

25 January 2013
Project No. 42213719

Darwin Waterfront Corporation
Ground Floor
Level 5, 7 Kitchener Dr
Darwin NT 0800

Attention: John Kassaras

Dear John

Subject: Classification of Stockpiled Excavated Material for Potential On-Site Reuse or Off-Site Disposal – Stage 2A – Stockpile Sampling Works 16 October 2012

Introduction

URS Australia Pty Ltd (URS) has been requested by Darwin Waterfront Corporation (DWC) to provide a letter report on the status of material excavated during the construction works at Darwin Waterfront Stage 2A (the Site).

URS undertook sampling of the stockpile of spoil from the top soil layer removed from the Stage 2A car-park area at Darwin Waterfront on 16 October 2012. As part of the environmental assessment works undertaken by URS, this material was sampled with the purpose of classification for potential on-site reuse as per site specific acceptance criteria or off-site disposal as per Northern Territory Waste Classification Guidelines.

Methodology

It is estimated that the stockpile consists of approximately 900 m³ of top soil material that has been trimmed from the Stage 2A car park area and stockpiled in the stockpile management area. A total of 13 primary samples were collected from the stockpile at a frequency greater than the Victorian EPA Industrial Waste Resource Guidelines, IWRG 702 sampling density for stockpiles 900m³ when using 95% UCL average of the mean (not less than 10 samples per stockpiles less than 1000 m³).

All samples were collected with the assistance of a 5 T excavator to cut representative cross sections through the stockpile profile. Samples were collected by hand from the excavated spoil, using dedicated nitrile gloves for each sample, and placed into laboratory supplied jars for transport to the laboratory. Standard environmental protocols were followed with respect to sample collection, and laboratory analyses included quality assurance/quality control samples to enable URS' assessment of the suitability of the data for interpretive use.

Soil analytical results have been compared against the following guidelines for assessment of material for off-site disposal, as summarised in **Attachment A**;

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Classification Report\Classification Letter (Letter) 1-Carpark Top Soil.docx

- The “NT Waste Classification Guidelines” adopted from NSW DECCW Waste Classification Guidelines (2008); and
- The site specific acceptance criteria (URS RAP V6 9th August 2005) based on National Environment Protection (Assessment of Site Contamination) Measure – Health Based Investigation Levels (NEPM, 1999) – HILs E and F and Ecological Intervention Levels (EILs).

Data Validation

URS has undertaken a review of the laboratory analytical results and considers the data acceptable for interpretive use as described in **Attachment D**.

Laboratory Results

The laboratory results are summarised and assessed against the relevant off-site disposal criteria in **Attachment A**. Laboratory analytical reports and chain of custody (COC) documentation are provided as **Attachment B**.

On-Site Reuse – Site Specific Acceptance Criteria (URS RAP V6 – 9 August 2005)

Table 1 Statistical Analysis and Adopted Guidelines – On-Site Reuse Acceptance Criteria

Analyte	^a Class 1 Criteria	# of Samples	# >LOR	# >Guideline	95% UCL
Arsenic	20	13	12	2	16.4
Cadmium	3	13	2	1	3.7
Chromium	-	8	8	NA	37.93
Copper	100	13	13	2	182.5
Lead	600	13	13	0	297.9
Nickel	60	13	13	0	8.9
Zinc	200	13	13	2	213.4
Fluoride	-	5	5	NA	255.7
Dieldrin	-	5	2	NA	-

¹ URS RAP V6 9th August 2005; ² Only two samples.

No individual sample results or 95% UCL of the mean exceeded the site specific Class 1 guidelines for the following analytes (**Table 1**):

- Chromium;
- Lead;
- Nickel;
- Fluoride; and
- Dieldrin.

Individual sample results exceeded the site specific Class 1 guidelines for the following analyte. The 95% UCL of the mean for the same analyte did not exceed the site specific Class 1 guidelines:

- Arsenic.

Individual sample results and the 95% UCL of the mean exceeded the site specific Class 1 guidelines for the following analytes. The individual sample results and the 95% UCL of the mean for the same analytes did not exceed the site specific Class 2A guidelines:

- Cadmium;
- Copper; and
- Zinc

Off-Site Disposal Criteria – NT Waste Classification Guidelines

Table 2 Statistical Analysis and Adopted Guidelines – Off-Site Disposal Criteria

Analyte	NT Waste Classification Guideline	# of Samples	# >LOR	# >Guideline	95% UCL
Arsenic	100	13	12	0	16.4
Cadmium	20	13	2	0	3.7
Chromium	-	8	8	NA	37.93
Copper	-	13	13	NA	182.5
Lead	100	13	13	2	297.9
Nickel	40	13	13	0	8.9
Zinc	-	13	13	NA	213.4
Fluoride	-	5	5	NA	255.7
Dieldrin	-	5	2	NA	-

No individual sample results or 95% UCL of the mean exceeded the site specific Class 1 guidelines for the following analytes (**Table 2**):

- Arsenic;
- Cadmium;
- Chromium;
- Copper; and
- Nickel.

There was no applicable NT Waste Classification guideline value for these analytes:

- Chromium;
- Copper;
- Zinc;
- Fluoride; and
- Dieldrin.

Two individual sample results and the 95% UCL of the mean exceeded the NT Waste Classification guidelines (general solid waste) for lead (254 and 590 mg/kg). One individual sample result also exceeded the NT Waste Classification guideline (restricted solid waste), the 95% UCL of the mean did not exceed the restricted solid waste criteria for lead.

Conclusion and Recommendation

The stockpiled top-soil material from the car-park has been characterised based on the results of the field observations, sampling and analysis conducted by URS as presented in the attached tables.

On the basis of the analytical results for samples collected from stockpiled top-soil material from the car-park at a rate of at least 1:70 m³, the stockpiled material is classified as Restricted Solid Waste with reference to the NT Waste Classification guidelines.

On the basis of the analytical results for samples collected from stockpiled top-soil material from the car-park at a rate of at least 1:70 m³, the stockpiled material is classified as Class 2A with reference to the site specific acceptance criteria detailed in the RAP (URS 9 August 2005).

Classification and Volume of Assessed Material

Estimated Volume and Tonnage	900 m ³	1,440 T
Classification On-Site Reuse	Class 2A	
Classification Off-Site Disposal	Restricted Solid Waste	

URS notes that this letter and the attached information is intended to support the process of on-site reuse or off-site disposal of the described soils to a suitable end-point. URS does not provide any recommendation or endorsement with respect to disposal of this material to any site; responsibility for accepting material to a third party site shall be the onus of the owner of that site.

Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Darwin Waterfront Corporation (DWC). A complete or partial copy of the report may only be provided by DWC to the EPA (Victoria) accredited Environmental Auditor (Contaminated Land) appointed by DWC to the project and to developers and contractors (Interested Parties) working on the Darwin Waterfront Redevelopment Project if the entire limitations statement of this report is included in the complete or partial copy of this report. Whilst URS does not admit that any action may exist or be available to any Interested Party, this report may only be relied on by an Interested Party with the written consent of DWC and on the basis that subject to any law the terms of which cannot be excluded or modified by agreement:

- (i) The maximum amount payable (if any) by URS to Interested Parties or any party claiming through an Interested Party in aggregate, whether in contract, tort or otherwise, in relation to claims, damages, liabilities, losses or expenses, under or in any way related to this report and/or its appendices or the services performed by URS to prepare the Report, shall be A\$2,000,000; and
- (ii) If there is more than one Interested Party, the maximum amount payable to any and all Interested Parties in total shall be A\$2,000,000.

Except as specifically stated in this limitations statement, this report may not be used by any third party.

This report is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the proposal dated 24 August 2006 and subsequent requests for this specific task in an email dated 17 December 2012.

The methodology adopted and sources of information used by URS are outlined in this report. Where this report indicates that information has been provided to URS by third parties, URS has made no independent verification of this information except as expressly stated in this report. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 10 January 2013 and 25 January 2013 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

We trust that the information detailed within this letter informs your requirements. Should you require further assistance please contact the undersigned.

Yours sincerely

URS Australia Pty Ltd

Bek Aagaard
Environmental Scientist

Tim Smith
Senior Environmental Geologist

Attachments

- Attachment A Summary of Analytical Results
- Attachment B Laboratory reports and Chain of Custody Forms
- Attachment C Data Validation and Statistical Analysis
- Attachment D Statistical Analysis

Attachment A

Location	Car-park Top Soil Stockpile												
Sample ID	SP01	SP02	SP03	SP04	SP05	SP06	SP07	SP08	SP09	SP10	SP11	SP12	SP13
Sampled Date Time	16/10/2012	17/10/2012	16/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Batch	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653

ChemName	output unit	EQL	Class 1	Class 2A	Class 2B													
C10-C14 fraction	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 fraction	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29-C36 fraction	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C10-C36 fraction (sum)	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C6-C9 fraction	mg/kg	10				<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
>C10-C16 fraction	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C16-C34 fraction	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34-C40 fraction	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C10-C40 fraction (sum)	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C6-C10 fraction (F1 minus BTEX)	mg/kg	10				-	<10	-	<10	-	<10	<10	-	<10	<10	-	<10	<10
C6-C10 fraction	mg/kg	10				-	<10	-	<10	-	<10	<10	-	<10	<10	-	<10	<10
Benzene	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m&p-Xylene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total BTEX	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Monocyclic Aromatic Hydrocarbons	mg/kg	0.2				<0.2	-	<0.2	-	<0.2	-	-	<0.2	-	-	<0.2	-	-
Naphthalene (VOC)	mg/kg	1				-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5		2	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PAHs	mg/kg	0.5		40	100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	1				-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1
Phenol	mg/kg	1		17000	42500	<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
2-Chlorophenol	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
2-Methylphenol (o-Cresol)	mg/kg	1				<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
3-&4-Methylphenol (m&p-Cresol)	mg/kg	1				<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
2-Nitrophenol	mg/kg	1				<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
2,4-Dichlorophenol	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
2,4-Dimethylphenol	mg/kg	1				<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
2,6-Dichlorophenol	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
4-Chloro-3-methylphenol	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
2,4,6-Trichlorophenol	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
2,4,5-Trichlorophenol	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
2,3,5,6-Tetrachlorophenol	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
4,6-Dinitro-2-methylphenol	mg/kg	5				<5	-	<5	-	<5	-	-	<5	-	-	<5	-	-
Pentachlorophenol	mg/kg	0.2				<0.2	-	<0.2	-	<0.2	-	-	<0.2	-	-	<0.2	-	-
2,3,4,5-&2,3,4,6-Tetrachlorophenol	mg/kg	0.05				<0.07	-	<0.05	-	<0.07	-	-	<0.07	-	-	<0.07	-	-
2,4-Dinitrophenol	mg/kg	5				<5	-	<5	-	<5	-	-	<5	-	-	<5	-	-
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	5				<5	-	<5	-	<5	-	-	<5	-	-	<5	-	-
4-Nitrophenol	mg/kg	5				<5	-	<5	-	<5	-	-	<5	-	-	<5	-	-
Dinoseb	mg/kg	5				<5	-	<5	-	<5	-	-	<5	-	-	<5	-	-
Sum of Phenols (halogenated)	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Sum of Phenols (non-halogenated)	mg/kg	1				<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
Chromium (hexavalent)	mg/kg	0.5	1	200	500	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	-	-
Mercury	mg/kg	0.1	1	30	75	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/kg	5	20	200	500	6	21	5	<5	6	24	6	10	7	7	6	6	7
Barium	mg/kg	10	300			-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	1		40	100	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1	3	40	100	<1	3	<1	<1	<1	7	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	2				-	37	-	37	-	36	37	-	33	25	-	39	36
Cobalt	mg/kg	2		200	500	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	5	100	2000	5000	26	356	22	19	26	183							

Location	Car-park Top Soil Stockpile												
Sample ID	SP01	SP02	SP03	SP04	SP05	SP06	SP07	SP08	SP09	SP10	SP11	SP12	SP13
Sampled Date Time	16/10/2012	17/10/2012	16/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Batch	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653

