-NOV-2013	03-DEC-2013	09-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LD_MW15_0.5, LA_SB02_3.0, D01_251113_TA, LA_MW03_3.0, LI_MW5_3.0, LA_MW01_2.1, LA_MW02_3.0, LA_SB01_3.0	25-NOV-2013	03-DEC-2013	09-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LD_MW15_0.5, LA_SB02_3.0, D01_251113_TA, LA_MW03_3.0, LI_MW5_3.0, LA_MW01_2.1, LA_MW02_3.0, LA_SB01_3.0	25-NOV-2013	03-DEC-2013	09-DEC-2013	✓	03-DEC-2013	09-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LD_MW15_0.5, LA_SB02_3.0, D01_251113_TA, LA_MW03_3.0, LI_MW5_3.0, LA_MW01_2.1, LA_MW02_3.0, LA_SB01_3.0	25-NOV-2013	03-DEC-2013	09-DEC-2013	✓	03-DEC-2013	09-DEC-2013	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber Glass Bottle - Unpreserved (EP071)</b> R01_2511113_JA	25-NOV-2013	02-DEC-2013	02-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_2511113_JA	25-NOV-2013	02-DEC-2013	09-DEC-2013	✓	02-DEC-2013	09-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> R01_2511113_JA	25-NOV-2013	02-DEC-2013	09-DEC-2013	✓	02-DEC-2013	09-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Electrical Conductivity (1:5)	EA010	2	18	11.1	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	2	17	11.8	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Electrical Conductivity (1:5)	EA010	1	18	5.6	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Electrical Conductivity (1:5)	EA010	1	18	5.6	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
TPH - Semivolatile Fraction	EP071	1	20	5.0	10.0	✖	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (1:5)	EA010	SOIL	(APHA 21st ed., 2510) Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 104)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.





<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA010: Conductivity</b>						
<b>Snap Lock Bag</b>						
LA_MW03_3.9	04-DEC-2013	02-DEC-2013	2	----	----	----

### Outliers : Frequency of Quality Control Samples

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

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
TPH - Semivolatile Fraction	1	20	5.0	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



no 3/3 coc  
found.



**CHAIN OF CUSTODY**

ALS Laboratory  
please list →

2001 USG 2001 USG 2001 USG 2001 USG  
2001 USG 2001 USG 2001 USG 2001 USG  
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**CLIENT:** BEW  
**OFFICE:** Sydney  
**PROJECT:** Project Symphony  
**ORDER NUMBER:** \_\_\_\_\_  
**PROJECT MANAGER:** Dr. Princy  
**SAMPLER:** Bob O'Leary  
**COC emailed to ALS?** (YES / NO) \_\_\_\_\_  
**Relinquish to (will default to PM if no other addresses are listed):** \_\_\_\_\_  
**Email Invoice to (will default to PM if no other addresses are listed):** \_\_\_\_\_

**TURNDOWN REQUIREMENTS:**  Standard TAT (last due date): \_\_\_\_\_  
 Non Standard or urgent TAT (last due date): \_\_\_\_\_  
**ALS QUOTE NO.:** SYT9413

**SITE:** BAYSWATER / LIDDELL  
**CONTACT PH:** \_\_\_\_\_  
**SAMPLER MOBILE:** 742470768  
**EDD FORMAT (or default):** \_\_\_\_\_  
**Relinquish to (will default to PM if no other addresses are listed):** Sydney, NSW - 6th Floor  
**DATE/TIME:** 28.11.13 17:15

**FOR LABORATORY USE ONLY (Circle):**  
**Customary Seal Intact?**  Yes  No **WA**  
**Free Ice / frozen Ice lids present upon receipt?**  Yes  No **WA**  
**Random Sample Temperature on Receipt:** \_\_\_\_\_ **°C**  
**Other comment:** \_\_\_\_\_

**RECEIVED BY:** Ravinesh  
**DATE/TIME:** 28/11/13 17:00 **19:00**

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	CONTAINER INFORMATION			ANALYSIS REQUIRED INCLUDING SUITES (NO. Suite Codes must be listed to attract scale price) Where Matrix not required, specify Total (unfiltered bottle required) or Dissolved (acid filtered bottle required).										Additional Information	
		TYPE & PRESERVATIVE codes (below)	TOTAL CONTAINERS (per 10)	MATRIX	DATE / TIME	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME		
13	LR-MW04-2.6		1 bag	SOIL	26.11.13 12:08	28.11.13	Ravinesh	28.11.13	17:15	28.11.13	15:30	SM	28.11.13	17:00	19:00	
14	LR-MW04-1.5		1 bag	-11-	-11-	-11-										Hold
15	201-20113-7A			W	26/11/13											Hold
16	Trip Spike															BTEX / TRH
17	Trip Blank															
18	TSC															

**Water Container Codes:** P = Unpreserved Plastic; Q = Nitric Preserved Plastic; QRC = Nitric Preserved Glass; SH = Sodium Hydroxide Preserved Plastic; AC = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
 V = VOA Vial; HCl Preserved; VA = VOA Vial; Sodium Borohydride Preserved; VS = VOA Vial; Sodium Borohydride Preserved; VAS = VOA Vial; Sodium Borohydride Preserved; VASG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Plastic; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Jar for Acid Sulphate Solids; B = Unpreserved Barn

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1325843</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact Address</b>	<b>: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Contact Address</b>	<b>: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: 0224198</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: LIDDELL</b>		
<b>Sampler</b>	<b>: JK</b>		

#### Dates

<b>Date Samples Received</b>	<b>: 28-NOV-2013</b>	<b>Issue Date</b>	<b>: 03-DEC-2013 11:02</b>
<b>Client Requested Due Date</b>	<b>: 05-DEC-2013</b>	<b>Scheduled Reporting Date</b>	<b>: 05-DEC-2013</b>

#### Delivery Details

<b>Mode of Delivery</b>	<b>: Carrier</b>	<b>Temperature</b>	<b>: 5.3°C - Ice present</b>
<b>No. of coolers/boxes</b>	<b>: 1 HARD</b>	<b>No. of samples received</b>	<b>: 18</b>
<b>Security Seal</b>	<b>: Intact.</b>	<b>No. of samples analysed</b>	<b>: 16</b>

#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TRH/BTEXN/PAH/Phenols&Metals
ES1325843-001	26-NOV-2013 15:00	LQ_SB01_1.0		✓		✓
ES1325843-002	26-NOV-2013 15:00	LQ_SB03_1.0		✓		✓
ES1325843-003	26-NOV-2013 15:00	LQ_SB04_0.7		✓		✓
ES1325843-004	26-NOV-2013 15:00	LQ_SB06_1.0		✓		✓
ES1325843-005	26-NOV-2013 15:00	LQ_SB05_1.0		✓		✓
ES1325843-006	26-NOV-2013 15:00	LQ_SB07_1.0		✓		✓
ES1325843-007	26-NOV-2013 15:00	LF_SB02_0.5				✓
ES1325843-008	26-NOV-2013 15:00	LQ_SB08_0.7		✓		✓
ES1325843-009	26-NOV-2013 15:00	LF_SB03_0.3				✓
ES1325843-010	26-NOV-2013 15:00	LF_SB04_0.6				✓
ES1325843-011	26-NOV-2013 15:00	LE_SB09_3.0				✓
ES1325843-012	26-NOV-2013 15:00	LQ_SB01_1.6		✓		✓
ES1325843-013	26-NOV-2013 15:00	LR_MW04_2.6	✓			
ES1325843-014	26-NOV-2013 15:00	LR_MW04_1.5	✓			
ES1325843-016	26-NOV-2013 15:00	TRIP SPIKE			✓	
ES1325843-017	26-NOV-2013 15:00	TRIP BLANK			✓	
ES1325843-018	26-NOV-2013 15:00	TSC			✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-05T TRH/BTEXN/8 Metals (Total)
ES1325843-015	26-NOV-2013 15:00	R01_261113_JK	✓

### Proactive Holding Time Report

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



### *Requested Deliverables*

#### **SYMPHONY MACGEN**

- \*AU Certificate of Analysis - NATA ( COA ) Email symphony.macgen@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email symphony.macgen@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC ) Email symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG ) Email symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT ) Email symphony.macgen@erm.com
- EDI Format - XTab ( XTAB ) Email symphony.macgen@erm.com

#### **THE ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	<b>: ES1325843</b>	<b>Page</b>	: 1 of 14
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	<b>: 0224198</b>	<b>Date Samples Received</b>	: 28-NOV-2013
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	: 05-DEC-2013
<b>Sampler</b>	<b>: JK</b>	<b>No. of samples received</b>	: 18
<b>Site</b>	<b>: LIDDELL</b>	<b>No. of samples analysed</b>	: 16
<b>Quote number</b>	<b>: SY/794/13</b>		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics





## General Comments

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

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

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

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

- **EP080: The TRIP SPIKE and TRIP SPIKE CONTROL have been analysed for volatile TPH and BTEX only. The TRIP SPIKE and TRIP SPIKE CONTROL were prepared in the lab using reagent grade sand spiked with petrol. The TRIP SPIKE was dispatched from the lab and the TRIP SPIKE CONTROL retained. The spike samples were extracted and analysed concurrently with samples reported in this batch.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_1.0	LQ_SB03_1.0	LQ_SB04_0.7	LQ_SB06_1.0	LQ_SB05_1.0
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-001	ES1325843-002	ES1325843-003	ES1325843-004	ES1325843-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	13.9	11.6	9.0	9.3	11.2
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	9	62	8	10	14
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	8	12	14	10
Copper	7440-50-8	5	mg/kg	8	15	12	14	11
Lead	7439-92-1	5	mg/kg	11	14	12	14	14
Nickel	7440-02-0	2	mg/kg	11	21	17	22	17
Zinc	7440-66-6	5	mg/kg	75	74	84	88	76
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_1.0	LQ_SB03_1.0	LQ_SB04_0.7	LQ_SB06_1.0	LQ_SB05_1.0
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-001	ES1325843-002	ES1325843-003	ES1325843-004	ES1325843-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_1.0	LQ_SB03_1.0	LQ_SB04_0.7	LQ_SB06_1.0	LQ_SB05_1.0
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-001	ES1325843-002	ES1325843-003	ES1325843-004	ES1325843-005
<b>EP080: BTEXN - Continued</b>								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	109	114	121	110	110
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	112	111	86.8	113	95.3
2-Chlorophenol-D4	93951-73-6	0.1	%	112	112	80.4	113	92.7
2,4,6-Tribromophenol	118-79-6	0.1	%	83.4	85.2	80.6	81.9	78.6
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	100	102	91.0	101	92.3
Anthracene-d10	1719-06-8	0.1	%	90.5	91.6	89.9	90.7	87.4
4-Terphenyl-d14	1718-51-0	0.1	%	80.6	81.7	80.6	81.4	77.8
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	105	109	103	107
Toluene-D8	2037-26-5	0.1	%	93.6	92.8	97.4	93.8	94.6
4-Bromofluorobenzene	460-00-4	0.1	%	101	99.6	104	97.7	101



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB07_1.0	LF_SB02_0.5	LQ_SB08_0.7	LF_SB03_0.3	LF_SB04_0.6
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-006	ES1325843-007	ES1325843-008	ES1325843-009	ES1325843-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	8.3	12.0	8.3	8.0	6.4
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	14	9	14	16
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	9	11	10	13
Copper	7440-50-8	5	mg/kg	9	10	7	7	10
Lead	7439-92-1	5	mg/kg	13	14	11	13	13
Nickel	7440-02-0	2	mg/kg	11	15	14	12	13
Zinc	7440-66-6	5	mg/kg	66	88	81	88	90
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB07_1.0	LF_SB02_0.5	LQ_SB08_0.7	LF_SB03_0.3	LF_SB04_0.6
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-006	ES1325843-007	ES1325843-008	ES1325843-009	ES1325843-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	90	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	9630	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	350	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	10100	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	620	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	9420	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	10000	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB07_1.0	LF_SB02_0.5	LQ_SB08_0.7	LF_SB03_0.3	LF_SB04_0.6
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-006	ES1325843-007	ES1325843-008	ES1325843-009	ES1325843-010
<b>EP080: BTEXN - Continued</b>								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	66.0	----	125	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	92.1	84.5	107	106	97.2
2-Chlorophenol-D4	93951-73-6	0.1	%	90.2	69.5	105	105	94.6
2,4,6-Tribromophenol	118-79-6	0.1	%	81.4	82.2	77.7	78.0	73.3
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	97.7	80.1	96.3	95.7	93.0
Anthracene-d10	1719-06-8	0.1	%	85.9	88.4	85.4	87.1	84.7
4-Terphenyl-d14	1718-51-0	0.1	%	77.6	78.6	76.7	77.7	76.6
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	104	106	103	97.7	95.8
Toluene-D8	2037-26-5	0.1	%	96.6	95.5	100	93.9	92.9
4-Bromofluorobenzene	460-00-4	0.1	%	102	107	109	98.8	98.9



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB09_3.0	LQ_SB01_1.6	TRIP SPIKE	TRIP BLANK	TSC
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-011	ES1325843-012	ES1325843-016	ES1325843-017	ES1325843-018
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.2	18.7	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	14	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	11	5	----	----	----
Copper	7440-50-8	5	mg/kg	5	<5	----	----	----
Lead	7439-92-1	5	mg/kg	16	8	----	----	----
Nickel	7440-02-0	2	mg/kg	3	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	56	47	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	2.7	<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	1.9	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB09_3.0	LQ_SB01_1.6	TRIP SPIKE	TRIP BLANK	TSC
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-011	ES1325843-012	ES1325843-016	ES1325843-017	ES1325843-018
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
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	<b>4.6</b>	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<b>69</b>	<10	<b>62</b>	<10	<b>67</b>
C10 - C14 Fraction	----	50	mg/kg	<b>760</b>	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<b>2850</b>	<b>260</b>	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<b>690</b>	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<b>4300</b>	<b>260</b>	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<b>126</b>	<10	<b>73</b>	<10	<b>80</b>
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<b>110</b>	<10	<b>40</b>	<10	<b>44</b>
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<b>1380</b>	<b>110</b>	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<b>2800</b>	<b>180</b>	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<b>170</b>	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<b>4350</b>	<b>290</b>	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<b>0.3</b>	<0.2	<b>0.6</b>	<0.2	<b>0.6</b>
Toluene	108-88-3	0.5	mg/kg	<b>2.0</b>	<0.5	<b>16.3</b>	<0.5	<b>17.7</b>
Ethylbenzene	100-41-4	0.5	mg/kg	<b>1.7</b>	<0.5	<b>2.1</b>	<0.5	<b>2.3</b>
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<b>8.4</b>	<0.5	<b>9.9</b>	<0.5	<b>11.0</b>
ortho-Xylene	95-47-6	0.5	mg/kg	<b>3.5</b>	<0.5	<b>4.1</b>	<0.5	<b>4.5</b>
^ Sum of BTEX	----	0.2	mg/kg	<b>15.9</b>	<0.2	<b>33.0</b>	<0.2	<b>36.1</b>
^ Total Xylenes	1330-20-7	0.5	mg/kg	<b>11.9</b>	<0.5	<b>14.0</b>	<0.5	<b>15.5</b>



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LE_SB09_3.0	LQ_SB01_1.6	TRIP SPIKE	TRIP BLANK	TSC
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325843-011	ES1325843-012	ES1325843-016	ES1325843-017	ES1325843-018
<b>EP080: BTEXN - Continued</b>								
Naphthalene	91-20-3	1	mg/kg	3	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	125	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	99.9	91.1	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	103	81.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	80.4	82.1	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	93.7	86.9	----	----	----
Anthracene-d10	1719-06-8	0.1	%	79.3	84.7	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	73.8	75.6	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	104	96.8	99.9	97.0
Toluene-D8	2037-26-5	0.1	%	104	101	96.0	95.1	102
4-Bromofluorobenzene	460-00-4	0.1	%	102	108	99.2	103	102



**Analytical Results**

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_261113\_JK

Client sampling date / time

26-NOV-2013 15:00

Compound	CAS Number	LOR	Unit	ES1325843-015				
<b>EG020T: Total Metals by ICP-MS</b>								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
<b>EP080: BTEXN</b>								
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	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	98.8	----	----	----	----



### Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

**R01\_261113\_JK**

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Client sampling date / time

26-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit
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**ES1325843-015**

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#### EP080S: TPH(V)/BTEX Surrogates - Continued

