General Comments

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

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

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

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

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

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

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	SB12_1.9_30/05/09	-----	-----	-----	-----
			Client sampling date / time	30-MAY-2009 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES0911075-001**	**----**	**----**	**----**	**----**
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**6.8**	----	----	----	----
After HCl pH	----	0.1	pH Unit	**1.5**	----	----	----	----
Extraction Fluid Number	----	1	-	**1**	----	----	----	----
Final pH	----	0.1	pH Unit	**4.9**	----	----	----	----

Analytical Results

Sub-Matrix: **TCLP LEACHATE**

Compound	CAS Number	LOR	Unit	Client sample ID: SB12_1.9_30/05/09	----	----	----	----
				Client sampling date / time: 30-JUL-2009 12:00	----	----	----	----
				ES0911075-001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**29.9**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**63.3**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**70.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**63.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**68.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**70.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **TCLP LEACHATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES0911075**	Page	: 1 of 5
Client	: **URS AUSTRALIA (NSW) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR JAPSON SIWADI	Contact	: Charlie Pierce
Address	: LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: japson_siwadi@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: 89255500	Telephone	: +61-2-8784 8555
Facsimile	: 89255555	Facsimile	: +61-2-8784 8500
Project	: 43217997 REBATCH OF ES0907905	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: COSTCO		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2009
Sampler	: JS	Issue Date	: 03-AUG-2009
Order number	: REBATCH OF ES0907905		
		No. of samples received	: 1
Quote number	: EN/001/08 V4	No. of samples analysed	: 1

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

This Quality Control Report contains the following information:

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

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Nanthini Coilparampil	Senior Inorganic Chemist	Inorganics
Pabi Subba	Senior Organic Chemist (Semi-Volatile)	Organics

General Comments

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

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

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

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

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

Laboratory Duplicate (DUP) Report

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

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1054716)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	2 µg/L	96.3	63.3	117
		0.5	µg/L	<0.5	----	----	----	----

Matrix Spike (MS) Report

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

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

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0911075**	Page	: 1 of 5
Client	: URS AUSTRALIA (NSW) PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR JAPSON SIWADI	Contact	: Charlie Pierce
Address	: LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: japson_siwadi@urscorp.com	E-mail	: charlie.pierce@alsenviro.com
Telephone	: 89255500	Telephone	: +61-2-8784 8555
Facsimile	: 89255555	Facsimile	: +61-2-8784 8500
Project	: 43217997 REBATCH OF ES0907905	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: COSTCO		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2009
Sampler	: JS	Issue Date	: 03-AUG-2009
Order number	: REBATCH OF ES0907905		
		No. of samples received	: 1
Quote number	: EN/001/08 V4	No. of samples analysed	: 1

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

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN33: TCLP Leach							
LabSplit: Leach for organics and other tests							
SB12_1.9_30/05/09	**30-MAY-2009**	**---**	---	----	**30-JUL-2009**	13-JUN-2009	✗
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
SB12_1.9_30/05/09	**30-JUL-2009**	**30-JUL-2009**	06-AUG-2009	✓	**31-JUL-2009**	08-SEP-2009	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	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 (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	(USEPA SW846-1311, ALS QWI-EN/33) The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
Separatory Funnel Extraction of Liquids	ORG14	SOIL	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

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 SW 846 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		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EN33: TCLP Leach						
LabSplit: Leach for organics and other tests						
SB12_1.9_30/05/09	----	----	----	30-JUL-2009	13-JUN-2009	**47**

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.**

Frank Ferraro

From:	Jennifer Cullen
Sent:	Tuesday, 28 July 2009 5:57 PM
To:	Samples Sydney
Cc:	Jacob Waugh; Charlie Pierce
Subject:	FW: Sample Analysis: Batch ES0907905
Follow Up Flag:	Follow up
Flag Status:	Red

Hi Fadi and Soy,

Could you please arrange for the below samples to be re-batched as per the client's request?

Thanks

Kind Regards

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

Environmental Division
Sydney
Work Order
ES0911075

Telephone : +61-2-8784 8555

From: Japson_Siwadi@URSCorp.com [mailto:Japson_Siwadi@URSCorp.com]
Sent: Tuesday, 28 July 2009 5:54 PM
To: Charlie Pierce
Cc: Jennifer Cullen; ALSE Sydney Aus
Subject: RE: Sample Analysis: Batch ES0907905

Hi,

May you please do a **TCLP** test on the following sample and analyse for **Benzo(a)pyrene** only.

SB12_1.9_30/05/09

Call me if you need any clarification.

Thank you.

Regards

Japson Siwadi
Senior Hydrogeologist
URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney, NSW, 2060
Tel: +61 2 8925 5500
Fax: +61 2 8925 5555
Mob: 0415 034 013

Received by ALS Sydney
Sample Logins
28/7/09 6:35 p.m.
17.6C

http://www.ap.urscorp.com

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