ChemName	output unit	EQL	Class 1	Class 2A	Class 2B													
Chlorobenzene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
1,2,4-Trichlorobenzene	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
1,2-Dichlorobenzene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
1,4-Dichlorobenzene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
1,1,1-Trichloroethane	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
1,1-Dichloroethene	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
1,2-Dichloroethane	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Carbon Tetrachloride	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
cis-1,2-Dichloroethene	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
Dichloromethane	mg/kg	0.4				<0.4	-	<0.4	-	<0.4	-	-	<0.4	-	-	<0.4	-	-
Hexachlorobutadiene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Tetrachloroethene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
trans-1,2-Dichloroethene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Trichloroethene	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Vinyl chloride	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
1,1,1,2-Tetrachloroethane	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
1,1,2,2-Tetrachloroethane	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
1,1,2-Trichloroethane	mg/kg	0.04				<0.04	-	<0.04	-	<0.04	-	-	<0.04	-	-	<0.04	-	-
Chloroform	mg/kg	0.02				<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-	-
Fluoride	mg/kg	40				260	-	240	-	250	-	-	260	-	-	220	-	-
Polychlorinated Biphenyls	mg/kg	0.1		20	50	<0.3	-	<0.1	-	<0.3	-	-	<0.3	-	-	<0.3	-	-
Chlorinated hydrocarbons (sum)	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
Other chlorinated hydrocarbons (sum)	mg/kg	0.01				<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-	-
Aldrin	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Dieldrin	mg/kg	0.03				0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-	-
a-BHC	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
b-BHC	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
d-BHC	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
g-BHC (Lindane)	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
cis-Chlordane	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
trans-Chlordane	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
DDD	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
DDE	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
DDT	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
Endosulfan 1	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Endosulfan 2	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Endosulfan sulfate	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Endrin	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Endrin aldehyde	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Heptachlor	mg/kg	0.03		20	50	<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Heptachlor epoxide	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Hexachlorobenzene (HCB)	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Methoxychlor	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Aldrin + Dieldrin	mg/kg	0.03		20	50	0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-	-
Chlordane	mg/kg	0.03		100	250	<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
DDT+DDE+DDD	mg/kg	0.05		400	1000	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-
Organochlorine pesticides (sum)	mg/kg	0.03				0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-	-
Other organochlorine pesticides (sum)	mg/kg	0.03				<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-	-
Cyanide Total	mg/kg	1		1000	2500	<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-
Moisture Content	%	1				6.2	8.8	7.8	6	4.4	8.9	5.4	3.6	8.4	9.4	6.5	9.2	6.2
pH (Lab)	pH Units	0.1				-	-	-	-	-	-	-	-	-	-	-	-	-
pH (CaCl ₂)	pH Units	0.1				8	-	8.1	-	8	-	-	7.9	-	-	8.1	-	-

Table ??
Analytical Results -
Waterfront Stage 2A - Waterfront Stage 2A
Darwin Waterfront Corporation

Sample ID	SP01	SP02	SP03	SP04	SP05	SP06	SP07	SP08	SP09	SP10	SP11	SP12	SP13
Sampled Date Time	16/10/2012	17/10/2012	16/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Batch	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653

ChemName	output unit	EQL	NSW 2008 General Solid Waste (No Leaching)	NSW 2008 General Solid Waste (with leached)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C14 fraction	mg/kg	50			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C15-C28 fraction	mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29-C36 fraction	mg/kg	100			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10-C36 fraction (sum)	mg/kg	50	10000		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
C6-C9 fraction	mg/kg	10	650		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C10-C16 fraction	mg/kg	50			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C16-C34 fraction	mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34-C40 fraction	mg/kg	100			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C10-C40 fraction (sum)	mg/kg	50			-	<10	-	<10	-	<10	<10	-	<10	<10	<10	<10
C6-C10 fraction (F1 minus BTEX)	mg/kg	10			-	<10	-	<10	-	<10	<10	-	<10	<10	<10	<10
C6-C10 fraction	mg/kg	10			-	<10	-	<10	-	<10	<10	-	<10	<10	<10	<10
Benzene	mg/kg	0.2	10	18	-	<0.2	-	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	288	518	-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	600	1080	-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m&p-Xylene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5	1000	1800	-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total BTEX	mg/kg	0.2			-	<0.2	-	<0.2	-	<0.2	<0.5	<0.2	<0.2	<0.5	<0.2	<0.2
Styrene	mg/kg	0.5	60	108	<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-
Total Monocyclic Aromatic Hydrocarbons	mg/kg	0.2			<0.2	-	<0.2	-	<0.2	-	<0.2	-	-	<0.2	-	-
Naphthalene (VOC)	mg/kg	1			-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	0.8	10	-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of PAHs	mg/kg	0.5			-	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	1			-	<1	-	<1	-	<1	<1	<1	<1	<1	<1	<1
Phenol	mg/kg	1		518	<1	-	<1	-	<1	-	<1	-	<1	-	-	-
2-Chlorophenol	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
2-Methylphenol (o-Cresol)	mg/kg	1	4000	7200	<1	-	<1	-	<1	-	<1	-	-	<1	-	-
3-&4-Methylphenol (m&p-Cresol)	mg/kg	1			<1	-	<1	-	<1	-	<1	-	-	<1	-	-
2-Nitrophenol	mg/kg	1			<1	-	<1	-	<1	-	<1	-	-	<1	-	-
2,4-Dichlorophenol	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
2,4-Dimethylphenol	mg/kg	1			<1	-	<1	-	<1	-	<1	-	-	<1	-	-
2,6-Dichlorophenol	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
4-Chloro-3-methylphenol	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
2,4,6-Trichlorophenol	mg/kg	0.05	40	72	<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-
2,4,5-Trichlorophenol	mg/kg	0.05			<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-
2,3,5,6-Tetrachlorophenol	mg/kg	0.03	8000	14400	<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
4,6-Dinitro-2-methylphenol	mg/kg	5			<5	-	<5	-	<5	-	<5	-	-	<5	-	-
Pentachlorophenol	mg/kg	0.2			<0.2	-	<0.2	-	<0.2	-	<0.2	-	-	<0.2	-	-
2,3,4,5-&2,3,4,6-Tetrachlorophenol	mg/kg	0.05			<0.07	-	<0.05	-	<0.07	-	<0.07	-	-	<0.07	-	-
2,4-Dinitrophenol	mg/kg	5			<5	-	<5	-	<5	-	<5	-	-	<5	-	-
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	5			<5	-	<5	-	<5	-	<5	-	-	<5	-	-
4-Nitrophenol	mg/kg	5			<5	-	<5	-	<5	-	<5	-	-	<5	-	-
Dinoseb	mg/kg	5			<5	-	<5	-	<5	-	<5	-	-	<5	-	-
Sum of Phenols (halogenated)	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	<0.03	-	-	<0.04	-	-
Sum of Phenols (non-halogenated)	mg/kg	1			<1	-	<1	-	<1	-	<1	-	-	<1	-	-
Chromium (hexavalent)	mg/kg	0.5	100	1900	<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-
Mercury	mg/kg	0.1	4	50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	mg/kg	5	100	500	6	21	5	<5	6	24	6	10	7	6	6	7
Barium	mg/kg	10			-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	1	20	100	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1	20	100	<1	3	<1	<1	<1	7	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	2			-	37	-	37	-	36	37	-	33	25	-	39
Cobalt	mg/kg	2			-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	5			26	356	22	19	26	183	22	48	25	36	19	22
Lead	mg/kg	5	100	1500	52	590	39	36	36	254	39	90	79	70	43	42
Manganese	mg/kg	5			-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	2	100	1000	<2	-	<2	-	<2	-	-	<2	-	-	<2	-
Nickel	mg/kg	2	40	1050	6	20	6	4	6	10	5	6	4	5	4	4
Zinc	mg/kg	5			89	384	77	123	117	379	108	134	105	168	125	144
Selenium	mg/kg	5	20	50	<5	-	<5	-	<5	-	-	<5	-	-	<5	-
Silver	mg/kg	2	100	180	<2	-	<2	-	<2	-	-	<2	-	-	<2	-
Tin	mg/kg	5			<5	-	<5	-	<5	-	-	<5	-	-	<5	-
Vanadium	mg/kg	5			-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	mg/kg	0.02	2000	3600	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
1,2,4-Trichlorobenzene	mg/kg	0.01			<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
1,2-Dichlorobenzene	mg/kg	0.02	86	155	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
1,4-Dichlorobenzene	mg/kg	0.02	150	270	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
1,1,1-Trichloroethane	mg/kg	0.01	600	1080	<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
1,1-Dichloroethene	mg/kg	0.01	14	25	<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
1,2-Dichloroethane	mg/kg	0.02	10	18	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
Carbon Tetrachloride	mg/kg	0.01	10	18	<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
cis-1,2-Dichloroethene	mg/kg	0.01			<0.01	-	<0.01	-	<0							

Sample ID	SP01	SP02	SP03	SP04	SP05	SP06	SP07	SP08	SP09	SP10	SP11	SP12	SP13
Sampled Date Time	16/10/2012	17/10/2012	16/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012	16/10/2012	17/10/2012	17/10/2012
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Lab Batch	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653	ES1224653

ChemName	output unit	EQL	NSW 2008 General Solid Waste (No Leaching)	NSW 2008 General Solid Waste (with leached)												
Tetrachloroethene	mg/kg	0.02	14	25.2	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
trans-1,2-Dichloroethene	mg/kg	0.02			<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
Trichloroethene	mg/kg	0.02	10	18	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
Vinyl chloride	mg/kg	0.02	4	7.2	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
1,1,1,2-Tetrachloroethane	mg/kg	0.01	200	360	<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
1,1,2,2-Tetrachloroethane	mg/kg	0.02	26	46.8	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
1,1,2-Trichloroethane	mg/kg	0.04	24	43.2	<0.04	-	<0.04	-	<0.04	-	-	<0.04	-	-	<0.04	-
Chloroform	mg/kg	0.02	120	216	<0.02	-	<0.02	-	<0.02	-	-	<0.02	-	-	<0.02	-
Fluoride	mg/kg	40	3000	10000	260	-	240	-	250	-	-	260	-	-	220	-
Polychlorinated Biphenyls	mg/kg	0.1		50	<0.3	-	<0.1	-	<0.3	-	-	<0.3	-	-	<0.3	-
Chlorinated hydrocarbons (sum)	mg/kg	0.01			<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
Other chlorinated hydrocarbons (sum)	mg/kg	0.01			<0.01	-	<0.01	-	<0.01	-	-	<0.01	-	-	<0.01	-
Aldrin	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Dieldrin	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-
a-BHC	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
b-BHC	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
d-BHC	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
g-BHC (Lindane)	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
cis-Chlordane	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
trans-Chlordane	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
DDD	mg/kg	0.05			<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-
DDE	mg/kg	0.05			<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-
DDT	mg/kg	0.05			<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-
Endosulfan 1	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Endosulfan 2	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Endosulfan sulfate	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Endrin	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Endrin aldehyde	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Heptachlor	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Heptachlor epoxide	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Hexachlorobenzene (HCB)	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Methoxychlor	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Aldrin + Dieldrin	mg/kg	0.03			0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-
Chlordane	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
DDT+DDE+DDD	mg/kg	0.05			<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-
Organochlorine pesticides (sum)	mg/kg	0.03			0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	0.06	-
Other organochlorine pesticides (sum)	mg/kg	0.03			<0.04	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.04	-
Cyanide Total	mg/kg	1	320	5900	<1	-	<1	-	<1	-	-	<1	-	-	<1	-
Moisture Content	%	1			6.2	8.8	7.8	6	4.4	8.9	5.4	3.6	8.4	9.4	6.5	9.2
pH (CaCl2)	pH Units	0.1			8	-	8.1	-	8	-	-	7.9	-	-	8.1	-