<b>Toluene-D8</b>	2037-26-5	0.1	%	<b>109</b>	----	----	----	----
<b>4-Bromofluorobenzene</b>	460-00-4	0.1	%	<b>98.7</b>	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
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

<b>Work Order</b>	: <b>ES1325843</b>	Page	: 1 of 14
<b>Client</b>	: <b>ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL	<b>Date Samples Received</b>	: 28-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 05-DEC-2013
<b>Sampler</b>	: JK	<b>No. of samples received</b>	: 18
<b>Order number</b>	: 0224198	<b>No. of samples analysed</b>	: 16
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3190920)</b>									
ES1325840-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.8	26.3	6.0	0% - 20%
ES1325843-002	LQ_SB03_1.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.6	10.0	14.8	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3190921)</b>									
ES1325843-011	LE_SB09_3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.2	17.4	1.0	0% - 50%
ES1325846-010	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.0	14.0	0.0	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3191682)</b>									
ES1325843-001	LQ_SB01_1.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	10	13.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	12	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	75	75	0.0	0% - 50%
ES1325843-011	LE_SB09_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	7	43.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	<5	92.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	14	9.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	56	50	10.7	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3191683)</b>									
ES1325843-001	LQ_SB01_1.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325843-011	LE_SB09_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3190751)</b>									
ES1326067-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1326183-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3187765)</b>									
ES1325840-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit





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 (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3187765) - continued</b>									
ES1325840-001	Anonymous	EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325843-003	LQ_SB04_0.7	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3187765)</b>									
ES1325840-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1325843-003	LQ_SB04_0.7	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3187765) - continued</b>									
ES1325843-003	LQ_SB04_0.7	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187741)</b>									
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325843-011	LE_SB09_3.0	EP080: C6 - C9 Fraction	----	10	mg/kg	69	55	22.6	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187764)</b>									
ES1325840-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325843-003	LQ_SB04_0.7	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187741)</b>									
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325843-011	LE_SB09_3.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	126	101	22.1	0% - 50%
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187764)</b>									
ES1325840-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325843-003	LQ_SB04_0.7	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3187741)</b>									
ES1325843-001	LQ_SB01_1.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP080: BTEXN (QC Lot: 3187741) - continued</b>									
ES1325843-001	LQ_SB01_1.0	EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325843-011	LE_SB09_3.0	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	0.3	0.3	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	2.0	1.5	26.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	1.7	1.3	27.5	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	8.4	6.4	27.6	0% - 50%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	3.5	2.6	27.8	No Limit
EP080: Naphthalene	91-20-3	1	mg/kg	3	3	0.0	No Limit		
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3190177)</b>									
EN1304368-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.010	0.010	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.095	0.089	6.4	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3191611)</b>									
ES1325303-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3190938)</b>									
ES1325845-008	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	710	650	8.5	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	60	<50	24.6	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1325845-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3190938)</b>									
ES1325845-008	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	680	580	15.3	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3188144)</b>									
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit



Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3188144) - continued</b>									
ES1325845-001	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		ES1325845-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1
EP080: Toluene	108-88-3	2		µg/L	<2	<2	0.0	No Limit	
EP080: Ethylbenzene	100-41-4	2		µg/L	<2	<2	0.0	No Limit	
EP080: meta- & para-Xylene	108-38-3 106-42-3	2		µg/L	<2	<2	0.0	No Limit	
EP080: ortho-Xylene	95-47-6	2		µg/L	<2	<2	0.0	No Limit	
EP080: Naphthalene	91-20-3	5		µg/L	<5	<5	0.0	No Limit	



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.9	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.1	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	104	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	97.2	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	103	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.2	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.2	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190751)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	57.4	117	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	114	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	115	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	102	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	107	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	81.4	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	106	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	95.2	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.0	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	86.4	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	84.6	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	86.5	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	16.3	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	111	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	104	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	109	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	116	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	113	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	115	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	103	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.3	73	121	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765) - continued</b>									
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	109	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	91.8	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	113	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	94.0	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	101	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	94.0	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.5	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	97.6	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	95.9	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	85.8	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.1	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	99.0	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	91.8	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	72.7	63	131	
<b>EP080: BTEXN (QCLot: 3187741)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	87.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	93.4	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	97.6	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.5	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	99.3	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3190177)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.2	79	121	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.6	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	103	83	115	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	107	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.0	85	115	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	83	117	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3190177) - continued</b>									
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.5	76	118	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191611)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	104	77	115	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	96.2	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.4	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.3	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	101	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	102	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	107	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.6	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	102	67	127	
<b>EP080: BTEXN (QCLot: 3188144)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	86.6	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	84.9	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.0	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	83.5	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	88.4	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	92.3	70	124	

### 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>								
ES1325843-001	LQ_SB01_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.7	70	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	99.6	70	130	
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130	
		EG005T: Lead	7439-92-1	125 mg/kg	96.4	70	130	



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682) - continued</b>								
ES1325843-001	LQ_SB01_1.0	EG005T: Nickel	7440-02-0	50 mg/kg	98.9	70	130	
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>								
ES1325843-001	LQ_SB01_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	88.6	70	130	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190751)</b>								
ES1326067-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	96.0	70	130	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>								
ES1325840-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	70	130	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	70	130	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	91.4	60	130	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	91.4	70	130	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	34.0	20	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>								
ES1325840-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	115	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>								
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	79.8	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>								
ES1325840-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	73.1	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.8	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	71.1	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>								
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.4	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>								
ES1325840-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.0	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.2	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	57.1	52	132	
<b>EP080: BTEXN (QCLot: 3187741)</b>								
ES1325843-001	LQ_SB01_1.0	EP080: Benzene	71-43-2	2.5 mg/kg	70.8	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.3	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.5	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	73.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	74.2	70	130	
EP080: Naphthalene	91-20-3	2.5 mg/kg	79.0	70	130			

Sub-Matrix: **WATER**

Matrix Spike (MS) Report





Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG020T: Total Metals by ICP-MS (QCLot: 3190177)</b>							
EN1304369-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	119	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	107	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	119	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	109	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	107	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	116	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191611)</b>							
ES1325843-015	R01_261113_JK	EG035T: Mercury	7439-97-6	0.010 mg/L	97.7	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>							
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>							
ES1325845-010	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	103	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	104	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	95.4	67	153
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>							
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>							
ES1325845-010	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	74	150
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	77	153
		EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	67	153
<b>EP080: BTEXN (QCLot: 3188144)</b>							
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	109	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	110	70	130
		106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.9	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	106	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
					Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>											
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	79.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>											
ES1325843-001	LQ_SB01_1.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.4	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3187741)</b>											
ES1325843-001	LQ_SB01_1.0	EP080: Benzene	71-43-2	2.5 mg/kg	70.8	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.3	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.5	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	73.6	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	74.2	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	79.0	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187764)</b>											
ES1325840-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	73.1	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	77.8	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	71.1	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187764)</b>											
ES1325840-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	94.0	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.2	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	57.1	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3187765)</b>											
ES1325840-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	113	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	112	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	91.4	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	91.4	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	34.0	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3187765)</b>											
ES1325840-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	115	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116	----	70	130	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190751)</b>											
ES1326067-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	96.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>											
ES1325843-001	LQ_SB01_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.7	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	99.6	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	96.4	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	98.9	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	----	70	130	----	----	



Sub-Matrix: SOIL					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>											
ES1325843-001	LQ_SB01_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	88.6	----	70	130	----	----	

Sub-Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3188144)</b>											
ES1325845-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	120	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3188144)</b>											
ES1325845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3188144)</b>											
ES1325845-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.0	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	109	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	110	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.9	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	106	----	70	130	----	----	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3190177)</b>											
EN1304369-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	119	----	70	130	----	----	
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	----	70	130	----	----	
		EG020A-T: Chromium	7440-47-3	1 mg/L	107	----	70	130	----	----	
		EG020A-T: Copper	7440-50-8	1 mg/L	119	----	70	130	----	----	
		EG020A-T: Lead	7439-92-1	1 mg/L	109	----	70	130	----	----	
		EG020A-T: Nickel	7440-02-0	1 mg/L	107	----	70	130	----	----	
		EG020A-T: Zinc	7440-66-6	1 mg/L	116	----	70	130	----	----	

<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3190938)</b>										
ES1325845-010	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	103	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	104	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	95.4	----	67	153	----	----

<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3190938)</b>										
ES1325845-010	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	98.1	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	96.3	----	67	153	----	----

<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191611)</b>										
ES1325843-015	R01_261113_JK	EG035T: Mercury	7439-97-6	0.010 mg/L	97.7	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325843</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 28-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: JK	No. of samples received	: 18
Order number	: 0224198	No. of samples analysed	: 16
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0	LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	----	----	----	03-DEC-2013	10-DEC-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0	LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	03-DEC-2013	25-MAY-2014	✓	04-DEC-2013	25-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0	LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	03-DEC-2013	24-DEC-2013	✓	05-DEC-2013	24-DEC-2013	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LQ_SB08_0.7	LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB01_1.6	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	05-DEC-2013	13-JAN-2014	✓



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
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b>							
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0, LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>							
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0, LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>							
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0, LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b>							
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0, TRIP SPIKE, TSC, LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6, TRIP BLANK,	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	03-DEC-2013	10-DEC-2013	✓



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	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LQ_SB01_1.0, LQ_SB04_0.7, LQ_SB05_1.0, LF_SB02_0.5, LF_SB03_0.3, LE_SB09_3.0, TRIP SPIKE, TSC	LQ_SB03_1.0, LQ_SB06_1.0, LQ_SB07_1.0, LQ_SB08_0.7, LF_SB04_0.6, LQ_SB01_1.6, TRIP BLANK,	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	03-DEC-2013	10-DEC-2013	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)</b>								
R01_261113_JK		26-NOV-2013	03-DEC-2013	25-MAY-2014	✓	03-DEC-2013	25-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)</b>								
R01_261113_JK		26-NOV-2013	----	----	----	04-DEC-2013	24-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP071)</b>								
R01_261113_JK		26-NOV-2013	03-DEC-2013	03-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
R01_261113_JK		26-NOV-2013	02-DEC-2013	10-DEC-2013	✓	02-DEC-2013	10-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b>								
R01_261113_JK		26-NOV-2013	02-DEC-2013	10-DEC-2013	✓	02-DEC-2013	10-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Total Mercury by FIMS	EG035T	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	10.0	*	NEPM 2013 Schedule B(3) and ALS QCS3 requirement





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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP) - Continued</b>							
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Total Mercury by FIMS	EG035T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Total Mercury by FIMS	EG035T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Mercury by FIMS	EG035T	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> 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) (Appdx. 2)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
Laboratory Duplicates (DUP)					
TPH - Semivolatile Fraction	1	20	5.0	10.0	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

**ALS**

**CHAIN OF CUSTODY**

ALS Laboratory: 1000 West 17th Street, Suite 100, Denver, CO 80202  
 Phone: 303.733.0100, Fax: 303.733.0101, Email: info@als.com  
 Project: Project Symphony  
 Order Number: 0224198  
 Project Manager: JOE FERRING  
 Sampler: JOHN BURIN

**CLIENT:** #ERM / MacGen  
**OFFICE:** Belmont  
**PROJECT:** Project Symphony  
**ORDER NUMBER:** 0224198  
**PROJECT MANAGER:** JOE FERRING  
**SAMPLER:** JOHN BURIN

**TURNAROUND REQUIREMENTS:** Standard TAT (List due date)  
 Standard TAT (List due date)  
 Non Standard or Urgent TAT (List due date)  
**ALS QUOTE NO.:** SY78413  
**SITE:** BAYSWATER CRODELL  
**CONTACT PH:**  
**SAMPLER MOBILE:**  
**EDD FORMAT (or default):**  
**RECEIVED BY:** S.M.S.  
**DATE/TIME:** 08/13 10:30  
**RELINQUISHED BY:**  
**DATE/TIME:** 28/11/13

**FOR LABORATORY**  
 Custody Seal Intact: Free Ice / Frozen Ice: Random Sample Te: Other Content:  
 Yes/No: Yes/No: °C  
**RECEIVED BY:** Ravinesh  
**DATE/TIME:** 28/11/13 19:00

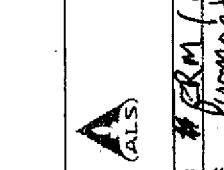
**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes (below)	refer to	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB, Solo Codes must be listed in aliquot will Where Metals are required, specify Total (unfiltered) or Dissolved (filtered))
1	LI-MW06-4.0	26/11/13	SOL	JAC	1	TOTAL	S2 Metals (As, Ba, Bi, Cd, Cr, Cu, Ni, Pb, Zn, Hg), 17 Metals (As, Ba, Bi, Cd, Co, Cr, Cu, Ni, Mn, Ni, Pb, P, V, Zn, Bi, Mo, Ti, Se), VOC Target Scan, Phenols, C9-24 TRHCs, COYBTEXN, PAH, PCB, pH (1:5), Exchangeable cations (ED07), PFOS/PFOA, Asbestos (absence/presence)
2	LI-MW07-2.9-3.0						
3	LS-SB03-2.7-2.8						
4	LS-SB01-2.9-3.0						
5	LS-SB04-2.7-3.3						
6	<del>LS-SB04-3.9-4.0</del>						
6	Pol-26113-JG						

**Water Container Codes:** P = Unpreserved Plastic; N = Nitril Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
 V = VOA Val HCl Preserved; VI = VOA Val Sodium Borophina Preserved; VS = VOA Val Sulfuric Preserved; NV = Airtight Unpreserved Val; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic (top for Acid Buffers) Solis; D = Unpreserved Bt

**Additional Information**  
 Comments on likely contaminant levels, dilutions, or samples requiring specific CC analysis etc.  
 No SAMPLE

Environmental Division  
 Sydney  
 Work Order  
**ES1325847**



Telephone : + 61-2-8784 8555

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1325847**

<p><b>Client : ENVIRO RESOURCES MANAGEMENT</b></p> <p><b>Contact : MR JOSEPH FERRING</b></p> <p><b>Address : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b></p>	<p><b>Laboratory : Environmental Division Sydney</b></p> <p><b>Contact : Barbara Hanna</b></p> <p><b>Address : 277-289 Woodpark Road Smithfield NSW Australia 2164</b></p>
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<p><b>E-mail : joseph.ferring@erm.com</b></p> <p><b>Telephone : +61 02 8584 8888</b></p> <p><b>Facsimile : +61 02 8584 8800</b></p>	<p><b>E-mail : Barbara.Hanna@alsglobal.com</b></p> <p><b>Telephone : +61 2 8784 8555</b></p> <p><b>Facsimile : +61 2 8784 8555</b></p>
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<p><b>Project : PROJECT SYMPHONY</b></p> <p><b>Order number : 0224198</b></p> <p><b>C-O-C number : ----</b></p> <p><b>Site : ----</b></p> <p><b>Sampler : JG</b></p>	<p><b>Page : 1 of 2</b></p> <p><b>Quote number : ES2013ENVRES0354 (EN/009/13)</b></p> <p><b>QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b></p>
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#### Dates

<p><b>Date Samples Received : 28-NOV-2013</b></p> <p><b>Client Requested Due Date : 05-DEC-2013</b></p>	<p><b>Issue Date : 28-NOV-2013 20:44</b></p> <p><b>Scheduled Reporting Date : 05-DEC-2013</b></p>
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#### Delivery Details

<p><b>Mode of Delivery : Carrier</b></p> <p><b>No. of coolers/boxes : 1 HARD</b></p> <p><b>Security Seal : Intact.</b></p>	<p><b>Temperature : 5.3°C - Ice present</b></p> <p><b>No. of samples received : 6</b></p> <p><b>No. of samples analysed : 6</b></p>
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-27 TRH/BTEXN/PAH/Phenols/8Metals
ES1325847-001	26-NOV-2013 15:00	LI_MW06_4.0	✓
ES1325847-002	26-NOV-2013 15:00	LI_MW07_2.9-3.0	✓
ES1325847-003	26-NOV-2013 15:00	LS_SB03_2.7-2.8	✓
ES1325847-004	26-NOV-2013 15:00	LS_SB01_2.9-3.0	✓
ES1325847-005	26-NOV-2013 15:00	LS_SB04_2.7-3.3	✓
ES1325847-006	26-NOV-2013 15:00	D01_261113_JG	✓

## Proactive Holding Time Report

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

## Requested Deliverables

### MR JOSEPH FERRING

- |  |       |                        |
|--|-------|------------------------|
| - *AU Certificate of Analysis - NATA ( COA )                     | Email | joseph.ferring@erm.com |
| - *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )    | Email | joseph.ferring@erm.com |
| - *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )            | Email | joseph.ferring@erm.com |
| - A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) | Email | joseph.ferring@erm.com |
| - Chain of Custody (CoC) ( COC )                                 | Email | joseph.ferring@erm.com |
| - EDI Format - ENMRG ( ENMRG )                                   | Email | joseph.ferring@erm.com |
| - EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )                     | Email | joseph.ferring@erm.com |
| - EDI Format - ESDAT ( ESDAT )                                   | Email | joseph.ferring@erm.com |
| - EDI Format - XTab ( XTAB )                                     | Email | joseph.ferring@erm.com |

### THE ACCOUNTS PAYABLE

- |                               |       |                     |
|-------------------------------|-------|---------------------|
| - A4 - AU Tax Invoice ( INV ) | Email | au.accounts@erm.com |
|-------------------------------|-------|---------------------|

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1325847</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224198 <b>C-O-C number</b> : ---- <b>Sampler</b> : JG <b>Site</b> : ----  <b>Quote number</b> : EN/009/13	<b>Page</b> : 1 of 9  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 28-NOV-2013 <b>Issue Date</b> : 05-DEC-2013  <b>No. of samples received</b> : 6 <b>No. of samples analysed</b> : 6
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics





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### **General Comments**

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_4.0	LI_MW07_2.9-3.0	LS_SB03_2.7-2.8	LS_SB01_2.9-3.0	LS_SB04_2.7-3.3
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325847-001	ES1325847-002	ES1325847-003	ES1325847-004	ES1325847-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	18.6	17.6	13.9	20.1	26.8
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	15	9	25	7	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	2
Chromium	7440-47-3	2	mg/kg	16	19	21	21	153
Copper	7440-50-8	5	mg/kg	25	20	12	15	326
Lead	7439-92-1	5	mg/kg	23	15	20	17	136
Nickel	7440-02-0	2	mg/kg	16	17	2	10	69
Zinc	7440-66-6	5	mg/kg	108	94	64	82	1420
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_4.0	LI_MW07_2.9-3.0	LS_SB03_2.7-2.8	LS_SB01_2.9-3.0	LS_SB04_2.7-3.3
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325847-001	ES1325847-002	ES1325847-003	ES1325847-004	ES1325847-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LI_MW06_4.0	LI_MW07_2.9-3.0	LS_SB03_2.7-2.8	LS_SB01_2.9-3.0	LS_SB04_2.7-3.3
				26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00	26-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325847-001	ES1325847-002	ES1325847-003	ES1325847-004	ES1325847-005
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	85.3	84.4	86.5	84.5	89.9
2-Chlorophenol-D4	93951-73-6	0.1	%	93.5	93.9	96.0	93.2	97.9
2,4,6-Tribromophenol	118-79-6	0.1	%	97.6	99.0	98.7	99.5	103
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	96.2	95.7	97.3	96.5	103
Anthracene-d10	1719-06-8	0.1	%	85.8	85.8	86.9	85.4	91.4
4-Terphenyl-d14	1718-51-0	0.1	%	86.1	85.0	86.7	85.7	91.0
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	88.9	89.2	89.7	105	94.0
Toluene-D8	2037-26-5	0.1	%	87.8	90.2	90.5	95.5	87.4
4-Bromofluorobenzene	460-00-4	0.1	%	95.6	95.3	98.3	105	94.6



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

D01\_261113\_JG

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Client sampling date / time

26-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325847-006	---	---	---	---
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### EA055: Moisture Content

Moisture Content (dried @ 103°C)	---	1.0	%	17.3	---	---	---	---
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### EG005T: Total Metals by ICP-AES

Arsenic	7440-38-2	5	mg/kg	6	---	---	---	---
Cadmium	7440-43-9	1	mg/kg	<1	---	---	---	---
Chromium	7440-47-3	2	mg/kg	15	---	---	---	---
Copper	7440-50-8	5	mg/kg	13	---	---	---	---
Lead	7439-92-1	5	mg/kg	27	---	---	---	---
Nickel	7440-02-0	2	mg/kg	4	---	---	---	---
Zinc	7440-66-6	5	mg/kg	58	---	---	---	---

### EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.1	mg/kg	<0.1	---	---	---	---
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### EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	0.5	mg/kg	<0.5	---	---	---	---
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	---	---	---	---
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	---	---	---	---
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	---	---	---	---
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	---	---	---	---
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	---	---	---	---
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	---	---	---	---
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	---	---	---	---
Pentachlorophenol	87-86-5	2	mg/kg	<2	---	---	---	---

### EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	---	---	---	---
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	---	---	---	---
Fluorene	86-73-7	0.5	mg/kg	<0.5	---	---	---	---
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	---	---	---	---
Anthracene	120-12-7	0.5	mg/kg	<0.5	---	---	---	---
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	---	---	---	---
Pyrene	129-00-0	0.5	mg/kg	<0.5	---	---	---	---



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

D01\_261113\_JG

Client sampling date / time

26-NOV-2013 15:00

Compound	CAS Number	LOR	Unit	ES1325847-006				
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

D01\_261113\_JG

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Client sampling date / time

26-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325847-006	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	90.6	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	99.3	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	104	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	101	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	90.0	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	90.1	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	88.6	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	91.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	93.9	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1325847</b>	<b>Page</b>	<b>: 1 of 11</b>
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	<b>: Barbara Hanna</b>
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	<b>: 28-NOV-2013</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 05-DEC-2013</b>
<b>Sampler</b>	<b>: JG</b>	<b>No. of samples received</b>	<b>: 6</b>
<b>Order number</b>	<b>: 0224198</b>	<b>No. of samples analysed</b>	<b>: 6</b>
<b>Quote number</b>	<b>: EN/009/13</b>		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba

#### Position

Senior Spectroscopist  
Senior Organic Chemist

#### Accreditation Category

Sydney Inorganics  
Sydney Organics



### **General Comments**

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

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

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

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



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3190922)</b>									
ES1325846-020	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.5	18.1	2.0	0% - 50%
ES1325846-031	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.0	16.3	10.0	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3190923)</b>									
ES1325847-004	LS_SB01_2.9-3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.1	19.0	5.8	0% - 20%
ES1325900-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	10.9	12.4	12.5	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3191682)</b>									
ES1325843-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	10	13.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	12	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	75	75	0.0	0% - 50%
ES1325843-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	7	43.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	<5	92.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	14	9.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	56	50	10.7	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3191683)</b>									
ES1325843-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325843-011	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3189101)</b>									
ES1325842-047	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3189101) - continued</b>									
ES1325842-047	Anonymous	EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1325899-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3189101)</b>									
ES1325842-047	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1325899-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3189101) - continued</b>									
ES1325899-002	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187741)</b>									
ES1325843-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325843-011	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	69	55	22.6	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187742)</b>									
ES1325899-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325900-010	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3189100)</b>									
ES1325842-047	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325899-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187741)</b>									
ES1325843-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325843-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	126	101	22.1	0% - 50%
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187742)</b>									
ES1325899-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325900-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3189100)</b>									
ES1325842-047	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325899-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3187741)</b>									



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 (%)
<b>EP080: BTEXN (QC Lot: 3187741) - continued</b>									
ES1325843-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1325843-011	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	0.3	0.3	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	2.0	1.5	26.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	1.7	1.3	27.5	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	8.4	6.4	27.6	0% - 50%
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	3.5	2.6	27.8	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	3	3	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3187742)</b>									
ES1325899-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1325900-010	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	105	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.9	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.1	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	104	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	97.2	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	103	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.2	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.2	66	112	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189101)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	82.4	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	89.9	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	107	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	108	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	88.2	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	88.0	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	94.8	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.6	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	92.1	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	93.0	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	93.4	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	25.9	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189101)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.5	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	106	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	100	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	108	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	108	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	107	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	108	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	99.1	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	102	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	96.3	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189101) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	98.4	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	98.3	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	99.5	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	97.1	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	88.5	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187742)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	93.7	68.4	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189100)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	107	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	109	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	95.2	64	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.1	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187742)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	94.5	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189100)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	103	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	107	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	76.7	63	131	
<b>EP080: BTEXN (QCLot: 3187741)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	87.4	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.4	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	93.4	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	97.6	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.5	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	99.3	62	138	
<b>EP080: BTEXN (QCLot: 3187742)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	69.2	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.5	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.4	58	118	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	93.1	60	120	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.3	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	104	62	138	





## 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>							
ES1325843-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.7	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.6	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	96.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.9	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>							
ES1325843-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	88.6	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189101)</b>							
ES1325842-047	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	75.8	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.2	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	74.1	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	76.5	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	54.4	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189101)</b>							
ES1325842-047	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	77.2	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	85.2	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>							
ES1325843-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	79.8	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187742)</b>							
ES1325899-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	108	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189100)</b>							
ES1325842-047	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.4	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	67.3	52	132
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>							
ES1325843-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.4	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187742)</b>							
ES1325899-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	110	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189100)</b>							
ES1325842-047	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	100	73	137



Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189100) - continued</b>								
ES1325842-047	Anonymous	EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.7	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.0	52	132	
<b>EP080: BTEXN (QCLot: 3187741)</b>								
ES1325843-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	70.8	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.3	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.5	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	73.6	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	74.2	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	79.0	70	130		
<b>EP080: BTEXN (QCLot: 3187742)</b>								
ES1325899-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	71.4	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	92.0	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	92.6	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	93.0	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	95.6	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	97.1	70	130		

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report							
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187741)</b>											
ES1325843-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	79.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187741)</b>											
ES1325843-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.4	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3187741)</b>											
ES1325843-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	70.8	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	74.3	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	73.5	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	73.6	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	74.2	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	79.0	----	70	130	----	----		



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187742)</b>											
ES1325899-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	108	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187742)</b>											
ES1325899-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	110	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3187742)</b>											
ES1325899-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	71.4	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	92.0	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	92.6	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	93.0	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	95.6	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	97.1	----	70	130	----	----		
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3189100)</b>											
ES1325842-047	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.4	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	67.3	----	52	132	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3189100)</b>											
ES1325842-047	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	100	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	72.7	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	55.0	----	52	132	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3189101)</b>											
ES1325842-047	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	75.8	----	70	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	79.2	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	74.1	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	76.5	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	54.4	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3189101)</b>											
ES1325842-047	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	77.2	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	85.2	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3191682)</b>											
ES1325843-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.7	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	99.6	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	106	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	96.4	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	98.9	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	89.1	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3191683)</b>											
ES1325843-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	88.6	----	70	130	----	----	

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325847</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 28-NOV-2013
C-O-C number	: ----	Issue Date	: 05-DEC-2013
Sampler	: JG	No. of samples received	: 6
Order number	: 0224198	No. of samples analysed	: 6
Quote number	: EN/009/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	----	----	----	03-DEC-2013	10-DEC-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	03-DEC-2013	25-MAY-2014	✓	04-DEC-2013	25-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	03-DEC-2013	24-DEC-2013	✓	05-DEC-2013	24-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
<b>Soil Glass Jar - Unpreserved (EP071)</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	04-DEC-2013	10-DEC-2013	✓	04-DEC-2013	13-JAN-2014	✓



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	
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	03-DEC-2013	10-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b>								
LI_MW06_4.0, LS_SB03_2.7-2.8, LS_SB04_2.7-3.3,	LI_MW07_2.9-3.0, LS_SB01_2.9-3.0, D01_261113_JG	26-NOV-2013	03-DEC-2013	10-DEC-2013	✓	03-DEC-2013	10-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	4	36	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.





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## Summary of Outliers

### **Outliers : Quality Control Samples**

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

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

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

#### **Regular Sample Surrogates**

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

### **Outliers : Analysis Holding Time Compliance**

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

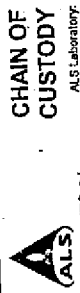
- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

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

- No Quality Control Sample Frequency Outliers exist.
-

04213



**CHAIN OF CUSTODY**  
ALS Laboratory  
Please tick

**TABLE 21** Burnside Road, Burnside SA 5095  
Ph: 08 8350 0900 E: address@als.com

**TABLE 22** 31 Sturt Street, Adelaide SA 5000  
Ph: 08 8350 0900 E: address@als.com

**TABLE 23** 1000 North East Road, North East SA 5014  
Ph: 08 8350 0900 E: address@als.com

**TABLE 24** 1000 North East Road, North East SA 5014  
Ph: 08 8350 0900 E: address@als.com

**CLIENT:** [Blank] **TURNAROUND REQUIREMENTS:**  Standard TAT (List due date)  Non Standard urgent TAT (List due date)

**OFFICE:** [Blank] **ALS QUOTE NO.:** SY79473

**PROJECT:** Project Symphony **SITE:** BAYSWATER / LIDDELL

**ORDER NUMBER:** [Blank] **CONTACT PH:** [Blank]

**PROJECT MANAGER:** [Blank] **SAMPLER MOBILE:** [Blank]

**SAMPLER:** [Blank] **EDD FORMAT (or default):** [Blank]

**COC emailed to ALS? (YES / NO):** [Blank]

**Additional info:** Email Reports to (will default to PM if no other addresses are listed): [Blank]  
Email Invoice to (will default to PM if no other addresses are listed): [Blank]

**FOR LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact?  Yes  No  N/A  
 Free Ice / Foam Ice blocks present upon receipt?  Yes  No  N/A  
 Random Sample Temperature on Receipt:  C

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below	TOTAL CONTAINERS	ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to attract suite price). Where Metals are required, specify Total (unfiltered) or Dissolved (filtered) (where required).	Additional Information
1	LA-SB01-0.1	9/11/13	soil			17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, B, Mn, Ni, Pb, V, Zn, Bi, Mo, Tl, Se) S-24 (As, Ba, Be, Cd, Co, Cr, Cu, B, Mn, Ni, Pb, V, Zn, Bi, Mo, Tl, Se) C40/B/B/K/K, P/A, H, Phendis	Comments on likely contaminant levels, dilutions, or samples requiring specific IGC analysis etc.
2	LA-MW07-0.5						
3	LA-SB04-0.1						
4	LA-SB03-0.1						
5	LA-MW06-0.1						
6	LA-SB06-0.1						
7	LA-SB08-0.1						
8	LA-MW05-0.1						
9	LA-SB05-0.1						
10	LA-SB02-0.1						

**RECEIVED BY:** Frank AS  
**DATE/TIME:** 26/11/13 1900

**RELINQUISHED BY:** [Blank] **DATE/TIME:** [Blank]

**RECEIVED BY:** [Blank] **DATE/TIME:** [Blank]

**RELINQUISHED BY:** [Blank] **DATE/TIME:** [Blank]

**Comments on likely contaminant levels, dilutions, or samples requiring specific IGC analysis etc.**

Environmental Division  
Sydney  
Work Order  
**ES1325885**



Telephone : + 61-2-8784 8555

**WATER CONTAINER CODES:** B = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sulfuric Preserved; VS = VOA Vial Sulfuric Preserved; AV = Air-tight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Tissue; HS = HCl Preserved Specimen; bottle; SP = Sulfuric Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved; Bottle; BT = Unpreserved Bag.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b> : <b>ES1325885</b>	
<b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Laboratory</b> : Environmental Division Sydney  <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224193 <b>C-O-C number</b> : ---- <b>Site</b> : BAYSWATER/LIDDELL <b>Sampler</b> : S.M
<b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800  <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224193 <b>C-O-C number</b> : ---- <b>Site</b> : BAYSWATER/LIDDELL <b>Sampler</b> : S.M	<b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555  <b>Page</b> : 1 of 3  <b>Quote number</b> : ES2013ENVRES0369 (SY/794/13)  <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

#### Dates

<b>Date Samples Received</b> : 26-NOV-2013 <b>Client Requested Due Date</b> : 04-DEC-2013	<b>Issue Date</b> : 03-DEC-2013 11:09 <b>Scheduled Reporting Date</b> : <b>04-DEC-2013</b>
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#### Delivery Details