Attachment B

CHAIN OF CUSTODY

URS Australia 3/93 Mitchell St Darwin 800 02 8980 2900 08 8941 3920		LABORATORY: ALS 277-289 Woodpark Rd Smithfield, NSW, 2164 02 8784 8555 02 8784 8500		All results to be provided in MEd format email address:	
PROJECT NAME: Shell McMin PROJECT NO: 42213921.40000		PROJECT MANAGER: Tim Smith SAMPLERS: Bok Aagaard		PURCHASE ORDER NUMBER:	
COMMENTS: Updated COC -					

LAB ID	SAMPLE ID	DATE	MATRIX	SITE	LOCATION	CONTAINER TYPE & PRESERVATIVE	TOTAL NUMBER OF CONTAINERS	ANALYSIS REQUIRED				HOLD
								NSW DECC	USW EPA	Soil screening	PAH, metals	
1	SP01-161012	16/10/12	Soil	Waterford	Stockpile	pile-scrape from carpark	1	1	1	1	1	
2	SP02-161012						1					
3	SP03-161012					Glass jar	1	1	1	1	1	
4	SP04-161012						1					
5	SP05-161012						1	1	1	1	1	
6	SP06-161012						1					
7	SP07-161012						1					
8	SP08-161012						1					
9	SP09-161012						1					
10	SP10-161012						1					
11	SP11-161012						1					
12	SP12-161012						1					
13	SP13TOP-161012						1					
TOTAL NO:							13	5	8			

RELINQUISHED BY: V. NINA DATE: 16/10/12 TIME: 10:40	CONTAINER TYPE AND PRESERVATIVE CODES J = Jar; A = Amber Bottle; VH = HCl Preserved Vial; P = Plastic Bottle; N = Nitric Acid Preserved; S = Sulphuric Acid Preserved; C = Sodium Hydroxide Preserved; B = Sterile Bottle; Z = Zinc Acetate Preserved; E = EDTA Preserved; O = Other
RECEIVED BY: B. Peart DATE: 16/10/12 TIME: 10:40	LAB OF ORIGIN: DARWIN

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **ES1224653**

Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: 42213719 70061 SHELL McMINN	Page	: 1 of 3
Order number	: ----	Quote number	: ES2012URSNT0270 (EN/001/12)
C-O-C number	: ----	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
Sampler	: BA		

Dates

Date Samples Received	: 17-OCT-2012	Issue Date	: 19-OCT-2012 11:47
Client Requested Due Date	: 24-OCT-2012	Scheduled Reporting Date	: 24-OCT-2012

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.5'C - Ice present
No. of coolers/boxes	: 5 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(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 - P-16 EPA 448.3 Comprehensive	SOIL - S-26 8 metals/TPH/BTEX/PAH
ES1224653-001	16-OCT-2012 15:00	SP01- 161012	✓	
ES1224653-002	[17-OCT-2012]	SP02- 161012		✓
ES1224653-003	16-OCT-2012 15:00	SP03- 161012	✓	
ES1224653-004	[17-OCT-2012]	SP04- 161012		✓
ES1224653-005	16-OCT-2012 15:00	SP05- 161012	✓	
ES1224653-006	[17-OCT-2012]	SP06- 161012		✓
ES1224653-007	[17-OCT-2012]	SP07- 161012		✓
ES1224653-008	16-OCT-2012 15:00	SP08- 161012	✓	
ES1224653-009	[17-OCT-2012]	SP09- 161012		✓
ES1224653-010	[17-OCT-2012]	SP10- 161012		✓
ES1224653-011	16-OCT-2012 15:00	SP11- 161012	✓	
ES1224653-012	[17-OCT-2012]	SP12- 161012		✓
ES1224653-013	[17-OCT-2012]	SP13- 161012		✓

Proactive Holding Time Report

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

ALL ACCOUNTS PAYABLE

Email Adelaide_Accounts@urscorp.com

[illegible][illegible][illegible]

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: ES1224653	Page	: 1 of 21
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: 42213719 70061 SHELL McMINN	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 17-OCT-2012
C-O-C number	: ----	Issue Date	: 24-OCT-2012
Sampler	: BA	No. of samples received	: 13
Site	: ----	No. of samples analysed	: 13
Quote number	: EN/001/12		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Xingbin Lin	Senior Organic Chemist	Melbourne Organics

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 | PHONE +61-2-8784 8555 | Facsimile +61-2-8784 8500
Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group A Campbell Brothers Limited Company



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

- **EP066-EM/075-EM: Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**

Sub-Matrix: **SOIL**

Client sample ID

Sub-Matrix: SOIL				Client sample ID	SP01-161012	SP02-161012	SP03-161012	SP04-161012	SP05-161012
Client sampling date / time				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	8.0	----	8.1	----	8.0	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%	6.2	8.8	7.8	6.0	4.4	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	6	21	5	<5	6	
Cadmium	7440-43-9	1	mg/kg	<1	3	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	----	37	----	37	----	
Copper	7440-50-8	5	mg/kg	26	356	22	19	26	
Lead	7439-92-1	5	mg/kg	52	590	39	36	36	
Molybdenum	7439-98-7	2	mg/kg	<2	----	<2	----	<2	
Nickel	7440-02-0	2	mg/kg	6	20	6	4	6	
Selenium	7782-49-2	5	mg/kg	<5	----	<5	----	<5	
Silver	7440-22-4	2	mg/kg	<2	----	<2	----	<2	
Tin	7440-31-5	5	mg/kg	<5	----	<5	----	<5	
Zinc	7440-66-6	5	mg/kg	89	384	77	123	117	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	<1	----	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	260	----	240	----	250	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.30	----	<0.10	----	<0.30	
EP074A: Monocyclic Aromatic Hydrocarbons									
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	
Styrene	100-42-5	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 monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	<0.2	----	<0.2	
EP074I: Volatile Halogenated Compounds									



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP01- 161012	SP02- 161012	SP03- 161012	SP04- 161012	SP05- 161012
				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005
EP074I: Volatile Halogenated Compounds - Continued								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	<0.04	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
^ Total Xylenes	1330-20-7	0.50	mg/kg	<0.50	----	<0.50	----	<0.50
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<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	----



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP01- 161012	SP02- 161012	SP03- 161012	SP04- 161012	SP05- 161012
				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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 (WHO)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.07	----	<0.05	----	<0.07
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	----	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	<5	----	<5
Dinoseb	88-85-7	5	mg/kg	<5	----	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	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

Client sample ID

Client sampling date / time

				SP01- 161012	SP02- 161012	SP03- 161012	SP04- 161012	SP05- 161012
				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
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) & Benzo(k)fluoranthene	205-99-2 207-08-9	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
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	0.04	----	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.04	----	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	0.04	----	<0.03	----	<0.03

Sub-Matrix: **SOIL**

Client sample ID

Sub-Matrix: SOIL				Client sample ID	SP01-161012	SP02-161012	SP03-161012	SP04-161012	SP05-161012
Client sampling date / time				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005	
EP075I: Organochlorine Pesticides - Continued									
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	0.04	----	<0.03	----	<0.03	
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	----	<0.05	----	<0.05	
^ Chlordane	57-74-9	0.03	mg/kg	<0.04	----	<0.03	----	<0.03	
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.04	----	<0.03	----	<0.03	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	----	<10	
C6 - C9 Fraction	----	10	mg/kg	----	<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	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction	----	10	mg/kg	----	<10	----	<10	----	
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	----	<10	----	<10	----	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<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	
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----	
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----	
EP080: BTEXN									
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	----	<0.5	----	
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	<0.2	----	
Naphthalene	91-20-3	1	mg/kg	----	<1	----	<1	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	72.3	----	94.3	----	81.3	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	76.2	----	92.1	----	78.4	
Toluene-D8	2037-26-5	0.1	%	79.1	----	82.8	----	78.2	
4-Bromofluorobenzene	460-00-4	0.1	%	91.3	----	92.1	----	74.2	
EP075(SIM)S: Phenolic Compound Surrogates									



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP01- 161012	SP02- 161012	SP03- 161012	SP04- 161012	SP05- 161012
				16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	16-OCT-2012 16:00
Compound	CAS Number	LOR	Unit	ES1224653-001	ES1224653-002	ES1224653-003	ES1224653-004	ES1224653-005
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.1	%	----	83.0	----	92.9	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	81.1	----	94.2	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	81.0	----	78.2	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	85.1	----	94.6	----
Anthracene-d10	1719-06-8	0.1	%	----	88.7	----	91.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	97.7	----	101	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	62.8	----	87.5	----	78.1
2-Chlorophenol-D4	93951-73-6	0.1	%	67.4	----	91.6	----	76.4
2,4,6-Tribromophenol	118-79-6	0.1	%	56.0	----	91.5	----	63.9
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	72.4	----	85.2	----	87.1
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	63.5	----	77.8	----	80.2
2-Fluorobiphenyl	321-60-8	0.1	%	72.5	----	95.1	----	86.5
Anthracene-d10	1719-06-8	0.1	%	95.5	----	107	----	111
4-Terphenyl-d14	1718-51-0	0.1	%	92.1	----	117	----	107
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	111	----	116	----
Toluene-D8	2037-26-5	0.1	%	----	109	----	116	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	104	----	110	----

Sub-Matrix: **SOIL**

Client sample ID

Sub-Matrix: SOIL				Client sample ID	SP06-161012	SP07-161012	SP08-161012	SP09-161012	SP10-161012
Client sampling date / time				[17-OCT-2012]	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	----	7.9	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%	8.9	5.4	3.6	8.4	9.4	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	24	6	10	7	7	
Cadmium	7440-43-9	1	mg/kg	7	<1	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	36	37	----	33	25	
Copper	7440-50-8	5	mg/kg	183	22	48	25	36	
Lead	7439-92-1	5	mg/kg	254	39	90	79	70	
Molybdenum	7439-98-7	2	mg/kg	----	----	<2	----	----	
Nickel	7440-02-0	2	mg/kg	10	5	6	4	5	
Selenium	7782-49-2	5	mg/kg	----	----	<5	----	----	
Silver	7440-22-4	2	mg/kg	----	----	<2	----	----	
Tin	7440-31-5	5	mg/kg	----	----	<5	----	----	
Zinc	7440-66-6	5	mg/kg	379	108	134	105	168	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	----	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	----	260	----	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<0.30	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
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	----	----	
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----	
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	<0.2	----	----	
EP074I: Volatile Halogenated Compounds									



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP06-161012	SP07-161012	SP08-161012	SP09-161012	SP10-161012
				[17-OCT-2012]	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010
EP074I: Volatile Halogenated Compounds - Continued								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	----	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg	----	----	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	----	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	----	<0.50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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
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



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP06-161012	SP07-161012	SP08-161012	SP09-161012	SP10-161012
				[17-OCT-2012]	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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 (WHO)	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	<0.03	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	----	----	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	<0.07	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	----	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	----	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	----	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg	----	----	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP06-161012	SP07-161012	SP08-161012	SP09-161012	SP10-161012
				[17-OCT-2012]	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
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) & Benzo(k)fluoranthene	205-99-2 207-08-9	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	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----

Sub-Matrix: **SOIL**

Client sample ID

Sub-Matrix: SOIL				Client sample ID		SP06-161012		SP07-161012		SP08-161012		SP09-161012		SP10-161012	
Client sampling date / time				[17-OCT-2012]		[17-OCT-2012]		16-OCT-2012 16:00		[17-OCT-2012]		[17-OCT-2012]		[17-OCT-2012]	
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010							
EP075I: Organochlorine Pesticides - Continued															
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	----							
Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	<0.05	----	----							
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	----							
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----							
EP080/071: Total Petroleum Hydrocarbons															
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----							
C6 - C9 Fraction	----	10	mg/kg	<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							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft															
C6 - C10 Fraction	----	10	mg/kg	<10	<10	----	<10	<10							
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	<10	<10	----	<10	<10							
>C10 - C16 Fraction	----	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							
EP080: BTEX															
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							
EP080: BTEXN															
^ Total Xylenes	1330-20-7	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							
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	<1	<1							
EP066S: PCB Surrogate															
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	83.5	----	----							
EP074S: VOC Surrogates															
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	91.3	----	----							
Toluene-D8	2037-26-5	0.1	%	----	----	89.2	----	----							
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	97.4	----	----							
EP075(SIM)S: Phenolic Compound Surrogates															



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP06- 161012	SP07- 161012	SP08- 161012	SP09- 161012	SP10- 161012
				[17-OCT-2012]	[17-OCT-2012]	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]
Compound	CAS Number	LOR	Unit	ES1224653-006	ES1224653-007	ES1224653-008	ES1224653-009	ES1224653-010
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
Phenol-d6	13127-88-3	0.1	%	89.8	90.2	----	86.8	85.2
2-Chlorophenol-D4	93951-73-6	0.1	%	88.7	92.6	----	86.1	90.0
2,4,6-Tribromophenol	118-79-6	0.1	%	77.7	77.7	----	73.7	71.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	90.8	93.0	----	85.7	86.6
Anthracene-d10	1719-06-8	0.1	%	91.2	91.6	----	89.9	86.2
4-Terphenyl-d14	1718-51-0	0.1	%	99.9	100	----	98.7	93.8
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	74.3	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	74.5	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	73.4	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	81.9	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	71.6	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	85.2	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	103	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	108	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	111	114	----	115	112
Toluene-D8	2037-26-5	0.1	%	109	115	----	116	113
4-Bromofluorobenzene	460-00-4	0.1	%	101	106	----	106	104

Sub-Matrix: **SOIL**

Client sample ID

Client sampling date / time

Sub-Matrix: SOIL				Client sample ID	SP11-161012	SP12-161012	SP13-161012	----	----
				Client sampling date / time	16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	8.1	----	----	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%	6.5	9.2	6.2	----	----	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	6	6	7	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----	
Chromium	7440-47-3	2	mg/kg	----	39	36	----	----	
Copper	7440-50-8	5	mg/kg	19	22	26	----	----	
Lead	7439-92-1	5	mg/kg	43	42	58	----	----	
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	
Nickel	7440-02-0	2	mg/kg	5	4	4	----	----	
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	
Zinc	7440-66-6	5	mg/kg	125	144	142	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	220	----	----	----	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.30	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
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	----	----	----	----	
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	
EP074I: Volatile Halogenated Compounds									



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP11- 161012	SP12- 161012	SP13- 161012	----	----
				16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----
EP074I: Volatile Halogenated Compounds - Continued								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	<0.50	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<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	----	----



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP11- 161012	SP12- 161012	SP13- 161012	----	----
				16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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 (WHO)	----	0.5	mg/kg	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.04	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.04	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.04	----	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.04	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.04	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.07	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.04	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP11- 161012	SP12- 161012	SP13- 161012	----	----
				16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
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) & Benzo(k)fluoranthene	205-99-2 207-08-9	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	----	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.04	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.04	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.04	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.04	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.04	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.04	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.04	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.04	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.04	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.04	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.04	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	0.06	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.04	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.04	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.04	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.04	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.04	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	0.06	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	0.06	----	----	----	----



Analytical Results

Sub-Matrix: SOIL

Client sample ID

Client sampling date / time

				SP11- 161012	SP12- 161012	SP13- 161012	----	----
				16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----
EP075I: Organochlorine Pesticides - Continued								
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.04	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.04	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C6 - C9 Fraction	----	10	mg/kg	----	<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	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
C6 - C10 Fraction	----	10	mg/kg	----	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	----	10	mg/kg	----	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<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	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	----	----
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	78.6	----	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	85.5	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	84.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	85.6	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	93.2	94.2	----	----



Analytical Results

Sub-Matrix: **SOIL**

Client sample ID

Client sampling date / time

				SP11- 161012	SP12- 161012	SP13- 161012	----	----
				16-OCT-2012 16:00	[17-OCT-2012]	[17-OCT-2012]	----	----
Compound	CAS Number	LOR	Unit	ES1224653-011	ES1224653-012	ES1224653-013	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	92.5	94.4	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	79.8	78.3	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	95.2	92.0	----	----
Anthracene-d10	1719-06-8	0.1	%	----	95.9	93.7	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	105	103	----	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.1	%	66.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	74.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	58.9	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	85.5	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.1	%	71.4	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	81.2	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	95.1	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	97.2	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	109	114	----	----
Toluene-D8	2037-26-5	0.1	%	----	110	117	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	101	107	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	26.5	130
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	67	119
Toluene-D8	2037-26-5	68	118
4-Bromofluorobenzene	460-00-4	70	120
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	56.3	133.3
2-Chlorophenol-D4	93951-73-6	53.8	133.8
2,4,6-Tribromophenol	118-79-6	23.1	134.9
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	58.9	132.7
Anthracene-d10	1719-06-8	55.0	137.6
4-Terphenyl-d14	1718-51-0	54.0	147.8
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	10.6	119
2-Chlorophenol-D4	93951-73-6	11.5	119
2,4,6-Tribromophenol	118-79-6	11.3	133
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	13.5	122
1,2-Dichlorobenzene-D4	2199-69-1	11.8	114
2-Fluorobiphenyl	321-60-8	19.6	126
Anthracene-d10	1719-06-8	27.5	135
4-Terphenyl-d14	1718-51-0	26.7	133
EP080S: TPH(V)/BTEX Surrogates			
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

Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES1224653	Page	: 1 of 20
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR TIM SMITH	Contact	: Client Services
Address	: G P O BOX 2005 DARWIN NT, AUSTRALIA 0801	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: tim.smith@urs.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 89802900	Telephone	: +61-2-8784 8555
Facsimile	: +61 89413920	Facsimile	: +61-2-8784 8500
Project	: 42213719 70061 SHELL McMINN	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 17-OCT-2012
Sampler	: BA	Issue Date	: 24-OCT-2012
Order number	: ----		
Quote number	: EN/001/12	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



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
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Evie.Sidarta	Inorganic Chemist	Sydney Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics
Xingbin Lin	Senior Organic Chemist	Melbourne 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**

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 (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 2557700)									
EM1212323-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	11.8	11.7	0.8	0% - 20%
EM1212397-009	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.4	6.2	3.2	0% - 20%
EA055: Moisture Content (QC Lot: 2553973)									
ES1224600-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.1	10.8	2.8	0% - 50%
ES1224653-010	SP10- 161012	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.4	9.5	0.0	No Limit
EA055: Moisture Content (QC Lot: 2556356)									
EM1212330-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.0	13.7	15.6	0% - 50%
EM1212372-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.5	19.4	5.4	0% - 50%
EA055: Moisture Content (QC Lot: 2556357)									
ES1224653-008	SP08- 161012	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.6	6.2	51.4	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 2553852)									
ES1224600-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	18	13.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	19	13.2	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	14.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	42	12.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	25	27	7.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	45	46	0.0	No Limit
ES1224653-004	SP04- 161012	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	37	32	14.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	19.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	19	35	58.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	36	53	37.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	123	122	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 2557708)									
EM1212381-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	113	123	8.4	0% - 20%
		EG005T: Silver	7440-22-4	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	46	47	3.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
EG005T: Tin	7440-31-5	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 (%)
EG005T: Total Metals by ICP-AES (QC Lot: 2557708) - continued									
EM1212381-001	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	43	47	9.4	No Limit
EM1212397-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	17	0.0	No Limit
		EG005T: Silver	7440-22-4	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	16	19	14.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	28	31	9.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	52	54	4.9	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2553853)									
ES1224600-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1224653-004	SP04- 161012	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2557709)									
EM1212381-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM1212397-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2557701)									
EM1212397-001	Anonymous	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1212397-010	Anonymous	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 2556344)									
EM1212306-021	Anonymous	EK026SF: Total Cyanide	57-12-5	1	-	Not Authorised	# Not Authorised	0.0	0% - 20%
EM1212372-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 2556314)									
ES1224653-001	SP01- 161012	EK040T: Fluoride	16984-48-8	40	mg/kg	260	260	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2557681)									
EM1212397-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
ES1224653-001	SP01- 161012	EP066-EM: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.30	<0.30	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2556313)									
ES1224653-001	SP01- 161012	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 2556313)									
ES1224653-001	SP01- 161012	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	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 (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 2556313) - continued									
ES1224653-001	SP01- 161012	EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2553301)									
ES1224653-002	SP02- 161012	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 (WHO)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1224653-013	SP13- 161012	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



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2553301) - continued									
ES1224653-013	SP13- 161012	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 (WHO)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 2557680)									
EM1212397-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1224653-001	SP01- 161012	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.07	<0.07	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 2557680)									
EM1212397-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	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 (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 2557680) - continued									
EM1212397-001	Anonymous	EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit
ES1224653-001	SP01- 161012	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit	
	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit	
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2557680)									
EM1212397-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h.)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1224653-001	SP01- 161012	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	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 (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2557680) - continued									
ES1224653-001	SP01- 161012	EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 2557680)									
EM1212397-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
ES1224653-001	SP01- 161012	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.04	<0.04	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 (%)
EP075I: Organochlorine Pesticides (QC Lot: 2557680) - continued									
ES1224653-001	SP01- 161012	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.04	<0.04	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2552336)									
ES1224593-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1224653-002	SP02- 161012	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2553299)									
ES1224653-002	SP02- 161012	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
ES1224653-013	SP13- 161012	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2556313)									
ES1224653-001	SP01- 161012	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2557690)									
EM1212381-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	1090	1020	6.9	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	2850	2590	9.5	0% - 20%
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	3940	3610	8.7	0% - 20%
EM1212397-010	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
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2552336)									
ES1224593-001	Anonymous	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1224653-002	SP02- 161012	EP080: C6 - C10 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2553299)									
ES1224653-002	SP02- 161012	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

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 Work Order : ES1224653
 Client : URS AUSTRALIA PTY LTD
 Project : 42213719 70061 SHELL McMINN



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2553299) - continued									
ES1224653-002	SP02- 161012	EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1224653-013	SP13- 161012	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	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2557690)									
EM1212381-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	3180	2940	7.7	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	2180	1860	15.6	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	5360	4800	11.0	0% - 20%
EM1212397-010	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	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 2552336)									
ES1224593-001	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
ES1224653-002	SP02- 161012	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



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**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2553852)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	117	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	109	----	----
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	----	----
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	122	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	109	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	116	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2557708)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	105	75	131
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	103	71	123
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	104	79	123
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	98.8	77	125
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	8.5 mg/kg	88.9	72	128
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	96.8	78	128
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	5.23 mg/kg	97.4	70	119
EG005T: Tin	7440-31-5	5	mg/kg	<5	26.3 mg/kg	88.3	70	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	93.7	75	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2553853)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.1	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2557709)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	101	81	123
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2557701)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	95.7	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 2556344)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	40 mg/kg	99.2	80	124
EK040T: Fluoride Total (QCLot: 2556314)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	86.7	72	108
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2557681)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	0.5 mg/kg	111	55	137
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2556313)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	87.0	75	120
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	99.7	77	116



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2556313) - continued								
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	99.2	76	117
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	99.5	75	117
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	102	72	123
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	102	78	118
EP074I: Volatile Halogenated Compounds (QCLot: 2556313)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	48	134
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	102	68	126
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	# 70.8	75	128
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	71	123
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.0	74	117
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	85.7	72	125
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	71.5	70	124
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	83.5	63	127
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	68	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	74	122
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.8	77	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	71	119
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.3	72	120
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	106	73	131
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.5	61	115
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	88.5	75	121
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	# 65.0	74	111
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	76	111
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	91.1	67	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2553301)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	100	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	96.3	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	96.4	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	96.9	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	97.8	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	95.4	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	96.7	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	97.3	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	101	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	107	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	109	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	94.4	76.4	113