<b>Mode of Delivery</b> : Carrier <b>No. of coolers/boxes</b> : 7 HARD <b>Security Seal</b> : Intact.	<b>Temperature</b> : 4.8°C - Ice present <b>No. of samples received</b> : 10 <b>No. of samples analysed</b> : 10
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#### 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
- **Samples received in appropriately pretreated and preserved containers.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA200 Asbestos Identification in Soils	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - S-27 TRH/BTEX/PAH/Phenols/8Metals
ES1325885-001	19-NOV-2013 15:00	LQ_SB01_0.1	✓	✓	✓
ES1325885-002	19-NOV-2013 15:00	LQ_MW07_0.5	✓	✓	✓
ES1325885-003	19-NOV-2013 15:00	LQ_SB04_0.1	✓	✓	✓
ES1325885-004	19-NOV-2013 15:00	LQ_SB03_0.1	✓	✓	✓
ES1325885-005	19-NOV-2013 15:00	LQ_MW06_0.1	✓	✓	✓
ES1325885-006	19-NOV-2013 15:00	LQ_SB06_0.1	✓	✓	✓
ES1325885-007	19-NOV-2013 15:00	LQ_SB08_0.1	✓	✓	✓
ES1325885-008	19-NOV-2013 15:00	LQ_MW05_0.1	✓	✓	✓
ES1325885-009	19-NOV-2013 15:00	LQ_SB05_0.1	✓	✓	✓
ES1325885-010	19-NOV-2013 15:00	LA_SB02_0.1	✓		✓

## Proactive Holding Time Report

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



## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com
- EDI Format - XTab ( XTAB )	Email	john.ewing@erm.com

### MR JOSEPH FERRING

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA ( COA )	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC )	Email	symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	symphony.macgen@erm.com
- EDI Format - XTab ( XTAB )	Email	symphony.macgen@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1325885</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224193 <b>C-O-C number</b> : ---- <b>Sampler</b> : S.M <b>Site</b> : BAYSWATER/LIDDELL  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 10  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 26-NOV-2013 <b>Issue Date</b> : 04-DEC-2013  <b>No. of samples received</b> : 10 <b>No. of samples analysed</b> : 10
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos



## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_0.1	LQ_MW07_0.5	LQ_SB04_0.1	LQ_SB03_0.1	LQ_MW06_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-001	ES1325885-002	ES1325885-003	ES1325885-004	ES1325885-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	20.2	17.9	13.1	24.0	13.8
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	589	421	505	390	628
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	8	13	8	5	6
Cadmium	7440-43-9	1	mg/kg	1	1	1	1	1
Chromium	7440-47-3	2	mg/kg	15	10	10	16	11
Copper	7440-50-8	5	mg/kg	13	13	17	13	13
Lead	7439-92-1	5	mg/kg	8	12	11	<5	6
Nickel	7440-02-0	2	mg/kg	21	28	19	21	24
Zinc	7440-66-6	5	mg/kg	45	78	41	103	74
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_0.1	LQ_MW07_0.5	LQ_SB04_0.1	LQ_SB03_0.1	LQ_MW06_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-001	ES1325885-002	ES1325885-003	ES1325885-004	ES1325885-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB01_0.1	LQ_MW07_0.5	LQ_SB04_0.1	LQ_SB03_0.1	LQ_MW06_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-001	ES1325885-002	ES1325885-003	ES1325885-004	ES1325885-005
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	96.0	104	102	112	124
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	92.8	91.7	90.0	88.2	92.5
2-Chlorophenol-D4	93951-73-6	0.1	%	102	101	98.9	96.3	102
2,4,6-Tribromophenol	118-79-6	0.1	%	97.4	97.0	97.5	63.7	97.3
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	108	105	104	104	108
Anthracene-d10	1719-06-8	0.1	%	96.2	93.1	91.7	92.5	95.4
4-Terphenyl-d14	1718-51-0	0.1	%	92.4	92.3	91.0	89.8	92.7
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.1	91.1	96.2	94.0	97.4
Toluene-D8	2037-26-5	0.1	%	97.8	94.2	101	97.0	95.1
4-Bromofluorobenzene	460-00-4	0.1	%	95.0	92.8	96.3	95.8	92.0



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB06_0.1	LQ_SB08_0.1	LQ_MW05_0.1	LQ_SB05_0.1	LA_SB02_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-006	ES1325885-007	ES1325885-008	ES1325885-009	ES1325885-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	20.4	23.7	19.9	18.3	16.0
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	485	549	452	469	327
APPROVED IDENTIFIER:	----	-	--	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE	P.RENNIE
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	14	10	<5	5	8
Cadmium	7440-43-9	1	mg/kg	1	1	1	1	1
Chromium	7440-47-3	2	mg/kg	10	13	15	12	16
Copper	7440-50-8	5	mg/kg	14	16	12	12	34
Lead	7439-92-1	5	mg/kg	14	8	16	<5	38
Nickel	7440-02-0	2	mg/kg	18	21	21	20	11
Zinc	7440-66-6	5	mg/kg	89	81	70	68	432
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB06_0.1	LQ_SB08_0.1	LQ_MW05_0.1	LQ_SB05_0.1	LA_SB02_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-006	ES1325885-007	ES1325885-008	ES1325885-009	ES1325885-010
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.3
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.9
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.3
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.7
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<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	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	6.8
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.7
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.3
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	430
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	220
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	650
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	70
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	560
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	120
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	750



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LQ_SB06_0.1	LQ_SB08_0.1	LQ_MW05_0.1	LQ_SB05_0.1	LA_SB02_0.1
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00
Compound	CAS Number	LOR	Unit	ES1325885-006	ES1325885-007	ES1325885-008	ES1325885-009	ES1325885-010
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	70
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	100	128	127	122	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	87.8	89.9	91.8	90.1	89.6
2-Chlorophenol-D4	93951-73-6	0.1	%	96.0	99.0	98.8	96.2	97.6
2,4,6-Tribromophenol	118-79-6	0.1	%	94.7	97.8	54.8	46.4	102
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	102	104	106	106	104
Anthracene-d10	1719-06-8	0.1	%	91.1	92.1	95.0	93.2	84.4
4-Terphenyl-d14	1718-51-0	0.1	%	90.8	91.6	95.5	89.8	87.1
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	91.1	90.7	87.7	97.9	89.1
Toluene-D8	2037-26-5	0.1	%	89.8	95.1	87.1	95.6	85.3
4-Bromofluorobenzene	460-00-4	0.1	%	89.5	94.1	89.0	93.4	75.3



## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LQ_SB01_0.1 - 19-NOV-2013 15:00	Brown clay soil with some vegetation
EA200: Description	LQ_MW07_0.5 - 19-NOV-2013 15:00	Brown clay soil with some vegetation
EA200: Description	LQ_SB04_0.1 - 19-NOV-2013 15:00	Mix of light brown and grey clay soil
EA200: Description	LQ_SB03_0.1 - 19-NOV-2013 15:00	Mix of light brown and grey clay soil
EA200: Description	LQ_MW06_0.1 - 19-NOV-2013 15:00	Mix of light brown and grey clay soil
EA200: Description	LQ_SB06_0.1 - 19-NOV-2013 15:00	Brown clay soil with small to medium sized grey and brown rocks
EA200: Description	LQ_SB08_0.1 - 19-NOV-2013 15:00	Mix of brown and grey clay soil
EA200: Description	LQ_MW05_0.1 - 19-NOV-2013 15:00	Mix of brown and grey clay soil
EA200: Description	LQ_SB05_0.1 - 19-NOV-2013 15:00	Mix of brown and grey clay soil
EA200: Description	LA_SB02_0.1 - 19-NOV-2013 15:00	Dark brown clay soil with some vegetation



### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1325885</b>	<b>Page</b>	: 1 of 12
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	<b>: PROJECT SYMPHONY</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	<b>: BAYSWATER/LIDDELL</b>	<b>Date Samples Received</b>	: 26-NOV-2013
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	: 04-DEC-2013
<b>Sampler</b>	<b>: S.M</b>	<b>No. of samples received</b>	: 10
<b>Order number</b>	<b>: 0224193</b>	<b>No. of samples analysed</b>	: 10
<b>Quote number</b>	<b>: SY/794/13</b>		

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

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

Celine Conceicao  
Pabi Subba  
Peter Rennie

#### Position

Senior Spectroscopist  
Senior Organic Chemist  
Asbestos Identifier

#### Accreditation Category

Sydney Inorganics  
Sydney Organics  
Newcastle - Asbestos





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### **General Comments**

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

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

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

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



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3189044)</b>									
ES1325884-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.2	13.0	1.5	0% - 50%
ES1325885-007	LQ_SB08_0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.7	21.8	8.5	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3186205)</b>									
ES1325762-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	7	10	36.5	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	33	38	15.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	11	20.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	15	15	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	1700	1980	15.4	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	253	226	11.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	6020	6030	0.2	0% - 20%
ES1325780-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	3	2	57.8	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	15	38.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	10	9	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	16	8	70.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	27	7.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	55	52	5.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	135	140	3.7	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3186207)</b>									
ES1325885-004	LQ_SB03_0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	16	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	24	10.2	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	15	18.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	6	24.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	103	92	10.7	0% - 20%
ES1325942-004	Anonymous	EG005T: Cadmium	7440-43-9	0.4	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	25	7.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	17	19	11.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	35	25	31.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	29	34	16.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	86	99	14.8	0% - 50%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3186206)</b>									
ES1325762-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	0.0	No Limit
ES1325780-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3186208)</b>									
ES1325885-004	LQ_SB03_0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3185564)</b>									
ES1325879-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325884-005	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3183195)</b>									
ES1325882-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
		ES1325885-001	LQ_SB01_0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5
EP075(SIM): 2-Chlorophenol	95-57-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2,4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2,4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2,6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			1	mg/kg	<1	<1	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2	mg/kg	<2	<2	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183195)</b>									
ES1325882-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



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 (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183195) - continued</b>									
ES1325882-001	Anonymous	EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3183194)</b>									
ES1325882-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3183200)</b>									
ES1325882-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3183194)</b>									
ES1325882-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3183194) - continued</b>									
ES1325882-001	Anonymous	EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3183200)</b>									
ES1325882-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3183200)</b>									
ES1325882-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1325885-001	LQ_SB01_0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186205)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	116	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	112	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	111	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	109	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	105	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	113	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186207)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	109	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	110	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	107	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	106	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	101	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	110	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	111	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186206)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.8	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186208)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.3	66	112	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185564)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	89.5	57.4	117	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183195)</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	99.0	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	101	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	104	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	106	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	88.6	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	90.9	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	98.7	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	102	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	93.9	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	94.4	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	96.9	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	16.8	3.9	57	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183195)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	102	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	112	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	113	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	113	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	104	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	106	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	99.0	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	112	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	102	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	98.7	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	98.6	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	97.4	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183194)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	85.8	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	95.8	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	96.5	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183200)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	104	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183194)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	87.6	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	99.1	74	138	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	84.2	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183200)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	106	68.4	128	
<b>EP080: BTEXN (QCLot: 3183200)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.1	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	102	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	62	138	



### 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

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186205)</b>							
ES1325762-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	114	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	# Not Determined	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	80.5	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	# Not Determined	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186207)</b>							
ES1325885-004	LQ_SB03_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	109	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	99.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	82.2	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186206)</b>							
ES1325762-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.0	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186208)</b>							
ES1325885-004	LQ_SB03_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	89.8	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185564)</b>							
ES1325879-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	121	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183195)</b>							
ES1325882-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	83.1	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.5	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	81.8	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	82.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	46.3	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183195)</b>							
ES1325882-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.4	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183194)</b>							





Sub-Matrix: SOIL				Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183194) - continued</b>								
ES1325882-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.2	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.9	52	132	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183200)</b>								
ES1325882-005	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.8	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183194)</b>								
ES1325882-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	100	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.3	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	58.4	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183200)</b>								
ES1325882-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	87.3	70	130	
<b>EP080: BTEXN (QCLot: 3183200)</b>								
ES1325882-005	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	79.8	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	86.5	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.7	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	84.4	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	86.2	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.7	70	130		

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183194)</b>										
ES1325882-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	78.2	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	80.6	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	72.9	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183194)</b>										
ES1325882-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	100	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	75.3	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	58.4	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183195)</b>										
ES1325882-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	83.1	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183195) - continued</b>											
ES1325882-001	Anonymous	EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	86.5	----	70	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	81.8	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	82.2	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	46.3	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183195)</b>											
ES1325882-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.6	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.4	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183200)</b>											
ES1325882-005	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.8	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183200)</b>											
ES1325882-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	87.3	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3183200)</b>											
ES1325882-005	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	79.8	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	86.5	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.7	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	84.4	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	86.2	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.7	----	70	130	----	----		
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3185564)</b>											
ES1325879-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	121	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186205)</b>											
ES1325762-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	107	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	107	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	114	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	# Not Determined	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	80.5	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	106	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	# Not Determined	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186206)</b>											
ES1325762-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186207)</b>											
ES1325885-004	LQ_SB03_0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	109	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.2	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	104	----	70	130	----	----	

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 Work Order : ES1325885  
 Client : ENVIRO RESOURCES MANAGEMENT  
 Project : PROJECT SYMPHONY



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3186207) - continued</b>										
ES1325885-004	LQ_SB03_0.1	EG005T: Lead	7439-92-1	125 mg/kg	99.6	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	100	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	82.2	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3186208)</b>										
ES1325885-004	LQ_SB03_0.1	EG035T: Mercury	7439-97-6	5 mg/kg	89.8	----	70	130	----	----



## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325885</b>	Page	: 1 of 6
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BAYSWATER/LIDDELL	Date Samples Received	: 26-NOV-2013
C-O-C number	: ----	Issue Date	: 04-DEC-2013
Sampler	: S.M	No. of samples received	: 10
Order number	: 0224193	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1	LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	----	----	----	02-DEC-2013	03-DEC-2013	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
<b>Snap Lock Bag (EA200)</b>								
LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1	LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	---	18-MAY-2014	----	04-DEC-2013	02-JUN-2014	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1	LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	29-NOV-2013	18-MAY-2014	✓	30-NOV-2013	18-MAY-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1	LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	29-NOV-2013	17-DEC-2013	✓	30-NOV-2013	17-DEC-2013	✓



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
<b>EP066: Polychlorinated Biphenyls (PCB)</b>							
<b>Soil Glass Jar - Unpreserved (EP066)</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1	19-NOV-2013	02-DEC-2013	03-DEC-2013	✓	03-DEC-2013	11-JAN-2014	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✓	03-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✓	03-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✓	03-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	29-NOV-2013	03-DEC-2013	✓	02-DEC-2013	03-DEC-2013	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP080)</b> LQ_SB01_0.1, LQ_SB04_0.1, LQ_MW06_0.1, LQ_SB08_0.1, LQ_SB05_0.1 LQ_MW07_0.5, LQ_SB03_0.1, LQ_SB06_0.1, LQ_MW05_0.1, LA_SB02_0.1	19-NOV-2013	29-NOV-2013	03-DEC-2013	✓	02-DEC-2013	03-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	30	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	31	12.9	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	6.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	31	6.5	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	6.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	31	6.5	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	30	6.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	31	6.5	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.





## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EG005T: Total Metals by ICP-AES	ES1325762-001	Anonymous	Copper	7440-50-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG005T: Total Metals by ICP-AES	ES1325762-001	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory  
Melbourne, VIC 3000

LABORATORY: 18 Brunel Road, Parkville, VIC 3045  
Ph: 03 9397 6000  
LABORATORY: 232-234 Street, Geelong, VIC 3220  
Ph: 03 5220 7322  
LABORATORY: 42 Coleridge, Geelong, VIC 3220  
Ph: 03 5211 5000

LABORATORY: 781 Hume Road, Northcote, VIC 3070  
Ph: 03 9441 9172  
LABORATORY: 3-4 Market Street, Melbourne, VIC 3001  
Ph: 03 5250 0000  
LABORATORY: 272 Swaner Road, Mulgrave, VIC 3230  
Ph: 03 512 8700

LABORATORY: 5 River Gum Road, Werribee, VIC 3046  
Ph: 02 4688 9433  
LABORATORY: 412 Geary Place, Northcote, VIC 3071  
Ph: 03 9443 2082  
LABORATORY: 10100 Vauxhall, WA 6000  
Ph: 08 9240 7655

LABORATORY: 277-289 Woodbank Road, Sandhurst, VIC 3231  
Ph: 03 9314 4331  
LABORATORY: 15 Deane Court, Ballarat, VIC 3240  
Ph: 03 4200 0090  
LABORATORY: 10000 Stoney Creek, Wollongong, NSW 2500  
Ph: 02 4253 8112

CLIENT: **ERM**

OFFICE: **Sydney**

PROJECT: **Project Symphony**

ORDER NUMBER: **0224198**

PROJECT MANAGER: **J. Fering**

SAMPLER: **T. ARMANI**

CONTACT PH: \_\_\_\_\_

SAMPLER MOBILE: **040406395**

EDD FORMAT (or default): \_\_\_\_\_

RELINQUISHED BY: **T. ARMANI**

DATE/TIME: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_

DATE/TIME: \_\_\_\_\_

FOR LABORATORY USE ONLY (circled)

Custody Seal intact? Yes No N/A

Free Ice / frozen Ice sticks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: \_\_\_\_\_ °C

Other comment: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_

DATE/TIME: \_\_\_\_\_

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: \_\_\_\_\_

ALS USE	SAMPLE DETAILS MATRIX: SOLID(S) WATER (W)	DATE / TIME	MATRIX	CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attract suite price) When Metals are required, specify Total (unfiltered) (bristle required) or Dissolved (frit filter and bottle required).							Additional Information	
						S-24 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Ti, Se)	S-24 TRH (C6-C40) (BTEXN, PAH, Phenols)	VOC Target Scan	PCB	pH (1:5)	Exchangeable cations (ED007)		PFOS/PFOA
1	LP SB03 3.0	19.11.13	SOIL		1	X	X	X	X	X	X	X		
2	LP SB03 0.1			bcg	1	X	X	X	X	X	X	X		
3	LN-MW05 3.0			bag	1	X	X	X	X	X	X	X		
4	LN-MW02 3.0				1	X	X	X	X	X	X	X		
5	LN-MW02 6.0			bag	1	X	X	X	X	X	X	X		
6	LN-MW01 0.1				1	X	X	X	X	X	X	X		
7	LN-MW07 3.0				1	X	X	X	X	X	X	X		
8	PO1-19 MW3-SK				1	X	X	X	X	X	X	X		
9	Trip Blank 8				1	X	X	X	X	X	X	X		
10	Trip Blank 9				1	X	X	X	X	X	X	X		

Matrix Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; CR = Nitric Preserved CR; SH = Sodium Hydroxide Preserved; W = VOA Vial NCI Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfide Preserved; AV = Air-tight Unpreserved Vial; SG = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Supplied; B = Unpreserved Bag; W = Water

Organized By / Date: \_\_\_\_\_  
Relinquished By / Date: \_\_\_\_\_  
Lab / Analysis: PSD + Asbestos - Bags  
Success / Forward Lab / Split WO

Sample taken R01-18 11/3-SK  
return to  
R01-19 11/3-SK

Environmental Division  
Sydney  
Work Order  
**ES1325886**



Telephone : +61-2-8784 8555

Attach By PO / Internal Sheet:

041218

Extra →

## Wael Saleh

---

**From:** Barbara Hanna  
**Sent:** Thursday, 5 December 2013 4:54 PM  
**To:** Wael Saleh  
**Subject:** FW: Batch ES1325886 - discrepancies between SRN and COC  
**Attachments:** ES1325886\_COC.pdf; ES1325886\_0\_SRN\_131127213059.pdf

**Importance:** High

Hi Wael,

Could you please arrange this ASAP.

Thanks!!

Kind Regards

## Barbara Hanna

**Client Services Manager**  
**ALS | Environmental Division**

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

*How was your customer experience? [Please send us your feedback](#)*

*Please see our latest [EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013](#)*

*[EnviroMail 69 - Testing Requirements of the new NEPM - July 2013](#)*

*[EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013](#)*

T +61 2 8784 8555  
F +61 2 8784 8500  
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Reduction in Sample Volumes – Improving quality, safety, efficiency and sustainability in environmental practices



Please consider the environment before printing this email.

---

**From:** Clea Henderson [mailto:Clea.Henderson@erm.com]  
**Sent:** Thursday, 5 December 2013 3:48 PM  
**To:** Barbara Hanna  
**Cc:** Joseph Ferring; John Ewing; ERM Australia Project Symphony MacGen  
**Subject:** Batch ES1325886 - discrepancies between SRN and COC  
**Importance:** High

Hi Barbara,

Thanks for sending through the COC for ES1325886 yesterday. I have just checked it against the SRN that was sent through last week and have found some discrepancies between the analysis we requested on the COC and that listed on the SRN, as follows:

**ES1325886-003 (LN MW05 3.0)**

Requested on COC      Soil S-27; VOCs; PCBs  
Listed on SRN          Soil S-27; VOCs; PCBs; pH; Electrical Conductivity

**ES1325886-004 (LN MW02 3.0)**

Requested on COC      Soil S-27; VOCs; PCBs; Exchangeable Cations, pH  
Listed on SRN          Soil S-27; VOCs; PCBs; Exchangeable Cations

If possible, please amend the analysis to that requested on the COC and re-issue the SRN.

Many thanks Barbara,

Clea Henderson  
Chemical Engineer

Environmental Resources Management  
Level 3, Tower 3, 13-38 Siddeley Street,  
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)  
Tel: +61 3 9696 8011 (switchboard)  
Fax: +61 3 9696 8022

[www.erm.com](http://www.erm.com)  
[clea.henderson@erm.com](mailto:clea.henderson@erm.com)

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## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	: <b>ES1325886</b>		
<b>Client</b>	: <b>ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact Address</b>	: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Contact Address</b>	: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>Page</b>	: 1 of 3
<b>Order number</b>	: 0224193	<b>Quote number</b>	: ES2013ENVRES0369 (SY/794/13)
<b>C-O-C number</b>	: ----	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL		
<b>Sampler</b>	: T.A		

#### Dates

<b>Date Samples Received</b>	: 26-NOV-2013	<b>Issue Date</b>	: 06-DEC-2013 10:12
<b>Client Requested Due Date</b>	: 06-DEC-2013	<b>Scheduled Reporting Date</b>	: <b>06-DEC-2013</b>

#### Delivery Details

<b>Mode of Delivery</b>	: Carrier	<b>Temperature</b>	: 5.3°C - Ice present
<b>No. of coolers/boxes</b>	: 7 HARD	<b>No. of samples received</b>	: 10
<b>Security Seal</b>	: Intact.	<b>No. of samples analysed</b>	: 10

#### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Insufficient time received for analysis of some analytes within 'analytical holding times'. Samples should be submitted with at least half the holding time remaining to minimize the possibility of holding time breaches.
- **Samples received in appropriately pretreated and preserved containers.**
- **All analysis will be reported on the scheduled due date 04/12/13, except for PSD analysis will be reported on 06/12/13**
- **Asbestos and PSD analysis will be conducted by ALS Newcastle.**
- **Breaches in recommended extraction / analysis holding times may occur. Please refer to the 'Proactive Holding Time Report' below for further details. Please contact ALS if further information is required.**
- **Sample TRIP SPIKE has not been received, but received extra TRIP BLANK and conducted TPH C6-C9/BTEX analysis , Please confirm**
- 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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA002 pH (1:5)	SOIL - EA150* Particle Size Analysis by Sieving (Default sieves from SOIL - EA200 Asbestos Identification in Soils	SOIL - ED007 CEC / Exchangeable Cations (ED007)-All	SOIL - EP004 (Carbon) Total Organic Carbon (Calc.)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP074 (solids) Volatile Organic Compounds	SOIL - S-02 8 Metals (incl. Digestion)
ES1325886-002	19-NOV-2013 00:00	LP_SB03_0.1		✓					
ES1325886-003	19-NOV-2013 00:00	LN_MW05_3.0				✓	✓		
ES1325886-004	19-NOV-2013 00:00	LN_MW02_3.0	✓		✓	✓	✓		
ES1325886-005	19-NOV-2013 00:00	LN_MW02_6.0		✓		✓		✓	
ES1325886-006	19-NOV-2013 00:00	LN_MW01_2.1				✓	✓		
ES1325886-007	19-NOV-2013 00:00	LN_MW07_3.2				✓	✓		

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-18 (NO MOIST) TPRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-27 TPRH/BTEXN/PAH/Phenols&Metals
ES1325886-001	19-NOV-2013 00:00	LP_SB03_3.0		✓
ES1325886-003	19-NOV-2013 00:00	LN_MW05_3.0		✓
ES1325886-004	19-NOV-2013 00:00	LN_MW02_3.0		✓
ES1325886-006	19-NOV-2013 00:00	LN_MW01_2.1		✓
ES1325886-007	19-NOV-2013 00:00	LN_MW07_3.2		✓
ES1325886-009	19-NOV-2013 15:00	TRIP BLANK 8	✓	
ES1325886-010	19-NOV-2013 15:00	TRIP BLANK 9	✓	



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-27T TRH/BTEX/PAH/Phenols/Total 8 Metals
ES1325886-008	19-NOV-2013 15:00	R01_191113_JK	✓

### Proactive Holding Time Report

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

### Requested Deliverables

#### JOHN EWING

- \*AU Certificate of Analysis - NATA ( COA ) Email john.ewing@erm.com
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI ) Email john.ewing@erm.com
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC ) Email john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN ) Email john.ewing@erm.com
- Attachment - Report ( SUBCO ) Email john.ewing@erm.com
- Chain of Custody (CoC) ( COC ) Email john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG ) Email john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS\_V5\_ERM ) Email john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT ) Email john.ewing@erm.com
- EDI Format - XTab ( XTAB ) Email john.ewing@erm.com

#### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV ) Email au.accounts@erm.com

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1325886</b>	Page	: 1 of 17
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193	Date Samples Received	: 26-NOV-2013
C-O-C number	: ----	Issue Date	: 09-DEC-2013
Sampler	: T.A	No. of samples received	: 10
Site	: LIDDELL	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits





## 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.

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

#### Signatories

#### Position

#### Accreditation Category

Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
		Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
				ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
Compound	CAS Number	LOR	Unit					
<b>EA150: Particle Sizing</b>								
+75µm	----	1	%	----	----	----	----	25
+150µm	----	1	%	----	----	----	----	21
+300µm	----	1	%	----	----	----	----	15
+425µm	----	1	%	----	----	----	----	13
+600µm	----	1	%	----	----	----	----	11
+1180µm	----	1	%	----	----	----	----	9
+2.36mm	----	1	%	----	----	----	----	6
+4.75mm	----	1	%	----	----	----	----	3
+9.5mm	----	1	%	----	----	----	----	<1
+19.0mm	----	1	%	----	----	----	----	<1
+37.5mm	----	1	%	----	----	----	----	<1
+75.0mm	----	1	%	----	----	----	----	<1
<b>EA002 : pH (Soils)</b>								
pH Value	----	0.1	pH Unit	----	----	----	7.5	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	23.6	----	29.9	17.6	16.9
<b>EA150: Soil Classification based on Particle Size</b>								
Fines (<75 µm)	----	1	%	----	----	----	----	75
Sand (>75 µm)	----	1	%	----	----	----	----	18
Gravel (>2mm)	----	1	%	----	----	----	----	6
Cobbles (>6cm)	----	1	%	----	----	----	----	<1
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	232	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	S.SPOONER	----	----	----
<b>ED007: Exchangeable Cations</b>								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	<0.1	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	<0.1	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	0.3	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	1.7	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	2.0	----
Exchangeable Aluminium	----	0.1	meq/100g	----	----	----	<0.1	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
Compound	CAS Number	LOR	Unit	ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	24	----	<5	<5	18
Cadmium	7440-43-9	1	mg/kg	1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	----	6	6	12
Copper	7440-50-8	5	mg/kg	25	----	7	8	25
Lead	7439-92-1	5	mg/kg	12	----	16	6	14
Nickel	7440-02-0	2	mg/kg	16	----	3	7	25
Zinc	7440-66-6	5	mg/kg	67	----	11	23	83
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	<0.1	<0.1	<0.1
<b>EP004: Organic Matter</b>								
Organic Matter	----	0.5	%	----	----	----	----	0.6
Total Organic Carbon	----	0.5	%	----	----	----	----	<0.5
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	<0.1	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	<0.5	----
Isopropylbenzene	98-82-8	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Propylbenzene	103-65-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	----	----	<0.5	<0.5	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	----	----	<0.5	<0.5	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	----	----	<0.5	<0.5	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	----	----	<0.5	<0.5	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	----	----	<0.5	<0.5	----
n-Butylbenzene	104-51-8	0.5	mg/kg	----	----	<0.5	<0.5	----
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	----	----	<5	<5	----
2-Butanone (MEK)	78-93-3	5	mg/kg	----	----	<5	<5	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	----	----	<5	<5	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	----	----	<5	<5	----
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	----	----	<0.5	<0.5	----
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	----	----	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
Compound	CAS Number	LOR	Unit	ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
<b>EP074D: Fumigants - Continued</b>								
1.2-Dichloropropane	78-87-5	0.5	mg/kg	----	----	<0.5	<0.5	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	----	----	<0.5	<0.5	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	----	----	<0.5	<0.5	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	----	----	<5	<5	----
Chloromethane	74-87-3	5	mg/kg	----	----	<5	<5	----
Vinyl chloride	75-01-4	5	mg/kg	----	----	<5	<5	----
Bromomethane	74-83-9	5	mg/kg	----	----	<5	<5	----
Chloroethane	75-00-3	5	mg/kg	----	----	<5	<5	----
Trichlorofluoromethane	75-69-4	5	mg/kg	----	----	<5	<5	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg	----	----	<0.5	<0.5	----
Iodomethane	74-88-4	0.5	mg/kg	----	----	<0.5	<0.5	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg	----	----	<0.5	<0.5	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	----	----	<0.5	<0.5	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg	----	----	<0.5	<0.5	----
Trichloroethene	79-01-6	0.5	mg/kg	----	----	<0.5	<0.5	----
Dibromomethane	74-95-3	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	----	----	<0.5	<0.5	----
Tetrachloroethene	127-18-4	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	----	----	<0.5	<0.5	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	----	----	<0.5	<0.5	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	----	----	<0.5	<0.5	----
Pentachloroethane	76-01-7	0.5	mg/kg	----	----	<0.5	<0.5	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	----	----	<0.5	<0.5	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	----	----	<0.5	<0.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
Compound	CAS Number	LOR	Unit	ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	----	----	<0.5	<0.5	----
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	<0.5	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	<0.5	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	<0.5	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	<0.5	<0.5	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	<0.5	<0.5	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	<0.5	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	<0.5	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	<0.5	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	<0.5	----
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	<0.5	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	----	----	<5	<5	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	----	<2	<2	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----



**Analytical Results**

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
Compound	CAS Number	LOR	Unit	ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	<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	<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	----	<b>0.6</b>	<b>0.6</b>	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	----	<b>1.2</b>	<b>1.2</b>	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	----
<b>EP080: BTEXN</b>								



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB03_3.0	LP_SB03_0.1	LN_MW05_3.0	LN_MW02_3.0	LN_MW02_6.0
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 00:00
Compound	CAS Number	LOR	Unit	ES1325886-001	ES1325886-002	ES1325886-003	ES1325886-004	ES1325886-005
<b>EP080: BTEXN - Continued</b>								
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	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	97.5	106	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	92.3	108	----
Toluene-D8	2037-26-5	0.1	%	----	----	100	118	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	93.0	105	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	91.4	----	89.7	83.0	----
2-Chlorophenol-D4	93951-73-6	0.1	%	100	----	99.5	89.9	----
2,4,6-Tribromophenol	118-79-6	0.1	%	104	----	104	101	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	107	----	106	100	----
Anthracene-d10	1719-06-8	0.1	%	95.8	----	94.0	92.3	----
4-Terphenyl-d14	1718-51-0	0.1	%	91.0	----	94.7	87.8	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	72.6	----	84.8	100	----
Toluene-D8	2037-26-5	0.1	%	107	----	92.6	108	----
4-Bromofluorobenzene	460-00-4	0.1	%	85.2	----	91.6	103	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW01_2.1	LN_MW07_3.2	TRIP BLANK 8	TRIP BLANK 9	----
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325886-006	ES1325886-007	ES1325886-009	ES1325886-010	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.2	16.7	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	12	12	----	----	----
Cadmium	7440-43-9	1	mg/kg	1	2	----	----	----
Chromium	7440-47-3	2	mg/kg	10	16	----	----	----
Copper	7440-50-8	5	mg/kg	21	27	----	----	----
Lead	7439-92-1	5	mg/kg	10	12	----	----	----
Nickel	7440-02-0	2	mg/kg	14	10	----	----	----
Zinc	7440-66-6	5	mg/kg	44	58	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	----	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	----	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	----	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	----	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	----	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	----	----	----
2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	----	----	----
2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	----	----	----
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	----	----	----