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2553301) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	91.1	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	88.9	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	90.0	72.4	114
EP075A: Phenolic Compounds (Halogenated) (QCLot: 2557680)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	0.5 mg/kg	91.5	41	135
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	0.5 mg/kg	89.7	39	135
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	0.5 mg/kg	94.3	40	136
EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	0.5 mg/kg	99.1	45	139
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	38	138
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	0.5 mg/kg	84.3	43	131
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	0.5 mg/kg	43.0	41	135
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	1.0 mg/kg	62.6	26.3	134
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	0.5 mg/kg	# 19.4	25	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 2557680)								
EP075-EM: Phenol	108-95-2	0.1 1	mg/kg mg/kg	---- <1	0.5 mg/kg ----	93.4 ----	40 ----	140 ----
EP075-EM: 2-Methylphenol	95-48-7	0.1 1	mg/kg mg/kg	---- <1	0.5 mg/kg ----	91.1 ----	37 ----	139 ----
EP075-EM: 3- & 4-Methylphenol	1319-77-3	0.5 1	mg/kg mg/kg	---- <1	1 mg/kg ----	91.8 ----	38 ----	138 ----
EP075-EM: 2-Nitrophenol	88-75-5	0.1 1	mg/kg mg/kg	---- <1	0.5 mg/kg ----	81.1 ----	35 ----	137 ----
EP075-EM: 2.4-Dimethylphenol	105-67-9	0.1 1	mg/kg mg/kg	---- <1	0.5 mg/kg ----	90.8 ----	10.9 ----	137 ----
EP075-EM: 2.4-Dinitrophenol	51-28-5	0.1 5	mg/kg mg/kg	---- <5	3 mg/kg ----	35.0 ----	22.7 ----	99 ----
EP075-EM: 4-Nitrophenol	100-02-7	0.1 5	mg/kg mg/kg	---- <5	3 mg/kg ----	83.3 ----	36 ----	136 ----
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	0.1 5	mg/kg mg/kg	---- <5	3 mg/kg ----	25.7 ----	15.4 ----	117 ----
EP075-EM: Dinoseb	88-85-7	0.1 5	mg/kg mg/kg	---- <5	3 mg/kg ----	30.7 ----	26.5 ----	128 ----
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	0.1 5	mg/kg mg/kg	---- <5	2.5 mg/kg ----	31.9 ----	12 ----	132 ----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2557680)								
EP075-EM: Naphthalene	91-20-3	0.1 0.5	mg/kg mg/kg	---- <0.5	0.5 mg/kg ----	96.4 ----	42 ----	134 ----



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2557680) - continued								
EP075-EM: Acenaphthene	83-32-9	0.1	mg/kg	----	0.5 mg/kg	102	43	137
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Acenaphthylene	208-96-8	0.1	mg/kg	----	0.5 mg/kg	97.3	43	139
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Fluorene	86-73-7	0.1	mg/kg	----	0.5 mg/kg	106	48	136
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Phenanthrene	85-01-8	0.1	mg/kg	----	0.5 mg/kg	107	51	139
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Anthracene	120-12-7	0.1	mg/kg	----	0.5 mg/kg	106	49	127
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Fluoranthene	206-44-0	0.1	mg/kg	----	0.5 mg/kg	110	48	134
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Pyrene	129-00-0	0.1	mg/kg	----	0.5 mg/kg	110	51	132
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benz(a)anthracene	56-55-3	0.1	mg/kg	----	0.5 mg/kg	111	50	133
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Chrysene	218-01-9	0.1	mg/kg	----	0.5 mg/kg	111	50	136
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.1	mg/kg	----	1.0 mg/kg	122	49	133
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(a)pyrene	50-32-8	0.1	mg/kg	----	0.5 mg/kg	124	48	131
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.1	mg/kg	----	0.5 mg/kg	114	42	142
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.1	mg/kg	----	0.5 mg/kg	112	42	142
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.1	mg/kg	----	0.5 mg/kg	110	43	141
		0.5	mg/kg	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides (QCLot: 2557680)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	0.5 mg/kg	110	48	140
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	0.5 mg/kg	111	47	139
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	0.5 mg/kg	115	46	144
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	0.5 mg/kg	112	50	140
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	0.5 mg/kg	108	50	132
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	0.5 mg/kg	105	49	132
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	0.5 mg/kg	106	49	131
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	0.5 mg/kg	108	50	129
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	0.5 mg/kg	109	46	137
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	0.5 mg/kg	109	47	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	0.5 mg/kg	104	48	136



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075I: Organochlorine Pesticides (QCLot: 2557680) - continued								
EP075-EM: 4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	107	46	133
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	0.5 mg/kg	108	49	134
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	0.5 mg/kg	115	19.4	159
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	0.5 mg/kg	116	61	137
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	0.5 mg/kg	109	50	144
EP075-EM: 4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	49	145
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	0.5 mg/kg	102	47	147
EP075-EM: 4.4'-DDT	50-29-3	0.05	mg/kg	<0.05	0.5 mg/kg	110	40	148
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	0.5 mg/kg	113	46	144
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2552336)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	111	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2553299)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	101	59	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	94.7	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	100	63	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556313)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	96.0	75	123
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2557690)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	602 mg/kg	78.8	55	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1875 mg/kg	78.4	72	134
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	738 mg/kg	76.8	71	143
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2552336)								
EP080: C6 - C10 Fraction	----	10	mg/kg	<10	31 mg/kg	114	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2553299)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	103	59	131
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	94.8	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	100	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2557690)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	929 mg/kg	79.9	69	123
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	2237 mg/kg	80.1	71	134
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	232 mg/kg	75.9	63	143
EP071: >C10 - C40 Fraction (sum)	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 2552336)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.1	62	120
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	101	58	118



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080: BTEXN (QCLot: 2552336) - continued								
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	99.5	60	120
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	112	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			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG005T: Total Metals by ICP-AES (QCLot: 2553852)							
ES1224600-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	111	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	124	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	106	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	107	70	130
EG005T: Total Metals by ICP-AES (QCLot: 2557708)							
EM1212397-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.8	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	87.7	70	130
		EG005T: Molybdenum	7439-98-7	50 mg/kg	85.9	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.1	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	82.2	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2553853)							
ES1224600-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2557709)							
EM1212397-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	110	70	120
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2557701)							
EM1212397-002	Anonymous	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	97.3	70	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 2556344)							
EM1212312-012	Anonymous	EK026SF: Total Cyanide	57-12-5	40 mg/kg	82.6	78	122



Sub-Matrix: **SOIL**

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
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2557681)							
EM1212397-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	105	49	135
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2556313)							
ES1224653-003	SP03- 161012	EP074-UT: Benzene	71-43-2	2 mg/kg	88.8	60	140
		EP074-UT: Toluene	108-88-3	2 mg/kg	101	64	134
EP074I: Volatile Halogenated Compounds (QCLot: 2556313)							
ES1224653-003	SP03- 161012	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	53.6	43	135
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	90.2	51	131
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	95.5	64	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2553301)							
ES1224653-002	SP02- 161012	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	88.5	70	130
EP075A: Phenolic Compounds (Halogenated) (QCLot: 2557680)							
EM1212397-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	68.1	35	139
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.5 mg/kg	75.3	27.7	134
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	# 19.7	23.4	127
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 2557680)							
EM1212397-002	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	76.8	28.2	132
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	70.4	11.2	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2557680)							
EM1212397-002	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	77.6	33	141
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	80.3	26.2	158
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2552336)							
ES1224593-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	98.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2553299)							
ES1224653-002	SP02- 161012	EP071: C10 - C14 Fraction	----	640 mg/kg	85.0	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	103	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	91.9	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556313)							
ES1224653-003	SP03- 161012	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	85.6	51	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2557690)							
EM1212397-001	Anonymous	EP071: C10 - C14 Fraction	----	602 mg/kg	89.4	54	123
		EP071: C15 - C28 Fraction	----	1875 mg/kg	85.1	74	134
		EP071: C29 - C36 Fraction	----	738 mg/kg	91.8	63	143
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2552336)							
ES1224593-001	Anonymous	EP080: C6 - C10 Fraction	----	37.5 mg/kg	101	70	130



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2553299)							
ES1224653-002	SP02- 161012	EP071: >C10 - C16 Fraction	----	850 mg/kg	105	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	96.0	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	78.6	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2557690)							
EM1212397-001	Anonymous	EP071: >C10 - C16 Fraction	----	929 mg/kg	88.4	54	123
		EP071: >C16 - C34 Fraction	----	2237 mg/kg	88.5	74	134
		EP071: >C34 - C40 Fraction	----	232 mg/kg	104	63	143
EP080: BTEXN (QCLot: 2552336)							
ES1224593-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	91.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.3	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	91.0	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.1	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**

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		MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2552336)										
ES1224593-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	98.8	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2552336)										
ES1224593-001	Anonymous	EP080: C6 - C10 Fraction	----	37.5 mg/kg	101	----	70	130	----	----
EP080: BTEXN (QCLot: 2552336)										
ES1224593-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.6	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	91.6	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	91.3	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	91.0	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.6	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	89.1	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2553299)										
ES1224653-002	SP02- 161012	EP071: C10 - C14 Fraction	----	640 mg/kg	85.0	----	73	137	----	----
		EP071: C15 - C28 Fraction	----	3140 mg/kg	103	----	53	131	----	----

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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2553299) - continued										
ES1224653-002	SP02- 161012	EP071: C29 - C36 Fraction	----	2860 mg/kg	91.9	----	52	132	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2553299)										
ES1224653-002	SP02- 161012	EP071: >C10 - C16 Fraction	----	850 mg/kg	105	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	96.0	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	78.6	----	52	132	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2553301)										
ES1224653-002	SP02- 161012	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	88.5	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2553852)										
ES1224600-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	111	----	70	130	----	----
		EG005T: Copper	7440-50-8	250 mg/kg	124	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	106	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	111	----	70	130	----	----
		EG005T: Zinc	7440-66-6	250 mg/kg	107	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2553853)										
ES1224600-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.2	----	70	130	----	----
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2556313)										
ES1224653-003	SP03- 161012	EP074-UT: Benzene	71-43-2	2 mg/kg	88.8	----	60	140	----	----
		EP074-UT: Toluene	108-88-3	2 mg/kg	101	----	64	134	----	----
EP074I: Volatile Halogenated Compounds (QCLot: 2556313)										
ES1224653-003	SP03- 161012	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	53.6	----	43	135	----	----
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	90.2	----	51	131	----	----
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	95.5	----	64	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2556313)										
ES1224653-003	SP03- 161012	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	85.6	----	51	131	----	----
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 2556344)										
EM1212312-012	Anonymous	EK026SF: Total Cyanide	57-12-5	40 mg/kg	82.6	----	78	122	----	----
EP075A: Phenolic Compounds (Halogenated) (QCLot: 2557680)										
EM1212397-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	68.1	----	35	139	----	----
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.5 mg/kg	75.3	----	27.7	134	----	----
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	# 19.7	----	23.4	127	----	----
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 2557680)										
EM1212397-002	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	76.8	----	28.2	132	----	----
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	70.4	----	11.2	137	----	----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2557680)										



Sub-Matrix: **SOIL**

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		MS	MSD	Low	High	Value	Control Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 2557680) - continued										
EM1212397-002	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	77.6	----	33	141	----	----
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	80.3	----	26.2	158	----	----
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2557681)										
EM1212397-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.5 mg/kg	105	----	49	135	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2557690)										
EM1212397-001	Anonymous	EP071: C10 - C14 Fraction	----	602 mg/kg	89.4	----	54	123	----	----
		EP071: C15 - C28 Fraction	----	1875 mg/kg	85.1	----	74	134	----	----
		EP071: C29 - C36 Fraction	----	738 mg/kg	91.8	----	63	143	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 2557690)										
EM1212397-001	Anonymous	EP071: >C10 - C16 Fraction	----	929 mg/kg	88.4	----	54	123	----	----
		EP071: >C16 - C34 Fraction	----	2237 mg/kg	88.5	----	74	134	----	----
		EP071: >C34 - C40 Fraction	----	232 mg/kg	104	----	63	143	----	----
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2557701)										
EM1212397-002	Anonymous	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	97.3	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 2557708)										
EM1212397-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.8	----	70	130	----	----
		EG005T: Copper	7440-50-8	50 mg/kg	110	----	70	130	----	----
		EG005T: Lead	7439-92-1	50 mg/kg	87.7	----	70	130	----	----
		EG005T: Molybdenum	7439-98-7	50 mg/kg	85.9	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	96.1	----	70	130	----	----
		EG005T: Selenium	7782-49-2	50 mg/kg	82.2	----	70	130	----	----
		EG005T: Zinc	7440-66-6	50 mg/kg	101	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2557709)										
EM1212397-001	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	110	----	70	120	----	----

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1224653	Page	: 1 of 9
Client	: URS AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
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Project	: 42213719 70061 SHELL McMINN	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 17-OCT-2012
C-O-C number	: ----	Issue Date	: 24-OCT-2012
Sampler	: BA	No. of samples received	: 13
Order number	: ----	No. of samples analysed	: 13
Quote number	: EN/001/12		

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

This Interpretive Quality Control Report contains the following information:

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



Analysis Holding Time Compliance

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

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

Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	23-OCT-2012	✓	22-OCT-2012	22-OCT-2012	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	----	----	----	19-OCT-2012	30-OCT-2012	✓
Soil Glass Jar - Unpreserved (EA055-103) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	----	----	----	18-OCT-2012	31-OCT-2012	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	14-APR-2013	✓	23-OCT-2012	14-APR-2013	✓
Soil Glass Jar - Unpreserved (EG005T) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	18-OCT-2012	15-APR-2013	✓	19-OCT-2012	15-APR-2013	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	13-NOV-2012	✓	23-OCT-2012	13-NOV-2012	✓
Soil Glass Jar - Unpreserved (EG035T) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	18-OCT-2012	14-NOV-2012	✓	19-OCT-2012	14-NOV-2012	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	13-NOV-2012	✓	23-OCT-2012	29-OCT-2012	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	19-OCT-2012	23-OCT-2012	✓	22-OCT-2012	02-NOV-2012	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	19-OCT-2012	23-OCT-2012	✓	22-OCT-2012	23-OCT-2012	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	23-OCT-2012	01-DEC-2012	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	22-OCT-2012	01-DEC-2012	✓
Soil Glass Jar - Unpreserved (EP071) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	19-OCT-2012	31-OCT-2012	✓	22-OCT-2012	28-NOV-2012	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	19-OCT-2012	30-OCT-2012	✓	19-OCT-2012	30-OCT-2012	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	19-OCT-2012	30-OCT-2012	✓	19-OCT-2012	30-OCT-2012	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	19-OCT-2012	30-OCT-2012	✓	19-OCT-2012	30-OCT-2012	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	19-OCT-2012	31-OCT-2012	✓	22-OCT-2012	28-NOV-2012	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	23-OCT-2012	01-DEC-2012	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	23-OCT-2012	01-DEC-2012	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	23-OCT-2012	01-DEC-2012	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) SP01- - 161012, SP05- - 161012, SP11- - 161012	SP03- - 161012, SP08- - 161012,	16-OCT-2012	22-OCT-2012	30-OCT-2012	✓	23-OCT-2012	01-DEC-2012	✓
EP080: BTEX								
Soil Glass Jar - Unpreserved (EP080) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	18-OCT-2012	31-OCT-2012	✓	22-OCT-2012	31-OCT-2012	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	18-OCT-2012	31-OCT-2012	✓	22-OCT-2012	31-OCT-2012	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								
Soil Glass Jar - Unpreserved (EP080) SP02- - 161012, SP06- - 161012, SP09- - 161012, SP12- - 161012,	SP04- - 161012, SP07- - 161012, SP10- - 161012, SP13- - 161012	17-OCT-2012	18-OCT-2012	31-OCT-2012	✓	22-OCT-2012	31-OCT-2012	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	5	40	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
pH in soil using a 0.01M CaCl2 extract	EA001	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	5	20.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	35	11.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	36	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	36	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	36	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	36	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	36	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	36	5.6	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	5.3	5.0	✓	ALS QCS3 requirement



Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.7	5.0	✔	ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.7	5.0	✔	ALS QCS3 requirement
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.6	5.0	✔	ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	15	6.7	5.0	✔	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	35	5.7	5.0	✔	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	36	5.6	5.0	✔	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	36	5.6	5.0	✔	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	19	5.3	5.0	✔	ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.0	5.0	✔	ALS QCS3 requirement



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	Rayment and Higginson 4B1 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (1999) 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 (2010 Draft) 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 (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Hexavalent Chromium by Alkaline Digestion	EG048	SOIL	USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by UV-VIS spectrophotometer following pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)



Analytical Methods	Method	Matrix	Method Descriptions
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In-house, APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	Rayment and Higginson 4B1 (mod.), 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (1999) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	(In-house) Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	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 - VIC EPA Screen	ORG17A-EM	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na ₂ SO ₄ 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 ₂ SO ₄ 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
Laboratory Control Spike (LCS) Recoveries							
EP074I: Volatile Halogenated Compounds	3030447-001	----	Methylene chloride	75-09-2	70.8 %	75-128%	Recovery less than lower control limit
EP074I: Volatile Halogenated Compounds	3030447-001	----	1,4-Dichlorobenzene	106-46-7	65.0 %	74-111%	Recovery less than lower control limit
EP075A: Phenolic Compounds (Halogenated)	3032366-001	----	Pentachlorophenol	87-86-5	19.4 %	25-129%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
EP075A: Phenolic Compounds (Halogenated)	EM1212397-002	Anonymous	Pentachlorophenol	87-86-5	19.7 %	23.4-127%	Recovery less than lower data quality objective

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

Attachment C

DATA VALIDATION SUMMARY REPORT: SOIL

Date: 23/01/2013

Site: **Waterfront Precinct**
 Project No.: **42213719**
 Project Manager: **Tim Smith**
 Matrix: **Water**
 Laboratory: **ALS/EnviroLab**
 Lab Batch Nos: **ES1224653**
 Sample Dates: **7/01/2013**

Validation Conducted by: **Bek Aagaard**
 Authorised by: **Tim Smith**

Component			Assessment		Comments
Frequency of laboratory QA/QC	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Frequency of field QA/QC	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	Refer to Note 1
Sample handling/preservation/holding time	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Number of tests requested/reported	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Limits of reporting	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Blank Analysis	Field Blank	OK	NOT OK	<input type="checkbox"/>	Refer to Note 2
	Rinsate Blank	OK	NOT OK	<input type="checkbox"/>	
	Trip Blank	OK	NOT OK	<input type="checkbox"/>	
	Method Blank	OK	NOT OK	<input type="checkbox"/>	
Field duplicate RPDs	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Laboratory duplicate RPDs	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	
Matrix Spikes	% Recoveries	OK	NOT OK	<input type="checkbox"/>	Refer to Note 3
LCS	% Recoveries	OK	NOT OK	<input type="checkbox"/>	Refer to Note 4
Surrogate recoveries	OK	<input checked="" type="checkbox"/>	NOT OK	<input type="checkbox"/>	

Number of Samples Taken

Primary samples: 13
 Inter-laboratory duplicates: 0
 Intra-laboratory duplicates: 0

Other observations:
ES1300228

- Note 1 Several analytes (Selected Metals, TPH, PAHs, Phenols and OC and OP pesticides) were not reported in either Intra- and Inter-laboratory field duplicate results; hence, care should be taken when interpreting results for these compounds close to the investigation levels (Metals). The presence of laboratory duplicates is considered sufficient for interpretation of the precision of the results, where no concentration of analytes in the primary samples were reported above laboratory LOR (TPH, PAHs, Phenols and and OC and OP pesticides).
- Note 2 No Field Blank, Rinsate Blank, Trip Blank or Method Blank were analysed; hence potential cross-contamination has not been assessed directly. As no samples were reported to contain BTEXN or volatile TPH and all samples were taken from the excavator's bucket, using fresh gloves and placed directly into the sample container, the potential for cross-contamination is minimal; therefore, this is not considered to affect the interpretation of the results.
- Note 3 Laboratory Matrix Spike recoveries were reported less than the lower control limit for Pentachlorophenol in laboratory Batch ES1224653. The accuracy of the analytical data for this analyte is considered acceptable based on the presence of other quality control data, such as LCS recovery, method blank and surrogate recovery.
- Note 4 The Laboratory Control Spike (LCS) recoveries for Methylene Chloride, 1,4-Dichlorobenzene and Pentachlorophenol were reported less than the upper control limits by 6%, 14% and 28%, respectively, in laboratory Batch ES1224653; hence, there is the potential for the results to be biased low. Due to the presence of other quality control data, including method blanks, matrix spikes and surrogate recoveries, and as these analytes were not reported above the laboratory LOR, the accuracy of the analytical data is considered acceptable.

Summary Comments:

None

Recommended Corrective Action

None

Site:Waterfront Precinct

Project No.:42213719

Project Manager:Tim Smith

Matrix:Water

Laboratory:ALS/Envirolab

Lab Batch Nos:ES1224653

Sample Dates:7/01/2013

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
SEMIVOLS ANALYSIS/ALS/EP080/071	>C10 - C16 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	>C16 - C34 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	>C34 - C40 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C10 - C14 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C15 - C28 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C29 - C36 Fraction	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
PHYSICAL CHEMISTRY ANALYSIS/ALS/	Fluoride	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	-	-
METALS PREPARATION/ALS/EG048	Hexavalent Chromium	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
SEMIVOLS ANALYSIS/ALS/EP075A	2,3,4,5 & 2,3,4,6-Tetrachlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,3,5,6-Tetrachlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,4,5-Trichlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,4,6-Trichlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,4-Dichlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,4-Dimethylphenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,4-Dinitrophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2,6-Dichlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2-Chlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	2-Cyclohexyl-4,6-Dinitrophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2-Methyl-4,6-dinitrophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2-Methylphenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	2-Nitrophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	3- & 4-Methylphenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	4-Chloro-3-Methylphenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	4-Nitrophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Dinoseb	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Pentachlorophenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	Phenol	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
SEMIVOLS ANALYSIS/ALS/EP075B	Acenaphthene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	✓	✓
	Acenaphthylene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Anthracene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benz(a)anthracene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(a)pyrene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(b) & Benzo(k)fluoranthene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Benzo(g,h,i)perylene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Chrysene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Dibenz(a,h)anthracene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Fluoranthene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Fluorene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Indeno(1,2,3-cd)pyrene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Naphthalene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Phenanthrene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Pyrene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	✓	✓

Site:Waterfront Precinct
Project No.:42213719
Project Manager:Tim Smith
Matrix:Water
Laboratory:ALS/Envirolab
Lab Batch Nos:ES1224653
Sample Dates:7/01/2013

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
SEMIVOLS ANALYSIS/ALS/EP075I	4,4'-DDD	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	4,4'-DDE	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	4,4'-DDT	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Aldrin	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	alpha-BHC	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	beta-BHC	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Chlordane	5	5	5	✓	✓	1	0	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	✓	✓
	cis-Chlordane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	delta-BHC	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Dieldrin	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Endosulfan 1	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Endosulfan 2	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Endosulfan sulfate	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Endrin	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Endrin aldehyde	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	gamma-BHC	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Heptachlor	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Heptachlor epoxide	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Hexachlorobenzene (HCB)	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Methoxychlor	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	trans-Chlordane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
VOLATILES ANALYSIS/ALS/EP074A	Benzene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	2	1	2	✓	✓
	Ethylbenzene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	meta- & para-Xylene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	ortho-Xylene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	Styrene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Toluene	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	2	1	2	✓	✓
VOLATILES ANALYSIS/ALS/EP074I	1,1,1,2-Tetrachloroethane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,1,1-Trichloroethane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,1,2,2-Tetrachloroethane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,1,2-Trichloroethane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,1-Dichloroethene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
	1,2,4-Trichlorobenzene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,2-Dichlorobenzene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,2-Dichloroethane	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	1,4-Dichlorobenzene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Carbon Tetrachloride	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Chlorobenzene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
	Chloroform	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	cis-1,2-Dichloroethene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Hexachlorobutadiene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Methylene chloride	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Tetrachloroethene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	trans-1,2-Dichloroethene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓
	Trichloroethene	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	1	1	1	✓	✓
	Vinyl chloride	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	✓	✓