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW01_2.1	LN_MW07_3.2	TRIP BLANK 8	TRIP BLANK 9	----
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325886-006	ES1325886-007	ES1325886-009	ES1325886-010	----
<b>EP074D: Fumigants - Continued</b>								
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	----	----	----
Chloromethane	74-87-3	5	mg/kg	<5	<5	----	----	----
Vinyl chloride	75-01-4	5	mg/kg	<5	<5	----	----	----
Bromomethane	74-83-9	5	mg/kg	<5	<5	----	----	----
Chloroethane	75-00-3	5	mg/kg	<5	<5	----	----	----
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	----	----	----
1.1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	----	----	----
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1.2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1.3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	----	----	----
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW01_2.1	LN_MW07_3.2	TRIP BLANK 8	TRIP BLANK 9	----
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325886-006	ES1325886-007	ES1325886-009	ES1325886-010	----
<b>EP074F: Halogenated Aromatic Compounds - Continued</b>								
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	----	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	<5	<5	----	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
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	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW01_2.1	LN_MW07_3.2	TRIP BLANK 8	TRIP BLANK 9	----
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325886-006	ES1325886-007	ES1325886-009	ES1325886-010	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
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	<b>0.6</b>	<b>0.6</b>	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LN_MW01_2.1	LN_MW07_3.2	TRIP BLANK 8	TRIP BLANK 9	----
				19-NOV-2013 00:00	19-NOV-2013 00:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----
Compound	CAS Number	LOR	Unit	ES1325886-006	ES1325886-007	ES1325886-009	ES1325886-010	----
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	69.2	103	----	----	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	105	113	----	----	----
Toluene-D8	2037-26-5	0.1	%	118	124	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	106	115	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	87.1	93.1	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	92.6	102	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	99.6	108	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	101	108	----	----	----
Anthracene-d10	1719-06-8	0.1	%	90.1	97.5	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	86.0	92.2	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	96.4	104	94.8	82.5	----
Toluene-D8	2037-26-5	0.1	%	109	115	86.8	94.9	----
4-Bromofluorobenzene	460-00-4	0.1	%	100	109	93.8	90.4	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_191113\_JK

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Client sampling date / time

19-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325886-008	---	---	---	---
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### EG020T: Total Metals by ICP-MS

Arsenic	7440-38-2	0.001	mg/L	<0.001	---	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	---	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	---	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	---	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	---	---	---	---
Zinc	7440-66-6	0.005	mg/L	<0.005	---	---	---	---

### EG035T: Total Recoverable Mercury by FIMS

Mercury	7439-97-6	0.0001	mg/L	<0.0001	---	---	---	---
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### EP075(SIM)A: Phenolic Compounds

Phenol	108-95-2	1.0	µg/L	<1.0	---	---	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	---	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	---	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	---	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	---	---	---
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	---	---	---
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	---	---	---
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	---	---	---
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	---	---	---	---
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	---	---	---
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	---	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	---	---	---

### EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	---	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	---	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	---	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	---	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

R01\_191113\_JK

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Client sampling date / time

19-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325886-008	---	---	---	---
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### EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued

Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	---	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	---	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	---	---	---	---

### EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	20	µg/L	<20	---	---	---	---
C10 - C14 Fraction	----	50	µg/L	<50	---	---	---	---
C15 - C28 Fraction	----	100	µg/L	<100	---	---	---	---
C29 - C36 Fraction	----	50	µg/L	<50	---	---	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	---	---	---	---

### EP080/071: Total Recoverable Hydrocarbons - NEPM 2013

C6 - C10 Fraction	C6_C10	20	µg/L	<20	---	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	---	---	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	---	---	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	---	---	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	---	---	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	---	---	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	---	---	---	---

### 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	---	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	---	---	---	---
^ Sum of BTEX	----	1	µg/L	<1	---	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	---	---	---	---

### EP075(SIM)S: Phenolic Compound Surrogates



## Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

**R01\_191113\_JK**

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Client sampling date / time

19-NOV-2013 15:00

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Compound	CAS Number	LOR	Unit	ES1325886-008	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
Phenol-d6	13127-88-3	0.1	%	<b>42.9</b>	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	<b>63.6</b>	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	<b>77.1</b>	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	<b>69.9</b>	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	<b>88.5</b>	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	<b>99.3</b>	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	<b>79.1</b>	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	<b>105</b>	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	<b>105</b>	----	----	----	----

## Analytical Results

### Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>		
EA200: Description	LP_SB03_0.1 - 19-NOV-2013 00:00	Mid brown clay soil with grey and orange rocks plus plenty of vegetation.



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128



# Certificate of Analysis

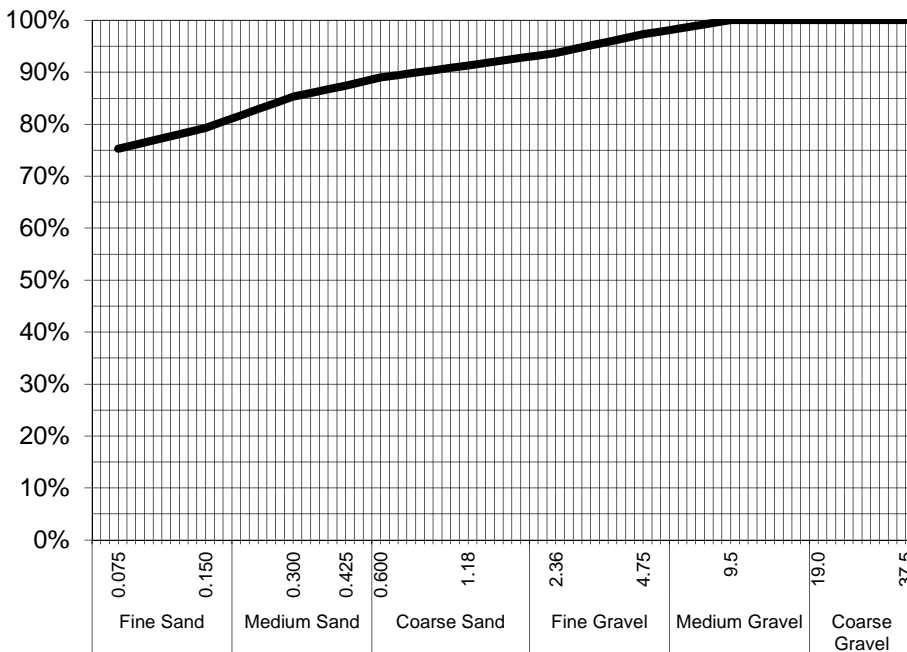
ALS Laboratory Group Pty Ltd  
5 Rosegum Road  
Warabrook, NSW 2304  
pH 02 4968 9433  
fax 02 4968 0349  
samples.newcastle@alsenviro.com

**ALS Environmental**  
**Newcastle, NSW**



**CLIENT:** Joseph Ferring **DATE REPORTED:** 6-Dec-2013  
**COMPANY:** Enviro Resources Management **DATE RECEIVED:** 26-Nov-2013  
**ADDRESS:** Ground Floor **REPORT NO:** ES1325886-005 / PSD  
33 Saunders Street, Pyrmont  
NSW 2009  
**PROJECT:** Project Symphony **SAMPLE ID:** LN\_MW02\_6.0

## Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	94%
1.18	91%
0.600	89%
0.425	87%
0.300	85%
0.150	79%
0.075	75%

Samples analysed as received.

## Sample Comments:

**Loss on Pretreatment** NA

**Sample Description:** Fines and sand

**Test Method:** AS1289.3.6.1

**Analysed:** 5-Dec-13

**Limit of Reporting:** 1%

**NATA Accreditation: 825 Site: Newcastle**  
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**Hamish Murray**  
Laboratory Supervisor, Newcastle  
**Authorised Signatory**

## QUALITY CONTROL REPORT

Work Order	: <b>ES1325886</b>	Page	: 1 of 21
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 26-NOV-2013
C-O-C number	: ---	Issue Date	: 09-DEC-2013
Sampler	: T.A	No. of samples received	: 10
Order number	: 0224193	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

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



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 Laboratory 825

Accredited for  
 compliance with  
 ISO/IEC 17025.

## Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hamish Murray	Supervisor - Soils	Newcastle - Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Shaun Spooner	Laboratory Technician	Newcastle - Asbestos
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA002 : pH (Soils) (QC Lot: 3197833)</b>									
ES1325886-004	LN_MW02_3.0	EA002: pH Value	----	0.1	pH Unit	7.5	7.5	0.0	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3189044)</b>									
ES1325884-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.2	13.0	1.5	0% - 50%
ES1325885-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.7	21.8	8.5	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3189045)</b>									
ES1325886-007	LN_MW07_3.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.7	17.4	4.4	0% - 50%
ES1325940-019	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.9	12.4	3.4	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3195110)</b>									
ES1326382-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	14.9	16.0	7.2	0% - 50%
<b>ED007: Exchangeable Cations (QC Lot: 3183542)</b>									
ES1325880-005	Anonymous	ED007: Exchangeable Calcium	----	0.1	meq/100g	7.2	7.2	0.0	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	7.6	7.7	0.0	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.2	0.2	0.0	0% - 20%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	0.3	0.3	0.0	0% - 20%
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	15.3	15.4	0.0	0% - 20%
		ED007: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
ES1325882-003	Anonymous	ED007: Exchangeable Calcium	----	0.1	meq/100g	4.8	4.7	2.9	0% - 20%
		ED007: Exchangeable Magnesium	----	0.1	meq/100g	10.4	10.2	1.8	0% - 20%
		ED007: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.2	0.0	0% - 20%
		ED007: Exchangeable Sodium	----	0.1	meq/100g	3.2	3.0	4.5	0% - 20%
		ED007: Cation Exchange Capacity	----	0.1	meq/100g	18.7	18.2	2.6	0% - 20%
		ED007: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3190953)</b>									
ES1325886-001	LP_SB03_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	1	2	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	15	26.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	7	72.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	21	14.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	20	24.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	9	29.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	67	64	5.6	0% - 50%
ES1325985-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	2	2	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	32	36	11.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	29	31	6.1	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	13	52.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	24	6.2	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 (%)
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3190953) - continued</b>									
ES1325985-003	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	37	37	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	59	65	9.4	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3194459)</b>									
ES1325886-005	LN_MW02_6.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	11	9.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	25	23	7.5	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	17	6.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	24	4.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	14	0.0	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	83	79	4.9	0% - 50%		
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3190954)</b>									
ES1325886-001	LP_SB03_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.0	No Limit
ES1325985-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3194460)</b>									
ES1325886-005	LN_MW02_6.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP004: Organic Matter (QC Lot: 3200424)</b>									
ES1325886-005	LN_MW02_6.0	EP004: Organic Matter	----	0.5	%	0.6	0.6	0.0	No Limit
		EP004: Total Organic Carbon	----	0.5	%	<0.5	<0.5	0.0	No Limit
ES1326321-015	Anonymous	EP004: Organic Matter	----	0.5	%	3.5	4.0	12.4	No Limit
		EP004: Total Organic Carbon	----	0.5	%	2.0	2.3	12.4	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3190624)</b>									
ES1325880-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1325886-004	LN_MW02_3.0	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3187235)</b>									
ES1325783-006	Anonymous	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074B: Oxygenated Compounds (QC Lot: 3187235)</b>									
ES1325783-006	Anonymous	EP074: Vinyl Acetate	108-05-4	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	<5	<5	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	5	mg/kg	<5	<5	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3187235)</b>									



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 (%)
<b>EP074C: Sulfonated Compounds (QC Lot: 3187235) - continued</b>									
ES1325783-006	Anonymous	EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3187235)</b>									
ES1325783-006	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3187235)</b>									
ES1325783-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Chloromethane	74-87-3	5	mg/kg	<5	<5	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	5	mg/kg	<5	<5	0.0	No Limit
EP074: Bromomethane	74-83-9	5	mg/kg	<5	<5	0.0	No Limit		
EP074: Chloroethane	75-00-3	5	mg/kg	<5	<5	0.0	No Limit		
EP074: Trichlorofluoromethane	75-69-4	5	mg/kg	<5	<5	0.0	No Limit		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3187235)</b>									
ES1325783-006	Anonymous	EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3187235) - continued</b>											
ES1325783-006	Anonymous	EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP074G: Trihalomethanes (QC Lot: 3187235)</b>											
ES1325783-006	Anonymous	EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP074H: Naphthalene (QC Lot: 3187235)</b>											
ES1325783-006	Anonymous	EP074: Naphthalene	91-20-3	5	mg/kg	<5	<5	0.0	No Limit		
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3183221)</b>											
ES1325880-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit		
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit		
		ES1325881-003	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2-Nitrophenol	88-75-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dimethylphenol	105-67-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4-Dichlorophenol	120-83-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,6-Dichlorophenol	87-65-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			1	mg/kg	<1	<1	0.0	No Limit		
EP075(SIM): Pentachlorophenol	87-86-5			2	mg/kg	<2	<2	0.0	No Limit		
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183221)</b>											
ES1325880-001	Anonymous			EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3183221) - continued</b>									
ES1325880-001	Anonymous	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
ES1325881-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3183220)</b>									
ES1325880-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit





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 (%)	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3183220) - continued</b>										
ES1325880-001	Anonymous	EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
ES1325881-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3187234)</b>										
ES1325783-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
ES1325886-003	LN_MW05_3.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3183220)</b>										
ES1325880-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
ES1325881-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit	
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3187234)</b>										
ES1325783-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
ES1325886-003	LN_MW05_3.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3187234)</b>										
ES1325783-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
ES1325886-003	LN_MW05_3.0	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit			
<b>Sub-Matrix: WATER</b>										
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3187888)</b>										
ES1325800-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.0	No Limit	
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.016	0.016	0.0	0% - 50%	
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.012	0.011	0.0	0% - 50%	



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3187888) - continued</b>										
ES1325800-001	Anonymous	EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.007	0.006	0.0	No Limit	
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.073	0.072	0.0	0% - 50%	
EW1303426-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit	
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.007	0.006	0.0	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.0	No Limit	
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.031	0.030	0.0	No Limit	
		<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3182952)</b>								
EN1304334-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3186193)</b>										
EB1329168-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	1420	1300	9.4	0% - 20%	
ES1325767-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3186193)</b>										
EB1329168-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1750	1610	8.6	0% - 20%	
ES1325767-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3186193)</b>										
EB1329168-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	173	153	12.7	0% - 20%	
		EP080: Toluene	108-88-3	2	µg/L	8	8	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	76	71	6.8	0% - 20%	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	235	220	6.5	0% - 20%	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	89	83	6.2	0% - 20%	
ES1325767-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	16	16	0.0	No Limit	
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	