Site:
Project No.:
Project Manager:
Matrix:
Laboratory:
Lab Batch Nos:
Sample Dates:

Waterfront Precinct
42213719
Tim Smith
Water
ALS/Envirolab
ES1224653
7/01/2013

Analytical Method	Analytical Parameter	Number of Tests Requested	Number of Tests Reported	Number of Primary Samples	Holding Times (a)	Limits of Reporting (b)	Field Blank (1 per day)		Rinsate Blank (1 per day)		Trip Blank (1 per esky with VOCs)		Method Blank (1 per batch)		Intra-Laboratory Duplicate Sample (1 in 20)		Inter-Laboratory Duplicate Sample (1 in 20)		Lab Duplicate (1 in 10)		Matrix Spike (1 in 20)		LCS (1 per batch)		Surrogates (GC-MS organics)	
							Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Number Required	Number Reported	Reported	OK
VOLATILES ANALYSIS/ALS/EP080/071	C6 - C10 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	C6 - C10 Fraction minus BTEX (F1)	8	8	8	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	C6 - C9 Fraction	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	3	1	2	1	2	✓	✓
METALS ANALYSIS/ALS/EG005T	Arsenic	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
	Cadmium	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
	Chromium	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	Copper	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
	Lead	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
	Molybdenum	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	1	1	2	-	-
	Nickel	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
	Selenium	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	1	-	-
	Silver	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	-	-
	Tin	5	5	5	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	-	-
	Zinc	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
SEMIVOLS ANALYSIS/ALS/EP066	Total Polychlorinated biphenyls	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
SEMIVOLATILES ANALYSIS/ALS/EP075	Acenaphthene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	✓	✓
	Acenaphthylene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Anthracene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(a)anthracene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(a)pyrene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(a)pyrene TEQ (WHO)	8	8	8	✓	✓	1	0	1	0	1	0	0	0	1	0	1	0	1	2	1	0	1	0	✓	✓
	Benzo(b)fluoranthene	8	8	8	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Benzo(g,h,i)perylene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Benzo(k)fluoranthene	8	8	8	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	0	1	1	✓	✓
	Chrysene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Dibenz(a,h)anthracene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Fluoranthene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Fluorene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Indeno(1,2,3-cd)pyrene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Naphthalene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Phenanthrene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	0	1	2	✓	✓
	Pyrene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	✓	✓
METALS ANALYSIS/ALS/EG035T	Mercury	13	13	13	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	2	4	1	2	1	2	-	-
NUTRIENTS ANALYSIS/ALS/EK026SF	Total Cyanide	5	5	5	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	-	-
SEMIVOLATILES ANALYSIS/ALS/EP080	>C10 - C16 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	>C16 - C34 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	>C34 - C40 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C10 - C14 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C15 - C28 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
	C29 - C36 Fraction	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	4	1	2	1	2	-	-
VOLATILES ANALYSIS/ALS/EP080	Benzene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	2	1	2	✓	✓
	Ethylbenzene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	meta- & para-Xylene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	Naphthalene	8	8	8	✓	✓	1	0	1	0	1	0	1	1	1	0	1	0	1	2	1	1	1	1	✓	✓
	ortho-Xylene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	1	1	2	✓	✓
	Toluene	8	8	8	✓	✓	1	0	1	0	1	0	1	2	1	0	1	0	1	3	1	2	1	2	✓	✓

Attachment D

1			General UCL Statistics for Full Data Sets											
2	User Selected Options													
3	From File		WorkSheet.wst											
4	Full Precision		OFF											
5	Confidence Coefficient		95%											
6	Number of Bootstrap Operations		2000											
7														
8														
9	Arsenic													
10														
11	General Statistics													
12	Number of Valid Observations				13		Number of Distinct Observations				6			
13														
14	Raw Statistics					Log-transformed Statistics								
15	Minimum				5		Minimum of Log Data				1.609			
16	Maximum				24		Maximum of Log Data				3.178			
17	Mean				8.923		Mean of log Data				2.042			
18	Geometric Mean				7.703		SD of log Data				0.507			
19	Median				6									
20	SD				6.184									
21	Std. Error of Mean				1.715									
22	Coefficient of Variation				0.693									
23	Skewness				2.05									
24														
25														
26	Relevant UCL Statistics													
27	Normal Distribution Test					Lognormal Distribution Test								
28	Shapiro Wilk Test Statistic				0.615		Shapiro Wilk Test Statistic				0.724			
29	Shapiro Wilk Critical Value				0.866		Shapiro Wilk Critical Value				0.866			
30	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level								
31														
32	Assuming Normal Distribution					Assuming Lognormal Distribution								
33	95% Student's-t UCL				11.98		95% H-UCL				11.94			
34	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL				14.11				
35	95% Adjusted-CLT UCL (Chen-1995)				12.79		97.5% Chebyshev (MVUE) UCL				16.46			
36	95% Modified-t UCL (Johnson-1978)				12.14		99% Chebyshev (MVUE) UCL				21.09			
37														
38	Gamma Distribution Test					Data Distribution								
39	k star (bias corrected)				2.788		Data do not follow a Discernable Distribution (0.05)							
40	Theta Star				3.2									
41	MLE of Mean				8.923									
42	MLE of Standard Deviation				5.344									
43	nu star				72.49									
44	Approximate Chi Square Value (.05)				53.89		Nonparametric Statistics							
45	Adjusted Level of Significance				0.0301		95% CLT UCL				11.74			
46	Adjusted Chi Square Value				51.61		95% Jackknife UCL				11.98			
47						95% Standard Bootstrap UCL						11.69		
48	Anderson-Darling Test Statistic				1.925		95% Bootstrap-t UCL				21.63			
49	Anderson-Darling 5% Critical Value				0.738		95% Hall's Bootstrap UCL				24.98			
50	Kolmogorov-Smirnov Test Statistic				0.371		95% Percentile Bootstrap UCL				11.69			
51	Kolmogorov-Smirnov 5% Critical Value				0.238		95% BCA Bootstrap UCL				12.77			
52	Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL						16.4		
53							97.5% Chebyshev(Mean, Sd) UCL				19.63			
54	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL						25.99		
55	95% Approximate Gamma UCL (Use when n >= 40)				12									

	A	B	C	D	E	F	G	H	I	J	K	L	
56	95% Adjusted Gamma UCL (Use when n < 40)					12.53							
57													
58	Potential UCL to Use					Use 95% Chebyshev (Mean, Sd) UCL						16.4	
59													
60	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
61	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)												
62	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.												
63													
64													
65	Cadmium												
66													
67	General Statistics												
68	Number of Valid Observations					13	Number of Distinct Observations					3	
69													
70	Raw Statistics					Log-transformed Statistics							
71	Minimum					1	Minimum of Log Data					0	
72	Maximum					7	Maximum of Log Data					1.946	
73	Mean					1.615	Mean of log Data					0.234	
74	Geometric Mean					1.264	SD of log Data					0.597	
75	Median					1							
76	SD					1.71							
77	Std. Error of Mean					0.474							
78	Coefficient of Variation					1.058							
79	Skewness					3.078							
80													
81													
82	Warning: There are only 3 Distinct Values in this data												
83	There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.												
84	Those methods will return a 'N/A' value on your output display!												
85													
86	It is necessary to have 4 or more Distinct Values to compute bootstrap methods.												
87	However, results obtained using 4 to 9 distinct values may not be reliable.												
88	It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.												
89													
90	Relevant UCL Statistics												
91	Normal Distribution Test					Lognormal Distribution Test							
92	Shapiro Wilk Test Statistic					0.429	Shapiro Wilk Test Statistic					0.463	
93	Shapiro Wilk Critical Value					0.866	Shapiro Wilk Critical Value					0.866	
94	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
95													
96	Assuming Normal Distribution					Assuming Lognormal Distribution							
97	95% Student's-t UCL					2.461	95% H-UCL					2.219	
98	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					2.599		
99	95% Adjusted-CLT UCL (Chen-1995)					2.828	97.5% Chebyshev (MVUE) UCL					3.081	
100	95% Modified-t UCL (Johnson-1978)					2.528	99% Chebyshev (MVUE) UCL					4.026	
101													
102	Gamma Distribution Test					Data Distribution							
103	k star (bias corrected)					1.736	Data do not follow a Discernable Distribution (0.05)						
104	Theta Star					0.931							
105	MLE of Mean					1.615							
106	MLE of Standard Deviation					1.226							
107	nu star					45.13							
108	Approximate Chi Square Value (.05)					30.72	Nonparametric Statistics						
109	Adjusted Level of Significance					0.0301	95% CLT UCL					2.395	
110	Adjusted Chi Square Value					29.03	95% Jackknife UCL					2.461	

	A	B	C	D	E	F	G	H	I	J	K	L	
111						95% Standard Bootstrap UCL						N/A	
112	Anderson-Darling Test Statistic					3.585	95% Bootstrap-t UCL						N/A
113	Anderson-Darling 5% Critical Value					0.742	95% Hall's Bootstrap UCL						N/A
114	Kolmogorov-Smirnov Test Statistic					0.51	95% Percentile Bootstrap UCL						N/A
115	Kolmogorov-Smirnov 5% Critical Value					0.239	95% BCA Bootstrap UCL						N/A
116	Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL						3.682	
117							97.5% Chebyshev(Mean, Sd) UCL						4.577
118	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL						6.333	
119	95% Approximate Gamma UCL (Use when n >= 40)					2.373							
120	95% Adjusted Gamma UCL (Use when n < 40)					2.511							
121													
122	Potential UCL to Use					Use 95% Chebyshev (Mean, Sd) UCL						3.682	
123													
124	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
125	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)												
126	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.												
127													
128													
129	Chromium												
130													
131	General Statistics												
132	Number of Valid Observations					8	Number of Distinct Observations					5	
133													
134	Raw Statistics					Log-transformed Statistics							
135	Minimum					25	Minimum of Log Data					3.219	
136	Maximum					39	Maximum of Log Data					3.664	
137	Mean					35	Mean of log Data					3.547	
138	Geometric Mean					34.72	SD of log Data					0.141	
139	Median					36.5							
140	SD					4.375							
141	Std. Error of Mean					1.547							
142	Coefficient of Variation					0.125							
143	Skewness					-2.088							
144													
145													
146	Warning: There are only 8 Values in this data												
147	Note: It should be noted that even though bootstrap methods may be performed on this data set,												
148	the resulting calculations may not be reliable enough to draw conclusions												
149													
150	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.												
151													
152	Relevant UCL Statistics												
153	Normal Distribution Test					Lognormal Distribution Test							
154	Shapiro Wilk Test Statistic					0.742	Shapiro Wilk Test Statistic					0.7	
155	Shapiro Wilk Critical Value					0.818	Shapiro Wilk Critical Value					0.818	
156	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
157													
158	Assuming Normal Distribution					Assuming Lognormal Distribution							
159	95% Student's-t UCL					37.93	95% H-UCL					38.77	
160	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					42.63		
161	95% Adjusted-CLT UCL (Chen-1995)					36.32	97.5% Chebyshev (MVUE) UCL					45.92	
162	95% Modified-t UCL (Johnson-1978)					37.74	99% Chebyshev (MVUE) UCL					52.38	
163													
164	Gamma Distribution Test					Data Distribution							
165	k star (bias corrected)					39.22	Data do not follow a Discernable Distribution (0.05)						

	A	B	C	D	E	F	G	H	I	J	K	L	
166	Theta Star					0.892							
167	MLE of Mean					35							
168	MLE of Standard Deviation					5.589							
169	nu star					627.5							
170	Approximate Chi Square Value (.05)					570.4	Nonparametric Statistics						
171	Adjusted Level of Significance					0.0195	95% CLT UCL					37.54	
172	Adjusted Chi Square Value					556.6	95% Jackknife UCL					37.93	
173							95% Standard Bootstrap UCL					37.36	
174	Anderson-Darling Test Statistic					1.106	95% Bootstrap-t UCL					36.95	
175	Anderson-Darling 5% Critical Value					0.715	95% Hall's Bootstrap UCL					36.72	
176	Kolmogorov-Smirnov Test Statistic					0.355	95% Percentile Bootstrap UCL					37	
177	Kolmogorov-Smirnov 5% Critical Value					0.293	95% BCA Bootstrap UCL					36.63	
178	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					41.74	
179							97.5% Chebyshev(Mean, Sd) UCL					44.66	
180	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					50.39	
181	95% Approximate Gamma UCL (Use when n >= 40)					38.5							
182	95% Adjusted Gamma UCL (Use when n < 40)					39.46							
183													
184	Potential UCL to Use						Use 95% Student's-t UCL					37.93	
185							or 95% Modified-t UCL					37.74	
186													
187	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
188	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)												
189	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.												
190													
191	Note: For highly negative-skewed data, confidence limits												
192	(e.g., Chen, Johnson, Lognormal, and Gamma) may not be												
193	reliable. Chen's and Johnson's methods provide												
194	adjustments for positively skewed data sets.												
195													
196													
197	Copper												
198													
199	General Statistics												
200	Number of Valid Observations					13	Number of Distinct Observations					8	
201													
202	Raw Statistics						Log-transformed Statistics						
203	Minimum					19	Minimum of Log Data					2.944	
204	Maximum					356	Maximum of Log Data					5.875	
205	Mean					63.85	Mean of log Data					3.592	
206	Geometric Mean					36.3	SD of log Data					0.912	
207	Median					26							
208	SD					98.17							
209	Std. Error of Mean					27.23							
210	Coefficient of Variation					1.538							
211	Skewness					2.704							
212													
213													
214	Relevant UCL Statistics												
215	Normal Distribution Test						Lognormal Distribution Test						
216	Shapiro Wilk Test Statistic					0.516	Shapiro Wilk Test Statistic					0.686	
217	Shapiro Wilk Critical Value					0.866	Shapiro Wilk Critical Value					0.866	
218	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level						
219													
220	Assuming Normal Distribution						Assuming Lognormal Distribution						

	A	B	C	D	E	F	G	H	I	J	K	L
221	95% Student's-t UCL					112.4	95% H-UCL					111.9
222	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					114.9
223	95% Adjusted-CLT UCL (Chen-1995)					130.5	97.5% Chebyshev (MVUE) UCL					141.8
224	95% Modified-t UCL (Johnson-1978)					115.8	99% Chebyshev (MVUE) UCL					194.6
225												
226	Gamma Distribution Test						Data Distribution					
227	k star (bias corrected)					0.836	Data do not follow a Discernable Distribution (0.05)					
228	Theta Star					76.38						
229	MLE of Mean					63.85						
230	MLE of Standard Deviation					69.83						
231	nu star					21.73						
232	Approximate Chi Square Value (.05)					12.14	Nonparametric Statistics					
233	Adjusted Level of Significance					0.0301	95% CLT UCL					108.6
234	Adjusted Chi Square Value					11.13	95% Jackknife UCL					112.4
235							95% Standard Bootstrap UCL					106.3
236	Anderson-Darling Test Statistic					2.335	95% Bootstrap-t UCL					537.1
237	Anderson-Darling 5% Critical Value					0.757	95% Hall's Bootstrap UCL					454.5
238	Kolmogorov-Smirnov Test Statistic					0.362	95% Percentile Bootstrap UCL					113.2
239	Kolmogorov-Smirnov 5% Critical Value					0.243	95% BCA Bootstrap UCL					128.7
240	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					182.5
241							97.5% Chebyshev(Mean, Sd) UCL					233.9
242	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					334.8
243	95% Approximate Gamma UCL (Use when n >= 40)					114.3						
244	95% Adjusted Gamma UCL (Use when n < 40)					124.7						
245												
246	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					182.5
247												
248	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
249	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
250	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											
251												
252												
253	Lead											
254												
255	General Statistics											
256	Number of Valid Observations					13	Number of Distinct Observations					11
257												
258	Raw Statistics						Log-transformed Statistics					
259	Minimum					36	Minimum of Log Data					3.584
260	Maximum					590	Maximum of Log Data					6.38
261	Mean					109.8	Mean of log Data					4.234
262	Geometric Mean					68.98	SD of log Data					0.84
263	Median					52						
264	SD					155.5						
265	Std. Error of Mean					43.14						
266	Coefficient of Variation					1.416						
267	Skewness					2.909						
268												
269	Relevant UCL Statistics											
270	Normal Distribution Test						Lognormal Distribution Test					
271	Shapiro Wilk Test Statistic					0.53	Shapiro Wilk Test Statistic					0.763
272	Shapiro Wilk Critical Value					0.866	Shapiro Wilk Critical Value					0.866
273	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
274												
275	Assuming Normal Distribution						Assuming Lognormal Distribution					

	A	B	C	D	E	F	G	H	I	J	K	L
276	95% Student's-t UCL					186.7	95% H-UCL					183.7
277	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					197.1
278	95% Adjusted-CLT UCL (Chen-1995)					218	97.5% Chebyshev (MVUE) UCL					241.4
279	95% Modified-t UCL (Johnson-1978)					192.5	99% Chebyshev (MVUE) UCL					328.3
280												
281	Gamma Distribution Test						Data Distribution					
282	k star (bias corrected)					0.985	Data do not follow a Discernable Distribution (0.05)					
283	Theta Star					111.5						
284	MLE of Mean					109.8						
285	MLE of Standard Deviation					110.7						
286	nu star					25.62						
287	Approximate Chi Square Value (.05)					15.09	Nonparametric Statistics					
288	Adjusted Level of Significance					0.0301	95% CLT UCL					180.8
289	Adjusted Chi Square Value					13.94	95% Jackknife UCL					186.7
290							95% Standard Bootstrap UCL					177.7
291	Anderson-Darling Test Statistic					1.77	95% Bootstrap-t UCL					604.6
292	Anderson-Darling 5% Critical Value					0.754	95% Hall's Bootstrap UCL					498.5
293	Kolmogorov-Smirnov Test Statistic					0.307	95% Percentile Bootstrap UCL					188.8
294	Kolmogorov-Smirnov 5% Critical Value					0.242	95% BCA Bootstrap UCL					222.9
295	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					297.9
296							97.5% Chebyshev(Mean, Sd) UCL					379.2
297	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					539.1
298	95% Approximate Gamma UCL (Use when n >= 40)					186.5						
299	95% Adjusted Gamma UCL (Use when n < 40)					201.8						
300												
301	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					297.9
302												
303	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
304	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
305	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											
306												
307												
308	Nickel											
309												
310	General Statistics											
311	Number of Valid Observations					13	Number of Distinct Observations					5
312												
313	Raw Statistics						Log-transformed Statistics					
314	Minimum					4	Minimum of Log Data					1.386
315	Maximum					20	Maximum of Log Data					2.996
316	Mean					6.538	Mean of log Data					1.757
317	Geometric Mean					5.794	SD of log Data					0.452
318	Median					5						
319	SD					4.352						
320	Std. Error of Mean					1.207						
321	Coefficient of Variation					0.666						
322	Skewness					2.873						
323												
324												
325	Relevant UCL Statistics											
326	Normal Distribution Test						Lognormal Distribution Test					
327	Shapiro Wilk Test Statistic					0.588	Shapiro Wilk Test Statistic					0.759
328	Shapiro Wilk Critical Value					0.866	Shapiro Wilk Critical Value					0.866
329	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
330												

	A	B	C	D	E	F	G	H	I	J	K	L
331	Assuming Normal Distribution						Assuming Lognormal Distribution					
332	95% Student's-t UCL					8.69	95% H-UCL					8.394
333	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					9.916
334	95% Adjusted-CLT UCL (Chen-1995)					9.551	97.5% Chebyshev (MVUE) UCL					11.45
335	95% Modified-t UCL (Johnson-1978)					8.85	99% Chebyshev (MVUE) UCL					14.47
336												
337	Gamma Distribution Test						Data Distribution					
338	k star (bias corrected)					3.356	Data do not follow a Discernable Distribution (0.05)					
339	Theta Star					1.948						
340	MLE of Mean					6.538						
341	MLE of Standard Deviation					3.569						
342	nu star					87.26						
343	Approximate Chi Square Value (.05)					66.73	Nonparametric Statistics					
344	Adjusted Level of Significance					0.0301	95% CLT UCL					8.524
345	Adjusted Chi Square Value					64.17	95% Jackknife UCL					8.69
346							95% Standard Bootstrap UCL					8.459
347	Anderson-Darling Test Statistic					1.491	95% Bootstrap-t UCL					14.69
348	Anderson-Darling 5% Critical Value					0.737	95% Hall's Bootstrap UCL					18.51
349	Kolmogorov-Smirnov Test Statistic					0.351	95% Percentile Bootstrap UCL					8.615
350	Kolmogorov-Smirnov 5% Critical Value					0.238	95% BCA Bootstrap UCL					9.538
351	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					11.8
352							97.5% Chebyshev(Mean, Sd) UCL					14.08
353	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					18.55
354	95% Approximate Gamma UCL (Use when n >= 40)					8.551						
355	95% Adjusted Gamma UCL (Use when n < 40)					8.891						
356												
357	Potential UCL to Use						Use 95% Student's-t UCL					8.69
358							or 95% Modified-t UCL					8.85
359												
360	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
361	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
362	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											
363												
364												
365	Zinc											
366												
367	General Statistics											
368	Number of Valid Observations					13	Number of Distinct Observations					13
369												
370	Raw Statistics						Log-transformed Statistics					
371	Minimum					77	Minimum of Log Data					4.344
372	Maximum					384	Maximum of Log Data					5.951
373	Mean					161.2	Mean of log Data					4.954
374	Geometric Mean					141.8	SD of log Data					0.485
375	Median					125						
376	SD					100.6						
377	Std. Error of Mean					27.91						
378	Coefficient of Variation					0.624						
379	Skewness					1.921						
380												
381	Relevant UCL Statistics											
382	Normal Distribution Test						Lognormal Distribution Test					
383	Shapiro Wilk Test Statistic					0.671	Shapiro Wilk Test Statistic					0.832
384	Shapiro Wilk Critical Value					0.866	Shapiro Wilk Critical Value					0.866
385	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
386												
387	Assuming Normal Distribution						Assuming Lognormal Distribution					
388	95% Student's-t UCL					210.9	95% H-UCL					213.7
389	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					252.7
390	95% Adjusted-CLT UCL (Chen-1995)					223	97.5% Chebyshev (MVUE) UCL					293.7
391	95% Modified-t UCL (Johnson-1978)					213.4	99% Chebyshev (MVUE) UCL					374.3
392												
393	Gamma Distribution Test						Data Distribution					
394	k star (bias corrected)					3.179	Data do not follow a Discernable Distribution (0.05)					
395	Theta Star					50.7						
396	MLE of Mean					161.2						
397	MLE of Standard Deviation					90.39						
398	nu star					82.65						
399	Approximate Chi Square Value (.05)					62.7	Nonparametric Statistics					
400	Adjusted Level of Significance					0.0301	95% CLT UCL					207.1
401	Adjusted Chi Square Value					60.23	95% Jackknife UCL					210.9
402							95% Standard Bootstrap UCL					204.7
403	Anderson-Darling Test Statistic					1.301	95% Bootstrap-t UCL					334
404	Anderson-Darling 5% Critical Value					0.737	95% Hall's Bootstrap UCL					524.4
405	Kolmogorov-Smirnov Test Statistic					0.291	95% Percentile Bootstrap UCL					210.3
406	Kolmogorov-Smirnov 5% Critical Value					0.238	95% BCA Bootstrap UCL					219.9
407	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					282.8
408							97.5% Chebyshev(Mean, Sd) UCL					335.5
409	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					438.9
410	95% Approximate Gamma UCL (Use when n >= 40)					212.4						
411	95% Adjusted Gamma UCL (Use when n < 40)					221.2						
412												
413	Potential UCL to Use						Use 95% Student's-t UCL					210.9
414							or 95% Modified-t UCL					213.4
415												
416	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
417	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
418	and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.											