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

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>ED007: Exchangeable Cations (QCLot: 3183542)</b>									
ED007: Exchangeable Calcium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Potassium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Sodium	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----	
ED007: Exchangeable Aluminium	----	0.1	meq/100g	<0.1	----	----	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3190953)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	103	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	98.4	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.8	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	105	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	90.9	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	100	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	93.1	81	133	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3194459)</b>									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	115	87	129	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	88.4	71	133	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	104	86	128	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	101	81	123	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	102	84	130	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.5	81	133	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3190954)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.8	66	112	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3194460)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.6	66	112	
<b>EP004: Organic Matter (QCLot: 3200424)</b>									
EP004: Organic Matter	----	0.5	%	<0.5	4.58 %	100	85	105	
EP004: Total Organic Carbon	----	0.5	%	<0.5	2.66 %	100	84	106	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190624)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	85.0	57.4	117	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3187235)</b>									
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	102	64	126	
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	104	66	128	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3187235) - continued</b>									
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	111	63	129	
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	113	63	129	
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	112	64	130	
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	113	63	129	
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	112	63	129	
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	113	62	130	
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	112	61	131	
<b>EP074B: Oxygenated Compounds (QCLot: 3187235)</b>									
EP074: Vinyl Acetate	108-05-4	1	mg/kg	----	10 mg/kg	100	29.6	156	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Butanone (MEK)	78-93-3	1	mg/kg	----	10 mg/kg	92.7	58	136	
		5	mg/kg	<5	----	----	----	----	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	1	mg/kg	----	10 mg/kg	98.2	54	138	
		5	mg/kg	<5	----	----	----	----	
EP074: 2-Hexanone (MBK)	591-78-6	1	mg/kg	----	10 mg/kg	99.3	54	136	
		5	mg/kg	<5	----	----	----	----	
<b>EP074C: Sulfonated Compounds (QCLot: 3187235)</b>									
EP074: Carbon disulfide	75-15-0	0.5	mg/kg	<0.5	1 mg/kg	97.5	54	126	
<b>EP074D: Fumigants (QCLot: 3187235)</b>									
EP074: 2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	1 mg/kg	92.1	55	133	
EP074: 1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	1 mg/kg	102	69	127	
EP074: cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	1 mg/kg	106	54	124	
EP074: trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	1 mg/kg	101	51	125	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	1 mg/kg	101	66	126	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3187235)</b>									
EP074: Dichlorodifluoromethane	75-71-8	1	mg/kg	----	10 mg/kg	112	30	148	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloromethane	74-87-3	1	mg/kg	----	10 mg/kg	110	41	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Vinyl chloride	75-01-4	1	mg/kg	----	10 mg/kg	107	43	147	
		5	mg/kg	<5	----	----	----	----	
EP074: Bromomethane	74-83-9	1	mg/kg	----	10 mg/kg	105	47	141	
		5	mg/kg	<5	----	----	----	----	
EP074: Chloroethane	75-00-3	1	mg/kg	----	10 mg/kg	107	49	143	
		5	mg/kg	<5	----	----	----	----	
EP074: Trichlorofluoromethane	75-69-4	1	mg/kg	----	10 mg/kg	108	49	135	
		5	mg/kg	<5	----	----	----	----	
EP074: 1,1-Dichloroethane	75-35-4	0.5	mg/kg	<0.5	1 mg/kg	101	54	126	
EP074: Iodomethane	74-88-4	0.5	mg/kg	<0.5	1 mg/kg	103	43	129	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3187235) - continued</b>									
EP074: trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	1 mg/kg	105	62	130	
EP074: 1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	1 mg/kg	104	66	132	
EP074: cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	1 mg/kg	105	66	132	
EP074: 1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	1 mg/kg	91.3	62	126	
EP074: 1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	1 mg/kg	104	64	128	
EP074: Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	1 mg/kg	102	59	125	
EP074: 1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	1 mg/kg	106	65	123	
EP074: Trichloroethene	79-01-6	0.5	mg/kg	<0.5	1 mg/kg	103	64	120	
EP074: Dibromomethane	74-95-3	0.5	mg/kg	<0.5	1 mg/kg	98.0	65	127	
EP074: 1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	1 mg/kg	108	70	130	
EP074: 1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	1 mg/kg	101	72	128	
EP074: Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	1 mg/kg	101	67	143	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	1 mg/kg	93.3	62	122	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	1 mg/kg	99.4	54	128	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	1 mg/kg	95.4	55	129	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	1 mg/kg	97.7	56	132	
EP074: 1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	1 mg/kg	107	65	135	
EP074: Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	1 mg/kg	112	19.8	134	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	1 mg/kg	93.6	53	129	
EP074: Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	1 mg/kg	115	48	136	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3187235)</b>									
EP074: Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	1 mg/kg	103	70	128	
EP074: Bromobenzene	108-86-1	0.5	mg/kg	<0.5	1 mg/kg	111	67	127	
EP074: 2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	1 mg/kg	111	64	130	
EP074: 4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	1 mg/kg	113	62	130	
EP074: 1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	1 mg/kg	111	63	129	
EP074: 1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	1 mg/kg	108	63	129	
EP074: 1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	1 mg/kg	108	66	128	
EP074: 1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	1 mg/kg	114	54	134	
EP074: 1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	1 mg/kg	114	60	132	
<b>EP074G: Trihalomethanes (QCLot: 3187235)</b>									
EP074: Chloroform	67-66-3	0.5	mg/kg	<0.5	1 mg/kg	97.8	62	120	
EP074: Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	1 mg/kg	99.4	61	121	
EP074: Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	1 mg/kg	98.7	63	121	
EP074: Bromoform	75-25-2	0.5	mg/kg	<0.5	1 mg/kg	104	60	126	
<b>EP074H: Naphthalene (QCLot: 3187235)</b>									
EP074: Naphthalene	91-20-3	0.5	mg/kg	----	1 mg/kg	108	63	133	
		5	mg/kg	<5	----	----	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183221)</b>									



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183221) - continued</b>									
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	103	74	116	
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	107	74	116	
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	108	72	116	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	109	69	123	
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	93.1	60.3	117	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	106	69	117	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	105	68	112	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	109	73	117	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	101	76.4	114	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	102	57	111	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	103	68.9	112	
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	46.9	3.9	57	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183221)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	107	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	116	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	112	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	111	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	115	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	111	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	111	81	123	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	111	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	101	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	112	76	122	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	108	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	107	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	105	72.4	114	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183220)</b>									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	96.6	71	131	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	106	74	138	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	96.3	64	128	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187234)</b>									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	122	68.4	128	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183220)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	97.8	70	130	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	105	74	138	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183220) - continued</b>									
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
		50	mg/kg	----	150 mg/kg	82.8	63	131	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187234)</b>									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	124	68.4	128	
<b>EP080: BTEXN (QCLot: 3187234)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	123	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	107	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	116	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	106	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	96.9	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3187888)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.3	79	121	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.3	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	102	83	115	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	106	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.6	85	115	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	106	83	117	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.3	76	118	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3182952)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	98.1	77	115	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3186882)</b>									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	51.0	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	98.4	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	62.2	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	60.6	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	87.6	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	74.4	59.9	112	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3186882) - continued</b>									
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	69.2	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	83.1	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	75.0	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	72.9	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	64.2	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	56.5	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3186882)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	69.4	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	72.4	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	73.3	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	69.2	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	89.3	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	91.4	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	64.2	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	83.6	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	64.4	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	89.6	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	82.7	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	98.6	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	85.4	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3186882) - continued</b>								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	87.8	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	92.7	61.2	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	85.8	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186193)</b>								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	107	75	127
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186881)</b>								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	65.7	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	86.9	71	131
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	83.9	62	120
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186193)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	114	75	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186881)</b>								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	81.6	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	84.0	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	78.7	67	127
<b>EP080: BTEXN (QCLot: 3186193)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.7	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	123	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	94.6	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	97.3	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.4	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	112	70	124

### 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**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3190953)</b>							
ES1325886-001	LP_SB03_3.0	EG005T: Arsenic	7440-38-2	50 mg/kg	86.3	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3190953) - continued</b>							
ES1325886-001	LP_SB03_3.0	EG005T: Cadmium	7440-43-9	50 mg/kg	89.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.5	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	94.3	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	91.5	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	77.6	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	71.1	70	130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3194459)</b>							
ES1325886-005	LN_MW02_6.0	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.1	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	95.3	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.7	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	108	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3190954)</b>							
ES1325886-001	LP_SB03_3.0	EG035T: Mercury	7439-97-6	5 mg/kg	100	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3194460)</b>							
ES1325886-005	LN_MW02_6.0	EG035T: Mercury	7439-97-6	5 mg/kg	98.4	70	130
<b>EP004: Organic Matter (QCLot: 3200424)</b>							
ES1325886-005	LN_MW02_6.0	EP004: Organic Matter	----	0.61 %	103	----	----
		EP004: Total Organic Carbon	----	0.35 %	104	----	----
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190624)</b>							
ES1325880-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	82.0	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3187235)</b>							
ES1325783-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	99.5	70	130
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	89.8	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3187235)</b>							
ES1325783-006	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.2	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183221)</b>							
ES1325880-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	91.4	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	95.2	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	97.5	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	93.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	101	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183221)</b>							
ES1325880-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70	130



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183221) - continued</b>								
ES1325880-001	Anonymous	EP075(SIM): Pyrene	129-00-0	10 mg/kg	109	70	130	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183220)</b>								
ES1325880-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	80.1	73	137	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	83.2	53	131	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	69.0	52	132	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187234)</b>								
ES1325783-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	117	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183220)</b>								
ES1325880-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	74.9	53	131	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.6	52	132	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187234)</b>								
ES1325783-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	119	70	130	
<b>EP080: BTEXN (QCLot: 3187234)</b>								
ES1325783-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	93.6	70	130	
		EP080: Toluene	108-88-3	2.5 mg/kg	96.0	70	130	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	118	70	130	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	97.3	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	101	70	130	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	85.4	70	130		

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG020T: Total Metals by ICP-MS (QCLot: 3187888)</b>							
ES1325800-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	108	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.8	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.5	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	104	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	100	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	84.3	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.5	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3182952)</b>							
ES1325702-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	87.0	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186193)</b>							
ES1325667-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	113	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186193)</b>							
ES1325667-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	110	70	130
<b>EP080: BTEXN (QCLot: 3186193)</b>							
ES1325667-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	96.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	92.2	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	103	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are 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) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3183220)</b>										
ES1325880-001	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	80.1	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	83.2	----	53	131	----	----
		EP071: C29 - C36 Fraction	----	2860 mg/kg	69.0	----	52	132	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3183220)</b>										
ES1325880-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	74.9	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	56.6	----	52	132	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3183221)</b>										
ES1325880-001	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	91.4	----	70	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	95.2	----	70	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	97.5	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	93.6	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	101	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3183221)</b>										
ES1325880-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	109	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3187234)</b>										
ES1325783-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	117	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3187234)</b>										
ES1325783-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	119	----	70	130	----	----



Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080: BTEXN (QCLot: 3187234)</b>											
ES1325783-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	93.6	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	96.0	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	118	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	97.3	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	101	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	85.4	----	70	130	----	----		
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3187235)</b>											
ES1325783-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	2.5 mg/kg	99.5	----	70	130	----	----	
		EP074: Trichloroethene	79-01-6	2.5 mg/kg	89.8	----	70	130	----	----	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3187235)</b>											
ES1325783-006	Anonymous	EP074: Chlorobenzene	108-90-7	2.5 mg/kg	91.2	----	70	130	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3190624)</b>											
ES1325880-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	82.0	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3190953)</b>											
ES1325886-001	LP_SB03_3.0	EG005T: Arsenic	7440-38-2	50 mg/kg	86.3	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.8	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	98.5	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	94.3	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	91.5	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	77.6	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	71.1	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3190954)</b>											
ES1325886-001	LP_SB03_3.0	EG035T: Mercury	7439-97-6	5 mg/kg	100	----	70	130	----	----	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3194459)</b>											
ES1325886-005	LN_MW02_6.0	EG005T: Arsenic	7440-38-2	50 mg/kg	104	----	70	130	----	----	
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.1	----	70	130	----	----	
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	----	70	130	----	----	
		EG005T: Copper	7440-50-8	125 mg/kg	103	----	70	130	----	----	
		EG005T: Lead	7439-92-1	125 mg/kg	95.3	----	70	130	----	----	
		EG005T: Nickel	7440-02-0	50 mg/kg	96.7	----	70	130	----	----	
		EG005T: Zinc	7440-66-6	125 mg/kg	108	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3194460)</b>											
ES1325886-005	LN_MW02_6.0	EG035T: Mercury	7439-97-6	5 mg/kg	98.4	----	70	130	----	----	
<b>EP004: Organic Matter (QCLot: 3200424)</b>											
ES1325886-005	LN_MW02_6.0	EP004: Organic Matter	----	0.61 %	103	----	----	----	----	----	
		EP004: Total Organic Carbon	----	0.35 %	104	----	----	----	----	----	



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3182952)</b>											
ES1325702-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	87.0	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3186193)</b>											
ES1325667-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	113	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3186193)</b>											
ES1325667-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	110	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3186193)</b>											
ES1325667-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	96.0	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	92.2	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	107	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	111	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	103	----	70	130	----	----	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3187888)</b>											
ES1325800-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	108	----	70	130	----	----	
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.8	----	70	130	----	----	
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.5	----	70	130	----	----	
		EG020A-T: Copper	7440-50-8	1 mg/L	104	----	70	130	----	----	
		EG020A-T: Lead	7439-92-1	1 mg/L	100	----	70	130	----	----	
		EG020A-T: Nickel	7440-02-0	1 mg/L	84.3	----	70	130	----	----	
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.5	----	70	130	----	----	

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1325886</b>	Page	: 1 of 12
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: PROJECT SYMPHONY	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: LIDDELL	Date Samples Received	: 26-NOV-2013
C-O-C number	: ----	Issue Date	: 09-DEC-2013
Sampler	: T.A	No. of samples received	: 10
Order number	: 0224193	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (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
<b>EA002 : pH (Soils)</b>							
Soil Glass Jar - Unpreserved (EA002) LN_MW02_3.0	19-NOV-2013	06-DEC-2013	26-NOV-2013	*	06-DEC-2013	06-DEC-2013	✓
<b>EA055: Moisture Content</b>							
Soil Glass Jar - Unpreserved (EA055-103) LN_MW02_6.0	19-NOV-2013	----	----	----	05-DEC-2013	03-DEC-2013	*
Soil Glass Jar - Unpreserved (EA055-103) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2 LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	----	----	----	02-DEC-2013	03-DEC-2013	✓
<b>EA150: Particle Sizing</b>							
Snap Lock Bag (EA150) LN_MW02_6.0	19-NOV-2013	---	18-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓
<b>EA150: Soil Classification based on Particle Size</b>							
Snap Lock Bag (EA150) LN_MW02_6.0	19-NOV-2013	---	18-MAY-2014	----	06-DEC-2013	03-JUN-2014	✓
<b>EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples</b>							
Snap Lock Bag (EA200) LP_SB03_0.1	19-NOV-2013	---	18-MAY-2014	----	05-DEC-2013	03-JUN-2014	✓
<b>ED007: Exchangeable Cations</b>							
Soil Glass Jar - Unpreserved (ED007) LN_MW02_3.0	19-NOV-2013	03-DEC-2013	17-DEC-2013	✓	03-DEC-2013	17-DEC-2013	✓
<b>EG005T: Total Metals by ICP-AES</b>							
Soil Glass Jar - Unpreserved (EG005T) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2 LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	03-DEC-2013	18-MAY-2014	✓	04-DEC-2013	18-MAY-2014	✓
Soil Glass Jar - Unpreserved (EG005T) LN_MW02_6.0	19-NOV-2013	04-DEC-2013	18-MAY-2014	✓	05-DEC-2013	18-MAY-2014	✓





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
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2 LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	03-DEC-2013	17-DEC-2013	✔	04-DEC-2013	17-DEC-2013	✔
<b>Soil Glass Jar - Unpreserved (EG035T)</b> LN_MW02_6.0	19-NOV-2013	04-DEC-2013	17-DEC-2013	✔	05-DEC-2013	17-DEC-2013	✔
<b>EP004: Organic Matter</b>							
<b>Soil Glass Jar - Unpreserved (EP004)</b> LN_MW02_6.0	19-NOV-2013	09-DEC-2013	17-DEC-2013	✔	09-DEC-2013	17-DEC-2013	✔
<b>EP066: Polychlorinated Biphenyls (PCB)</b>							
<b>Soil Glass Jar - Unpreserved (EP066)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	03-DEC-2013	03-DEC-2013	✔	03-DEC-2013	12-JAN-2014	✔
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
<b>Soil Glass Jar - Unpreserved (EP071)</b> LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2 LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✔	04-DEC-2013	12-JAN-2014	✔
<b>EP074D: Fumigants</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	✖	02-DEC-2013	26-NOV-2013	✖
<b>EP074E: Halogenated Aliphatic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	✖	02-DEC-2013	26-NOV-2013	✖
<b>EP074F: Halogenated Aromatic Compounds</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	✖	02-DEC-2013	26-NOV-2013	✖
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	✖	02-DEC-2013	26-NOV-2013	✖
<b>EP074H: Naphthalene</b>							
<b>Soil Glass Jar - Unpreserved (EP074)</b> LN_MW05_3.0, LN_MW01_2.1 LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	✖	02-DEC-2013	26-NOV-2013	✖



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
<b>EP074B: Oxygenated Compounds</b>							
Soil Glass Jar - Unpreserved (EP074) LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	*	02-DEC-2013	26-NOV-2013	*
<b>EP074C: Sulfonated Compounds</b>							
Soil Glass Jar - Unpreserved (EP074) LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	*	02-DEC-2013	26-NOV-2013	*
<b>EP074G: Trihalomethanes</b>							
Soil Glass Jar - Unpreserved (EP074) LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	19-NOV-2013	02-DEC-2013	26-NOV-2013	*	02-DEC-2013	26-NOV-2013	*
<b>EP075(SIM)A: Phenolic Compounds</b>							
Soil Glass Jar - Unpreserved (EP075(SIM)) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2, LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
Soil Glass Jar - Unpreserved (EP075(SIM)) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2, LN_MW05_3.0, LN_MW01_2.1	19-NOV-2013	03-DEC-2013	03-DEC-2013	✓	04-DEC-2013	12-JAN-2014	✓
<b>EP080: BTEXN</b>							
Soil Glass Jar - Unpreserved (EP080) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2, TRIP BLANK 9, LN_MW05_3.0, LN_MW01_2.1, TRIP BLANK 8,	19-NOV-2013	02-DEC-2013	03-DEC-2013	✓	02-DEC-2013	03-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Soil Glass Jar - Unpreserved (EP080) LP_SB03_3.0, LN_MW02_3.0, LN_MW07_3.2, TRIP BLANK 9, LN_MW05_3.0, LN_MW01_2.1, TRIP BLANK 8,	19-NOV-2013	02-DEC-2013	03-DEC-2013	✓	02-DEC-2013	03-DEC-2013	✓

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG020T: Total Metals by ICP-MS</b>							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) R01_191113_JK	19-NOV-2013	02-DEC-2013	18-MAY-2014	✓	02-DEC-2013	18-MAY-2014	✓



Matrix: **WATER**

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

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) R01_191113_JK	19-NOV-2013	----	----	----	28-NOV-2013	17-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber Glass Bottle - Unpreserved (EP071) R01_191113_JK	19-NOV-2013	26-NOV-2013	26-NOV-2013	✓	02-DEC-2013	11-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>							
Amber Glass Bottle - Unpreserved (EP075(SIM)) R01_191113_JK	19-NOV-2013	26-NOV-2013	26-NOV-2013	✓	02-DEC-2013	11-JAN-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>							
Amber Glass Bottle - Unpreserved (EP075(SIM)) R01_191113_JK	19-NOV-2013	26-NOV-2013	26-NOV-2013	✓	02-DEC-2013	11-JAN-2014	✓
<b>EP080: BTEXN</b>							
Amber VOC Vial - Sulfuric Acid (EP080) R01_191113_JK	19-NOV-2013	01-DEC-2013	03-DEC-2013	✓	01-DEC-2013	03-DEC-2013	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>							
Amber VOC Vial - Sulfuric Acid (EP080) R01_191113_JK	19-NOV-2013	01-DEC-2013	03-DEC-2013	✓	01-DEC-2013	03-DEC-2013	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Exchangeable Cations	ED007	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	5	44	11.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	2	11	18.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	15	13.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	20	15.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	20	15.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Exchangeable Cations	ED007	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Exchangeable Cations	ED007	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Total Metals by ICP-AES	EG005T	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

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

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Laboratory Duplicates (DUP)</b>							
Total Mercury by FIMS	EG035T	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 2009
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Exchangeable Cations	ED007	SOIL	Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(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 <sub>2</sub> 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)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TPH - Semivolatle Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
Volatile Organic Compounds	EP074	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> 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) (Appdx. 2)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	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 NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH <sub>4</sub> Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

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<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.





## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

#### Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP080S: TPH(V)/BTEX Surrogates	ES1325886-001	LP_SB03_3.0	1.2-Dichloroethane-D4	17060-07-0	72.6 %	72.8-133.2 %	Recovery less than lower data quality objective

### Outliers : Analysis Holding Time Compliance

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

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA002 : pH (Soils)</b>							
Soil Glass Jar - Unpreserved LN_MW02_3.0		06-DEC-2013	26-NOV-2013	10	----	----	----
<b>EA055: Moisture Content</b>							
Soil Glass Jar - Unpreserved LN_MW02_6.0		----	----	----	05-DEC-2013	03-DEC-2013	2
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>							
Soil Glass Jar - Unpreserved LN_MW05_3.0, LN_MW01_2.1,	LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074B: Oxygenated Compounds</b>							
Soil Glass Jar - Unpreserved LN_MW05_3.0, LN_MW01_2.1,	LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074C: Sulfonated Compounds</b>							
Soil Glass Jar - Unpreserved LN_MW05_3.0, LN_MW01_2.1,	LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EP074D: Fumigants</b>						
<b>Soil Glass Jar - Unpreserved</b> LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074E: Halogenated Aliphatic Compounds</b>						
<b>Soil Glass Jar - Unpreserved</b> LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074F: Halogenated Aromatic Compounds</b>						
<b>Soil Glass Jar - Unpreserved</b> LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074G: Trihalomethanes</b>						
<b>Soil Glass Jar - Unpreserved</b> LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6
<b>EP074H: Naphthalene</b>						
<b>Soil Glass Jar - Unpreserved</b> LN_MW05_3.0, LN_MW01_2.1, LN_MW02_3.0, LN_MW07_3.2	02-DEC-2013	26-NOV-2013	6	02-DEC-2013	26-NOV-2013	6

**Outliers : Frequency of Quality Control Samples**

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

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



**SAMPLE RECEIPT NOTIFICATION (SRN)****Comprehensive Report**

**Work Order** : **ES1325888**

**Client** : **ENVIRO RESOURCES MANAGEMENT**      **Laboratory** : Environmental Division Sydney

**Contact** : MR JOSEPH FERRING      **Contact** : Barbara Hanna  
**Address** : GROUND FLOOR      **Address** : 277-289 Woodpark Road Smithfield  
33 SAUNDERS STREET, PYRMONT      NSW Australia 2164  
NSW 2009  
LOCKED BAG 24  
BROADWAY NSW, AUSTRALIA 2007

**E-mail** : joseph.ferring@erm.com      **E-mail** : Barbara.Hanna@alsglobal.com  
**Telephone** : +61 02 8584 8888      **Telephone** : +61 2 8784 8555  
**Facsimile** : +61 02 8584 8800      **Facsimile** : +61 2 8784 8555

**Project** : PROJECT SYMPHONY      **Page** : 1 of 2

**Order number** : 0224193

**C-O-C number** : ----      **Quote number** : ES2013ENVRES0369 (SY/794/13)

**Site** : LIDDELL

**Sampler** : JG      **QC Level** : NEPM 2013 Schedule B(3) and ALS QCS3 requirement

**Dates**

**Date Samples Received** : 26-NOV-2013      **Issue Date** : 27-NOV-2013 20:06  
**Client Requested Due Date** : 04-DEC-2013      **Scheduled Reporting Date** : **04-DEC-2013**

**Delivery Details**

**Mode of Delivery** : Carrier      **Temperature** : 5.3°C - Ice present  
**No. of coolers/boxes** : 7 HARD      **No. of samples received** : 4  
**Security Seal** : Intact.      **No. of samples analysed** : 3

**General Comments**

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **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 (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

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

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

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process 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 to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL	No analysis requested	SOIL - EP066 (solids)	Polychlorinated Biphenyls by GC/MS	SOIL - EP074 (solids)	Volatile Organic Compounds	SOIL - S-27	TRH/TEX/N/PAH/Phenols/8Metals
ES1325888-001	19-NOV-2013 15:00	LP_SB04_2.9-3.0								✓
ES1325888-002	19-NOV-2013 15:00	LP_MW05_2.9-3.0								✓
ES1325888-003	19-NOV-2013 15:00	LN_MW06_2.9-3.0			✓		✓			✓
ES1325888-004	19-NOV-2013 15:00	LP_SB04_1.6-1.7	✓							

## Proactive Holding Time Report

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

## Requested Deliverables

### JOHN EWING

- *AU Certificate of Analysis - NATA ( COA )	Email	john.ewing@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	john.ewing@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	john.ewing@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	john.ewing@erm.com
- A4 - AU Tax Invoice ( INV )	Email	john.ewing@erm.com
- Chain of Custody (CoC) ( COC )	Email	john.ewing@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	john.ewing@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	john.ewing@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	john.ewing@erm.com
- EDI Format - XTab ( XTAB )	Email	john.ewing@erm.com

### SYMPHONY MACGEN

- *AU Certificate of Analysis - NATA ( COA )	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	symphony.macgen@erm.com
- A4 - AU Tax Invoice ( INV )	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC )	Email	symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	symphony.macgen@erm.com
- EDI Format - XTab ( XTAB )	Email	symphony.macgen@erm.com

### THE ACCOUNTS PAYABLE

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1325888</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : PROJECT SYMPHONY <b>Order number</b> : 0224193 <b>C-O-C number</b> : ---- <b>Sampler</b> : JG <b>Site</b> : LIDDELL  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 8  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 26-NOV-2013 <b>Issue Date</b> : 04-DEC-2013  <b>No. of samples received</b> : 4 <b>No. of samples analysed</b> : 3
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics



## General Comments

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

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

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

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

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB04_2.9-3.0	LP_MW05_2.9-3.0	LN_MW06_2.9-3.0	---	---
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	---	---
Compound	CAS Number	LOR	Unit	ES1325888-001	ES1325888-002	ES1325888-003	---	---
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	---	1.0	%	16.7	10.0	15.1	---	---
<b>EG005T: Total Metals by ICP-AES</b>								
Arsenic	7440-38-2	5	mg/kg	10	9	<5	---	---
Cadmium	7440-43-9	1	mg/kg	2	1	<1	---	---
Chromium	7440-47-3	2	mg/kg	11	12	6	---	---
Copper	7440-50-8	5	mg/kg	21	9	<5	---	---
Lead	7439-92-1	5	mg/kg	13	11	6	---	---
Nickel	7440-02-0	2	mg/kg	14	26	<2	---	---
Zinc	7440-66-6	5	mg/kg	57	43	<5	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	---	---
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	---	0.1	mg/kg	---	---	<0.1	---	---
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	0.5	mg/kg	---	---	<0.5	---	---
Isopropylbenzene	98-82-8	0.5	mg/kg	---	---	<0.5	---	---
n-Propylbenzene	103-65-1	0.5	mg/kg	---	---	<0.5	---	---
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	---	---	<0.5	---	---
sec-Butylbenzene	135-98-8	0.5	mg/kg	---	---	<0.5	---	---
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	---	---	<0.5	---	---
tert-Butylbenzene	98-06-6	0.5	mg/kg	---	---	<0.5	---	---
p-Isopropyltoluene	99-87-6	0.5	mg/kg	---	---	<0.5	---	---
n-Butylbenzene	104-51-8	0.5	mg/kg	---	---	<0.5	---	---
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	5	mg/kg	---	---	<5	---	---
2-Butanone (MEK)	78-93-3	5	mg/kg	---	---	<5	---	---
4-Methyl-2-pentanone (MIBK)	108-10-1	5	mg/kg	---	---	<5	---	---
2-Hexanone (MBK)	591-78-6	5	mg/kg	---	---	<5	---	---
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	0.5	mg/kg	---	---	<0.5	---	---
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	---	---	<0.5	---	---
1,2-Dichloropropane	78-87-5	0.5	mg/kg	---	---	<0.5	---	---





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB04_2.9-3.0	LP_MW05_2.9-3.0	LN_MW06_2.9-3.0	---	---
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	---	---
Compound	CAS Number	LOR	Unit	ES1325888-001	ES1325888-002	ES1325888-003	---	---
<b>EP074D: Fumigants - Continued</b>								
cis-1.3-Dichloropropylene	10061-01-5	0.5	mg/kg	---	---	<0.5	---	---
trans-1.3-Dichloropropylene	10061-02-6	0.5	mg/kg	---	---	<0.5	---	---
1.2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	---	---	<0.5	---	---
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	5	mg/kg	---	---	<5	---	---
Chloromethane	74-87-3	5	mg/kg	---	---	<5	---	---
Vinyl chloride	75-01-4	5	mg/kg	---	---	<5	---	---
Bromomethane	74-83-9	5	mg/kg	---	---	<5	---	---
Chloroethane	75-00-3	5	mg/kg	---	---	<5	---	---
Trichlorofluoromethane	75-69-4	5	mg/kg	---	---	<5	---	---
1.1-Dichloroethene	75-35-4	0.5	mg/kg	---	---	<0.5	---	---
Iodomethane	74-88-4	0.5	mg/kg	---	---	<0.5	---	---
trans-1.2-Dichloroethene	156-60-5	0.5	mg/kg	---	---	<0.5	---	---
1.1-Dichloroethane	75-34-3	0.5	mg/kg	---	---	<0.5	---	---
cis-1.2-Dichloroethene	156-59-2	0.5	mg/kg	---	---	<0.5	---	---
1.1.1-Trichloroethane	71-55-6	0.5	mg/kg	---	---	<0.5	---	---
1.1-Dichloropropylene	563-58-6	0.5	mg/kg	---	---	<0.5	---	---
Carbon Tetrachloride	56-23-5	0.5	mg/kg	---	---	<0.5	---	---
1.2-Dichloroethane	107-06-2	0.5	mg/kg	---	---	<0.5	---	---
Trichloroethene	79-01-6	0.5	mg/kg	---	---	<0.5	---	---
Dibromomethane	74-95-3	0.5	mg/kg	---	---	<0.5	---	---
1.1.2-Trichloroethane	79-00-5	0.5	mg/kg	---	---	<0.5	---	---
1.3-Dichloropropane	142-28-9	0.5	mg/kg	---	---	<0.5	---	---
Tetrachloroethene	127-18-4	0.5	mg/kg	---	---	<0.5	---	---
1.1.1.2-Tetrachloroethane	630-20-6	0.5	mg/kg	---	---	<0.5	---	---
trans-1.4-Dichloro-2-butene	110-57-6	0.5	mg/kg	---	---	<0.5	---	---
cis-1.4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	---	---	<0.5	---	---
1.1.2.2-Tetrachloroethane	79-34-5	0.5	mg/kg	---	---	<0.5	---	---
1.2.3-Trichloropropane	96-18-4	0.5	mg/kg	---	---	<0.5	---	---
Pentachloroethane	76-01-7	0.5	mg/kg	---	---	<0.5	---	---
1.2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	---	---	<0.5	---	---
Hexachlorobutadiene	87-68-3	0.5	mg/kg	---	---	<0.5	---	---
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	0.5	mg/kg	---	---	<0.5	---	---



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB04_2.9-3.0	LP_MW05_2.9-3.0	LN_MW06_2.9-3.0	----	----
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1325888-001	ES1325888-002	ES1325888-003	----	----
<b>EP074F: Halogenated Aromatic Compounds - Continued</b>								
Bromobenzene	108-86-1	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	----	----	<0.5	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	----	----	<0.5	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	----	----	<0.5	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	----	----	<0.5	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	----	----	<0.5	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	0.5	mg/kg	----	----	<0.5	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	----	----	<0.5	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	----	----	<0.5	----	----
Bromoform	75-25-2	0.5	mg/kg	----	----	<0.5	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	5	mg/kg	----	----	<5	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				LP_SB04_2.9-3.0	LP_MW05_2.9-3.0	LN_MW06_2.9-3.0	----	----
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----	----
Compound	CAS Number	LOR	Unit	ES1325888-001	ES1325888-002	ES1325888-003	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	>C10_C16	50	mg/kg	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				LP_SB04_2.9-3.0	LP_MW05_2.9-3.0	LN_MW06_2.9-3.0	----	----
				19-NOV-2013 15:00	19-NOV-2013 15:00	19-NOV-2013 15:00	----	----
				ES1325888-001	ES1325888-002	ES1325888-003	----	----
Compound	CAS Number	LOR	Unit					
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	74.7	----	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	103	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	110	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	99.6	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	112	106	111	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	117	109	112	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	92.5	88.8	82.2	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	104	102	99.7	----	----
Anthracene-d10	1719-06-8	0.1	%	91.5	90.8	87.2	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	91.6	90.0	88.4	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	105	96.8	108	----	----
Toluene-D8	2037-26-5	0.1	%	99.6	97.6	103	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	98.8	93.7	101	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	64	130
Toluene-D8	2037-26-5	66	136
4-Bromofluorobenzene	460-00-4	60	122
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES1325888</b>	Page	: 1 of 14
<b>Client</b>	: <b>ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR JOSEPH FERRING	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: joseph.ferring@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: PROJECT SYMPHONY	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: LIDDELL	<b>Date Samples Received</b>	: 26-NOV-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 04-DEC-2013
<b>Sampler</b>	: JG	<b>No. of samples received</b>	: 4
<b>Order number</b>	: 0224193	<b>No. of samples analysed</b>	: 3
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



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Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics